



# IBM PureData System for Operational Analytics Fixpack Readme

V1.1.0.4 (FP4)

Change Notes:

Change Notes:

| Date      | Change   |
|-----------|----------|
| 3/12/2021 | Released |
|           |          |
|           |          |

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## PureData System for Operational Analytics for V1.1.0.4

# Introduction

PureData System for Operational Analytics (PDOA), the appliance, fixpacks provide the following:

- A downloadable set of images from IBM FixCentral which includes all the software and firmware updates required to update the appliance to the latest validated stack level as indicated for their version of the appliance in the validated stack pages.
- This readme distributed as a technote with the set of instructions necessary to apply the update.
- A technote that includes the known issues related to the application of the fixpack as well as any known issues with the appliance after the fixpack has been applied.
- A technote that contains the updated validated stack for V1.1.0.4.
- Note that V1.0.0.8 (V1.0 FP8) was not released. V1.0.0.7 or (V1.0 FP7) is the last fixpack available for that appliance. The V1.0 environment with the machine type 8279 has reached its end of support (EOS) date as of 9/2020. For customers with extended support contracts please contact IBM for more information about update options.

## Important Notes about V1.1.0.4

These fixpacks represent an important change to how fixpacks will be applied on the appliance now and in the future.

## Brief history of the PDOA Fixpack model

In V1.0.0.5/V1.1.0.1 and earlier the fixpacks ran in simple stages managed by the UI. The stages were:

- Registration
- Preview
- Management Apply
- Prepare
- Core Apply
- Commit

### Benefits:

- Consistent and tested update methodology managed by code.
- Benefits of the herd. Each application of the fixpack provided useful information for fixpack applications on subsequent appliances.
- Resume feature addressed some issues allowing fixpack to continue after some failures.

### Challenges:

- The UI did not always consistently reflect the current state of the fixpack or its progress. Customers often had to run the fixpack at the UI and command line levels which lead to some confusion and exposed the complexities of the fixpack mechanism.
- Apply phases required full downtime of their respective components. Core apply downtimes often cited as the biggest reason for customers to avoid or postpone updates.
- Fixpack failures lead to missed outage windows. The design of the fixpack did not accommodate entering back into production if a stage was not completed.
- In some fixpack failure scenarios it was difficult to get the fixpack into a state where it could resume, even after addressing the failure.
- The fixpack had a specific way to update some components. In some failure cases component support teams used methods that were not compatible to the appliance fixpack.
- Resume did not support all scenarios and lead to more challenging support efforts when multiple resumes were run in succession.

## Important changes to the PDOA fixpack model

- The appliance console has been removed in FP6\_FP2.
- The fixpack methodology will take advantage of the concurrent update features in the storage. Customers can choose to update their storage while servicing low impact business requirements.
- The fixpack methodology will take advantage of the redundant features of the appliance in the SAN fabric.
  - Redundant SANs allow one SAN to go offline while providing reduced I/O bandwidth through the other SAN.
- The fixpack methodology will take advantage of the redundant features that can be updated without degradation of appliance performance.
  - Standby Servers and the ability to failover services
  - Redundant HMCs
- The fixpack methodology will take advantage of some mixed mode features.
  - RSCT Mixed Version Domains
  - Mixed AIX Levels Across Servers
  - Mixed Power Firmware Levels across servers.
  - Mixed component firmware levels for some adapters across servers.
- The fixpack methodology will provide more opportunities to return to production within the fixpack application with more granular updates.
- The fixpack methodology will allow more freedom for component support team to address issues in line with their respective components.
- The fixpack will continue to use fixpack scripting where possible as provided by the platform layer.
- Fixpack Stages have been modified to reflect the new methodology.

New Challenges arising out of the above fixpack process change:

- Customer or a customer agent will be responsible to run several hundred command line instructions as part of this update.
- Requires System Administration skills to apply the fixpack.

## Appliance fixpack stage definitions

| Stage and Stage Impacts                                                                                                                                                                | Notes                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stage 1: Prerequisites                                                                                                                                                                 | Budget: 1 Week. <ul style="list-style-type: none"> <li>• Preview Steps</li> <li>• This should be done at least a week before the planned update.</li> </ul>                                                                                                                                                                                                                                                           |
| Stage 2: Platform Updates                                                                                                                                                              | Budget: 1.5 Hours + Buffer <ul style="list-style-type: none"> <li>• Update AIX on management host. (New if V1.1 FP4)</li> <li>• Update Platform Layer</li> </ul>                                                                                                                                                                                                                                                      |
| Stage 3: HMC Updates <ul style="list-style-type: none"> <li>• Single HMC while other HMC updates.</li> </ul>                                                                           | Budget: 180 Minutes (90 Minutes / HMC) + Buffer <ul style="list-style-type: none"> <li>• Update HMC1</li> <li>• Update HMC2</li> </ul>                                                                                                                                                                                                                                                                                |
| Stage 4: Storage Updates <ul style="list-style-type: none"> <li>• Reduced paths while canisters are updated.</li> <li>• Updates can be spread over multiple update windows.</li> </ul> | Budget 3 Hours / Rack + Buffer <ul style="list-style-type: none"> <li>• Update Foundation Storage By MTM</li> <li>• Update Core Storage in Multiple Phases</li> </ul>                                                                                                                                                                                                                                                 |
| Stage 5: SANs <ul style="list-style-type: none"> <li>• Reduced Paths while SAN switches are updated.</li> <li>• Updates can be spread over multiple update windows.</li> </ul>         | Budget 2.5 Hours + Buffer <ul style="list-style-type: none"> <li>• Update Odd Number SAN Switches</li> <li>• Update Even Numbered SAN Switches.</li> </ul>                                                                                                                                                                                                                                                            |
| Stage 6: Update Management Hosts                                                                                                                                                       | Budget: 3 Hours + Buffer<br>Update Management and Management Standby hosts <ul style="list-style-type: none"> <li>• Quiesce management nodes</li> <li>• Update AIX</li> <li>• Reboot</li> <li>• Stop GPFS</li> <li>• Update FC Adapter Firmware</li> <li>• Update NIC Adapter Firmware</li> <li>• Update Internal RAID Adapter Firmware</li> <li>• Update GPFS</li> <li>• Update TSA</li> <li>• Update DB2</li> </ul> |
| Stage 7: Update Standby hosts OS/Adapter/Power Firmware                                                                                                                                | Budget: 3 hours per pass + Buffer. <ul style="list-style-type: none"> <li>• Update Standby Servers               <ul style="list-style-type: none"> <li>◦ Quiesce Standby Servers [ HA is degraded ]</li> </ul> </li> </ul>                                                                                                                                                                                           |

|                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• No HA System Available while Server is quiesced.</li> <li>• Requires failover interruption when preparing for next round of server updates.</li> <li>• Updates can be spread over multiple update windows.</li> </ul> | <ul style="list-style-type: none"> <li>○ Update AIX on quiesced nodes.</li> <li>○ Reboot</li> <li>○ Stop GPFS on quiesced nodes.</li> <li>○ Update Internal Raid Adapter Firmware</li> <li>○ Update FC Adapter Firmware</li> <li>○ Update NIC Adapter Firmware</li> <li>○ Update Power Firmware</li> <li>○ Validate Updates</li> <li>○ Unquiesce Servers</li> <li>○ Plan for next failover from non-updated servers to updated servers</li> <li>○ System may run in production mode until next interrupt window is available.</li> <li>○ Perform Failovers if necessary.</li> <li>○ Repeat Update as needed based on schedule and plans.</li> </ul>     |
| <p>Stage 8: CORE Update<br/>GPFS/TSA/DB2/BNT</p> <ul style="list-style-type: none"> <li>• System will be down during update time.</li> <li>• Requires one update window.</li> </ul>                                                                            | <p>Budget: 3 Hours + Buffer (Outage) + 8 hours + buffer (mkysb/commits/remirror rootvg)</p> <ul style="list-style-type: none"> <li>• Quiesce Appliance</li> <li>• Perform Updates <ul style="list-style-type: none"> <li>○ Update BNT Switches</li> <li>○ Update GPFS</li> <li>○ Update TSA</li> <li>○ Update HA Tools</li> <li>○ Update DB2</li> </ul> </li> <li>• Restart Appliance Features</li> <li>• mkysbs</li> <li>• Commit Features <ul style="list-style-type: none"> <li>○ GPFS Clusters</li> <li>○ GPFS Filesystems</li> <li>○ Db2 Database</li> <li>○ Power Firmware</li> </ul> </li> <li>• Restore rootvg mirrors on AIX hosts.</li> </ul> |
| <p>Stage 9: Other Removals</p> <ul style="list-style-type: none"> <li>• Remove obsolete software</li> <li>• No Outages Required.</li> </ul>                                                                                                                    | <p>Budget: 2 Hours</p> <ul style="list-style-type: none"> <li>• Update the appliance catalog.</li> <li>• Remove Java5/Java6 and DPM</li> <li>• Verifying the fixpack.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Is it possible skip a fixpack level?

The fixpack delivered in FP5\_FP1 was a milestone fixpack and was the last fixpack to be applied using the console and the previous fixpack stage definitions. The changes made to the fixpack model in FP6\_FP2 will allow a customer to plan an upgrade that combines the updates into a single planned event.

- Tested Fixpack Scenarios
  - V1.1 GA -> V1.1 FP1 -> V1.1 FP2 -> V1.1 FP3 -> V1.1 FP4
  - V1.1 GA -> V1.1 FP1 -> V1.1 FP3 -> V1.1 FP4
    - FP1->FP3 was tested and validated in February 2020
      - Full Outage required for Stage 7 updates.
      - HMC [ Apply FP2 level before FP3 during Stage 3]
      - AIX [ Apply FP2 level before FP3 during Stage 6 and 7]
      - GPFS [ Apply FP2 level before FP3 during Stage 6 and Stage 8]
- Potentially Supported Fixpack Scenarios
  - V1.1 GA -> V1.1 FP1 -> V1.1 FP2 -> V1.1 FP4
    - V1.1 FP2-> V1.1 FP4 may be tested 3 months after FP4 is released.
- Higher Risk Fixpack Scenarios
  - V1.1 GA -> V1.1 FP1 -> V1.1 FP4
    - This scenario will not be tested in the lab.
- Unsupported Scenarios
  - V1.1 GA -> V1.1 FP2
  - V1.1 GA -> V1.1 FP3
  - V1.1 GA -> V1.1 FP4

For untested higher risk update scenarios the following steps need to be taken.

- High risk updates should be done using a full outage model.
- Downloading the readme and fixpack images for all fixpacks involved.
- Reading through the Readmes to look for what has been updated. It is especially important to watch for configuration type changes. For example, in FP6\_FP2 there were important updates to the ssh\_config and sshd\_config files as part of the transition from FP5\_FP1 to FP6\_FP2.
- For each component updated checking the individual components rules and complexities between the two validated stack versions.
  - In the past it has been necessary to apply multiple hops within the fixpack for the following components:
    - V7000 Enclosures
    - Flash900 Enclosures
    - HMC
    - Power Firmware
    - GPFS
  - These components tend to support direct updates without requiring additional hops.

- TSA
- DB2
- The following components require updates to FP6\_FP2 levels prior to applying FP7\_FP3 levels. This will add additional time to account for these extra hops.
  - HMC
    - Must apply the updated HMC images in FP6\_FP2 prior to applying the latest images in FP7\_FP3. PDOA Platform Layer 2.0.7.0 from FP7\_FP3 may be used to apply this update.
  - AIX
    - AIX 7.1 TL3->TL5 using the base imaged in FP6\_FP2 before applying the fixpack images from FP7\_FP3.
  - GPFS
    - GPFS base images are only included in FP6\_FP2 and must be applied before FP7\_FP3's updates can be applied.
- Checking for any Cross Compatability issues that may exist.
  - For example:
    - AIX 7.1 TL5 had updates to OpenSSL and OpenSSH as security defaults had changed. This led to connectivity issues connecting to/from the SAN and BNT switches in the appliance.
    - Power Firmware and HMC Level Compatibility.
- Determining if updates managed through the pplayer (appl\*) commands is compatible with the updates.
  - The pplayer commands are automation that work with components and have been tested in specific scenarios. Over time the pplayer has been updated to accommodate changes to the API and command line calls as well as their expected outputs as they have changed with the updates to the firmware, software and configuration details of the system.
  - In some cases as part of the planning it may be necessary to skip using the pplayer commands and instead to follow the regular instructions for an update to a specific component.
  - The FP7\_FP3 pplayer can be used to apply FP6\_FP2 updates as needed. FP6\_FP2 images are required solely for the intermediate software and firmware updates.
  - In FP8\_FP4 a layer of fixpack tools has been added. These tools have not been fully tested when the system starting point is at the FP6\_FP2 or FP5\_FP1 validated stack levels and neither has the FP8\_FP4 platform layer been fully tested in those scenarios. V1.1 FP2 to V1.1 FP4 scenarios will be tested after the fixpack has been released. Any updates required to the fixpack package or readme will be provided at that time as needed.
- Determining if it is necessary to take a full outage versus the staged approach to the fixpack.
  - In almost all cases it is recommended to plan for a full outage versus the stages approach to avoid edge cases that could arise on systems that are not fully updated and have not been tested in a mixed update configuration.



## Security Updates

The main purpose of the fixpack is to deliver a tested combination of components. With the large gap between fixpack deliveries it is expected that security updates to some or all of the components in the stack will occur in between the time the validated stack was selected, delivered and ultimately applied at a customer site.

This is particularly true for AIX, HMCs, and DB2 which have frequent security bulletins but is no less true for other components.

The remediation method for this appliance is for customers to subscribe to the components in the validated stack for pre-emptive security notifications as well as to scan their system and then to engage with IBM Support for anything that needs an appropriate remediation. It is through that process the proper remediation option for the appliance and the customer can be discussed and planned.

| Component                           | Link                                                                                                                                                                                                                                                                                  |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIX Download Site (FTP)             | <a href="ftp://aix.software.ibm.com/aix/efixes/security/">ftp://aix.software.ibm.com/aix/efixes/security/</a>                                                                                                                                                                         |
| Db2 Security Related Special Builds | <a href="https://www.ibm.com/support/pages/published-security-vulnerabilities-db2-linux-unix-and-windows-including-special-build-information">https://www.ibm.com/support/pages/published-security-vulnerabilities-db2-linux-unix-and-windows-including-special-build-information</a> |
| HMC Security Bulletin Searches      | <a href="https://www.ibm.com/blogs/psirt/?s=power+hmc">https://www.ibm.com/blogs/psirt/?s=power+hmc</a>                                                                                                                                                                               |

## Alternative Staging Option

The stages are designed to reduce outage time by allowing the stages to be run with the system operational as much as possible. The stages are also designed to be clear enough that it is possible to design other patterns.

One alternative pattern is to perform the stages 3-5 in an outage window and to update all like components in parallel versus the staged approach. While this can shorten the outage window time, it does introduce risks related to unexpected outages.

Additional alternatives patterns are to take full outages for Stage 6 and/or Stage 7.

- Option: Combine Stage 7 and Stage 8 in a full outage window.
  - Stage 6 as documented.
  - Quiesce Appliance.
  - Combine Stage 7 and Stage 8 and remove need for complexity of failover logic.
- Option: Combine Stage 6, Stage 7 and Stage 8 in a full outage window.
  - Quiesce Appliance
  - Combine Stage 6 through 8 in a full outage window.

The documentation for Stages 6 through 8 will have different output if the full outage model is used and some procedures will not be necessary and the customer or practitioner should have expert knowledge of the system to understand how to verify the system after each step, phase and stage.

It is still highly recommended to update components in sets that reduce risks and can allow going back to production in case of unexpected errors during updates.

- Update only 3 to 4 storage enclosures of the same type in parallel.
- Update only even numbered and then odd numbered SAN switches.
- Update Servers (Stage 6/7) such that only one server per rack is updated.

One strawman example of a different Stage plan is show in the table below.

An example of a full outage scenario might be:

| Stage and Stage Impacts                                                                                                          | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stage 1: Prerequisites                                                                                                           | <ul style="list-style-type: none"> <li>Preview Steps</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Stage 2: Platform Updates                                                                                                        | <ul style="list-style-type: none"> <li>Update AIX on management (V1.1 FP4)</li> <li>Update Platform Layer</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Stage 3: HMC Updates <ul style="list-style-type: none"> <li>Single HMC while other HMC updates.</li> </ul>                       | <ul style="list-style-type: none"> <li>Update HMC1</li> <li>Update HMC2</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Appliance Quiesce [ Optional ]                                                                                                   | <ul style="list-style-type: none"> <li>Stop Db2</li> <li>Stop DPM</li> <li>Stop TSA Domains</li> <li>Stop GPFS</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Stage 4: Storage Updates                                                                                                         | <ul style="list-style-type: none"> <li>Update Foundation Storage By MTM</li> <li>Update Core Storage in Multiple Phases</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Stage 5: SANs                                                                                                                    | <ul style="list-style-type: none"> <li>Update Odd Number SAN Switches</li> <li>Update Even Numbered SAN Switches.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Appliance Quiesce [ Optional ]                                                                                                   | <ul style="list-style-type: none"> <li>If the appliance was not quiesced prior to Stage 4, it can be quiesced here instead.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Combined Staging<br>Stage 6, Stage 7, Stage 8                                                                                    | <ul style="list-style-type: none"> <li>Appliance Quiesced.</li> <li>Perform AIX update on all non management hosts and management standby.</li> <li>Update BNT Switches</li> <li>Update Internal Raid Adapter Firmware</li> <li>Update Power Firmware All Servers</li> <li>Update Adapter Firmware</li> <li>Update GPFS (Stage6/Stage8 steps)</li> <li>Update TSA (Stage 6/ Stage 8 steps)</li> <li>Update DB2 all steps (Stage 6 / Stage 8)</li> <li>Restart Appliance Features</li> <li>mksysbs</li> <li>Commit Features               <ul style="list-style-type: none"> <li>GPFS Clusters</li> <li>GPFS Filesystems</li> <li>Db2 Database</li> </ul> </li> <li>Power FirmwareRestore rootvg mirrors on AIX hosts.</li> </ul> |
| Stage 9: Other Removals <ul style="list-style-type: none"> <li>Remove obsolete software</li> <li>No Outages Required.</li> </ul> | <ul style="list-style-type: none"> <li>Update the appliance catalog.</li> <li>Remove Java5/Java6 and DPM</li> <li>Verify the fixpack.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |



## Fixpack details

### Where to get the fixpack

The PDOA Fixpack is available from IBM Fixcentral. Each PDOA Version has its own downloadable compressed (gzip) package (tar) file. While the paths to the files through Fix Central are different and the filenames are different there is no difference between the content of the two files.

The following table shows the fixpack file associated with the edition as available from IBM Fix Central.

| Edition   | Filename                                                                                                                                                                           | Fix Central Direct Link |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| PDOA V1.0 | V1.0 FP8 Is N/A                                                                                                                                                                    | N/A                     |
| PDOA V1.1 | 1.1.0.4-IM-PureData_System_for_OpAnalytics-fp004.tgz<br>1.1.0.4-IM-PureData_System_for_OpAnalytics-fp004.tgz.cksum<br>1.1.0.4-IM-PureData_System_for_OpAnalytics-fp004.files.cksum | <a href="#">FC</a>      |

## Fixpack contents

The following table lists the software and firmware included in this update. The most recent validated stack recommendations can be found at the following [link](#).

| Component                                                 | V1.1.0.4                                                    |
|-----------------------------------------------------------|-------------------------------------------------------------|
| AIX                                                       | 7100-05-07-2038 +IJ29552                                    |
| DB2 V10.5<br>or<br>DB2 V11.1                              | 10.5 FP11 SB #40160<br>or<br>11.1.4.5 SB #40159             |
| GPFS                                                      | 5.0.5.4                                                     |
| IBM InfoSphere Optim Performance Manager Extended Edition | Removed Stage 9                                             |
| IBM Systems Director Platform Control for Power           | 4.0.8.0                                                     |
| IBM Reliable Scalable Cluster Technology (RSCT)           | 3.2.5.2                                                     |
| IBM Tivoli System Automation for Multiplatforms           | 4.1.0.6                                                     |
| OpenSSH                                                   | 8.1.102.2101 [ 1 ]                                          |
| OpenSSL                                                   | 1.0.2.2100 [ 1 ]                                            |
| Java 5 and Java 6                                         | Removed Stage 9                                             |
| Java 7                                                    | 7.0.0.665 [ 1 ]                                             |
| Java 8                                                    | 8.0.0.610 [ 1 ]                                             |
| 8 Gb Fiber Channel Adapter (FC 5729)                      | 210313 [ 3 ]                                                |
| 8 Gb Fiber Channel Adapter (FC EN0Y)                      | 0325080271                                                  |
| PCIe3 x8 SAS RAID Internal Adapter 6Gb (CCIN 57D7)        | 19512b00                                                    |
| 10 Gb + 1 Gb Ethernet SR+RJ45 Adapter (FC EN0S, FC EN0T)  | 30100310 [ 3 ]                                              |
| Hardware Management Console [CR8 – CR9]                   | V9R1.942<br>MH01810+ MH01831+ MH01853+<br>MH01859 + MH01876 |
| IBM Power S822                                            | SV860_226                                                   |
| IBM Power S824                                            |                                                             |
| IBM RackSwitch G8052 1Gb switch                           | 7.11.19.0                                                   |
| IBM RackSwitch G8264 10Gb switch                          |                                                             |
| IBM Storwize V7000                                        | 8.2.1.11                                                    |
| IBM Storwize v7000 Drive Microcode Package                | 20200821                                                    |
| IBM FlashSystem 900                                       | 1.5.2.7                                                     |
| IBM System Storage SAN48B0-5 (Brocade) switch             | 7.4.2e                                                      |

**Notes:**

[ 1 ]: Updated or Installed as part of AIX Update.

[2 ]: This RAID adapter was not previous tracked in validated stacks.

[3]: No Change. This is listed for completeness and this level is not included in the fixpack package.



### Registering the fixpack with PDOA.

1. In previous fixpacks registering a fixpack was performed through the PDOA console. This fixpack is not compatible with the model so instead follow the instructions below to upload the file and extract the file into the right location.
2. Copy the fixpack files to the /BCU\_share directory on the management host.
3. Login to the management host as the root user.

4. Command: Change the working directory to /BCU\_share.

```
cd /BCU_share
```

5. Verify the cksum of the fixpack matches the cksum shown in the command below for the fixpack file that was downloaded. The cksum and size are the same regardless of the file downloaded. The following command should have no output.

```
$ cksum 1.1.0.4-IM-PureData_System_for_OpAnalytics-fp004.tgz | diff 1.1.0.4-IM-PureData_System_for_OpAnalytics-fp004.tgz.cksum -
```

6. Use the following command line to unpack the contents of the compressed tar file.

```
$ time gzip -d < /BCU_share/1.1.0.4-IM-PureData_System_for_OpAnalytics-fp004.tgz | tar -xof - -C /BCU_share
```

```
real    5m2.64s
user    2m46.78s
sys     1m9.56s
```

7. Verify the number of files and directories in /BCU\_share/FP8\_FP4. This check will not work after the fixpack begins as new files will be added to the directory during the update.

```
$ find /BCU_share/FP8_FP4 | wc -l
3579
```

8. Verify the file cksums. After the fixpack is applied newly extracted files and some log files will appear in the difference output.

```
$ time find FP8_FP4 -type f | xargs cksum | diff 1.1.0.4-IM-PureData_System_for_OpAnalytics-fp004.files.cksum -
```

```
real    1m44.35s
user    0m53.76s
sys     0m6.98s
```

## Removed Components

The following table lists the software removed as part of this update.

| Component                                                    | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IBM InfoSphere Optim Performance Manager<br>Extended Edition | <p>This component is known as Database Performance Manager (DPM) in the appliance.</p> <p>This component was intended to be replaced in V1.1 FP3 by IBM Data Server Manager (DSM), however DSM is no longer supported.</p> <p>The replacement for DSM is IBM Data Management Console (DSC) however DSC does not support AIX 7.1. At this time it is not possible to install DSC on any PDOA AIX server in a supportable way, however, DSC can be installed outside of the PDOA server and is allowed to connect to and monitor the PDOA instance. More information about DSC can be found <a href="https://www.ibm.com/products/db2-data-management-console">https://www.ibm.com/products/db2-data-management-console</a></p> |
| Java5 and Java5_64<br>Java6 and Java6_64                     | <p>PDOA GA shipped Java5 and Java6 32 and 64 bit as part of AIX on all AIX hosts.</p> <p>PDOA V1.1 FP1 IF01 introduced Java7 and Java7_64 as part of the update to AIX 7.1 TL5 and PDOA V1.1 FP3 introduced Java8 and Java8_64 as part of the AIX 7.1 TL5 SP4 update.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Deprecated Components

The following table lists the software that is currently deprecated.

| Component | Notes |
|-----------|-------|
|           |       |

## Requirements and Planning

### Requirements

1. This fixpack is only applicable to PDOA V1.1 (machine type 8280) environments. PDOA V1.0 (machine type 8279) cannot be updated as part of this fixpack.
2. These instructions were tested on V1.1 FP3 systems. If starting on V1.1 FP2 or lower please contact IBM.
3. Prior to applying this fixpack, it is recommended to verify and address any issues with the current environment.
4. It is recommended to review the backup and recovery procedures for mksysb based backup and restore. During the update the mirrored hdisks protecting rootvg will be broken, leaving rootvg vulnerable to disk failures.
5. As time passes between the fixpack release date and the application of the fixpack on a system many components such as AIX, Db2 and the HMCs will have security updates. Those security updates can be evaluated and incorporated into the fixpack planning.
6. This update will move all PDOA appliances to a higher AIX service pack It is highly recommended that customers verify the support and compatibility status of any third-party software on AIX 7.1 TL5 SP7.
7. This update may require multiple roles to perform the update. It is important to verify the availability of those resources.
  - a. Access to root on management.
  - b. Access to the instance owner, the default is *bcuaix*.
  - c. Application Users and DBAs that may need to perform tests against the database after the DB2 update.
  - d. SSR or CE access to data center as part of support related actions if needed.
8. This update requires planning and in general can take 1 to 2 weeks to apply all of the stages per environment. The design of the fixpack is flexible and has many accommodations to manage risks and outage timeframes.
9. Important Links:
  - a. This Readme: <https://www.ibm.com/support/pages/node/6415127>
  - b. Known Issues Links: <http://www.ibm.com/support/docview.wss?uid=swg21647099>
  - c. Validated Stack Links: <https://www-01.ibm.com/support/docview.wss?uid=swg21610644>

## Planning

- This fixpack readme lays out the step by step commands to apply V1.1 FP4. Commands can be found where the word “Command:” is listed in the step. The command should follow in Courier New 6 point bold font. After the command there may be the words “Example Output” which shows an example of the expected output or may show examples of some potentially expected errors. The commands are almost always one line and are designed to be cut and paste directly from this document. In a few cases it may be necessary to change a hostname or user and those commands should have clear explanations when those changes are needed.
- Be sure to include in your planning timeframes any tasks related to the following:
  - If using DR, the time to move applications from Production to DR and back again as needed.
  - Time needed to stop applications before entering an outage or limiting applications when running updates with reduced workloads (such as in Stage 4 or Stage 5 during the storage and SAN updates).
  - Time needed for validation, such as application or DBA time.
- This fixpack document and process includes many commands. It is not recommended to try to apply this fixpack in a marathon style without having adequate staffing who can apply the updates in shifts. This is particularly true for customers who may be applying this fixpack for the first time on their systems. While there are many safeguards and checks to help avoid mistakes, mental fatigue is a real risk. The fixpack is designed and tested to explicitly allow the update to span days or weeks and to run in production even if not all of the updates are applied within the same update period.
- When using fixpack tool commands, the standard output and standard error is logged in /BCU\_share/support/FP8\_FP4/log. The filename includes the script name, the host and the timestamp when the command is run.
- When using platform layer commands the commands are logged in /BCU\_share/aixappl/pfplayer/log in log and trace files. These files are rotated over time so a tool is provided that will collect these files in a timestamped and labelled .tgz file and copied to /BCU\_share/support/FP8\_FP4/log/pfplayer.
- Can sudo be used? The commands in this document are not tested for use with sudo and therefore the use of sudo is not supported.
- This fixpack is primarily applied through the command line using root on the management host. Many commands are long running commands and should be protected from session failures by running those commands either in a local screen session or via the console through vtmenu. Screen is preferable to vtmenu but is not installed on PDOA by default. Testing was performed with screen version screen-3.9.10-2.ppc. The rpm for screen is provided in /BCU\_share/FP8\_FP4/software/rpms. This rpm is only needed, for fixpack purposes, to be installed on the management host. Becoming familiar with the screen utility is encouraged as it has many options. The version included is older, but works on all PDOA level from GA through FP4. Newer screen RPMs have additional requirements and are more complicated to install.
  - Screen installation.

```
$ rpm -i /BCU_share/FP8_FP4/software/rpm/screen-3.9.10-2.aix4.3.ppc.rpm
(0) root @ kf5hostname03: 7.1.0.0: /BCU_share/FP8_FP4/software/rpm
$ rpm -qa | grep screen
```

```
screen-3.9.10-2.ppc
```

- When the fixpack is complete, the following can be used to remove screen.

```
$ rpm -e screen-3.9.10-2.ppc
$ rpm -qa | grep screen
```

- If screen is installed, we follow a practice where we have two screen sessions created as follows on the management host. Each screen has 50000 lines of scrollback buffer. This will have to be repeated multiple times when the management host is rebooted after AIX is updated and after the Power Firmware is updated. Screen documentation can be found here: <https://linux.die.net/man/1/screen>. Note that Screen sessions are scoped per user. For fixpack purposes all screen sessions should be started with the root user on the management host.

```
screen -S fprun -h 50000
screen -S fplog -h 50000
```

- Once a command is running exit a screen session using <ctrl>+a d to return the regular shell.
- List screens using

```
$ screen -ls
There are screens on:
    2490526.fprun      (Attached)
    2753102.fplog     (Detached)
2 Sockets in /tmp/screens/S-root.
```

- If not connected to a screen use: (note, you may need to use the full pid.<label> if there are multiple screen sessions which similar names.

```
screen -r fprun
screen -r fplog
```

- If a session is disconnected but screen still shows as active it is possible to force a screen using the following:

```
screen -dr fprun
screen -dr fplog
```

- It is possible to determine which screen session is being used. This only works if you have not initiated another shell or logged into another system. Examining the \$STY variable. Below shows using the fplog session.

```
$ echo $STY
5505526.fplog
```

- Once in a screen session use: <ctrl>+a <esc> to enter copy mode which allows you to scroll using vi keys to scroll through the output. Use 'q' + enter to exit copy mode. Note that screen will not work with scrollbars.
- It is possible to save the output of a screen session by hitting <ctrl>+a h. This will save *hardcopy.0* file to the directory where screen was started. This will not track new output to the session. Alternatively typing '<ctrl>+a :' allows you to specify the filename for the

hardcopy file using *hardcopy* <hardcopyfilename> at the prompt.

- If the file already exists it will append to that file. Using <ctrl>-a H will toggle logging the file *screenlog.0* which will track new data as long as the screen session is running. If there are multiple screens that are started from the same directory they will all log to the same files.
- After a screen session is established it is possible to change the logging using <ctrl>-a :. To change the logfile name type *logfile* <logfilefilename> at the prompt. This will take effect the next time logging, <ctrl>-a H, is invoked and logging is started. If logging is running at the time you will need toggle it of and toggle it on for the new file to take effect.
- It is recommended to read through this document thoroughly to understand the new fixpack methodology. For any questions on the update, please contact your IBM representative or open a ticket to contact IBM support.
- It is recommended as part of any fixpack planning that the customer opens a pro-active ticket to alert IBM Support that they are planning a fixpack update and when they are planning to do the update.
- While this fixpack provides more options for utilizing the redundant and HA features of the appliance to help reduce downtime, it is entirely possible to perform some or all updates during outage windows.
- In general, the philosophy of the appliance is to always continue forward through an update and to not rollback changes.
- This document makes heavy use of the 'dsh' or distributed shell command. Using 'dsh' as the root user on the management host and the shell variables BCUMGMT, BCUMGMTSTDBY, BCUDB2ALL, and ALL allows for commands lines that work on the appliance level regardless of the size of the system. Here are the definitions for the shell variables.
  - ALL: Lists all of the AIX hosts in the appliance.
  - BCUMGMT: Lists the management host in the appliance.
  - BCUMGMTSTDBY: Lists the standby management host.
  - BCUDB2ALL: Lists the core hosts, admin, data and their associated standby hosts.
- This fixpack methodology has the following risk mitigation techniques in place.
  - Limiting how many components are at risk at any one time.
  - Providing plenty of check commands to verify the state prior to proceeding.
  - Allowing customers to stop in between stages and even within some stages to return to full production status.
- Compatibility Issues
  - GPFS/Spectrum Scale Exceptions
    - Some PDOA customers have exemptions for sharing GPFS/Spectrum Scale filesystems from/to PDOA with external GPFS clusters. This will require additional update planning to ensure continued interoperability of this environment.
  - AIX
    - See Risks and Mitigation section.

- Backups
  - Filesystems:
    - Filesystems
      - Safe guards:
        - All non-rootvg filesystems are protected in Storage Enclosures using RAID technology.
        - All V7000 filesystems are protected by RAID-5 arrays with multiple spares for each enclosure.
        - All Flash900 filesystems are protected by flash RAID-5 like arrays with 1 spare.
      - Customers may have tier 3 filesystems in GPFS. If used for cooling/cold db2 container storage see /bkpfs comments.
      - Non-GPFS Filesystems:
        - /BCU\_share, /BCU\_share/securefs
          - Location: Foundation V7000
          - Use: PDOA ATK, Fixpack, Support, NFS. Hosted by management and accessible when needed on all AIX hosts. Pflayer databases.
          - Recovery: savevg to backup these filesystems.
        - /pscfs
          - Location: Foundation V7000
          - Use: Console database up to V1.1 FP1. Console removed in V1.1 FP2 and this space is reserved for future use.
          - Recovery: savevg to backup this filesystem.
    - GPFS Filesystems:
      - /db2home:
        - Location: Foundation Flash
        - Use: db2home contains db2 instance directories, dba and other user files.
        - Recovery: Instance files can be recreated without data loss. Non Db2 files need to be backed up outside of this using filesystem backup recovery means.
      - /dwhome:
        - Location: Foundation Flash
        - Use: User directories.
        - Recovery: If used for non Db2 files those need to be backed up outside using filesystem backup recovery tools.
      - /db2fs/<instance>/NODE####
        - Location: Flash enclosures
        - Use: Hot Database containers. Temp containers, db2diag target. Customer may also use for their own purposes.

- Recovery: Db2 BAR. If used for non Db2 files those need to be backed up outside using filesystem backup recovery tools.
- /db2path/<instance>/NODE####
  - Location: Flash enclosures
  - Use: Transaction Logs
  - Recovery: Db2 BAR. If used for non Db2 files those need to be backed up outside using filesystem backup recovery tools.
- /bkpfs/<instance>/NODE####
  - Location: V7000 enclosures
  - Use: Customer can choose.
    - Cooling / Cold database containers.
    - Db2 Local Backups.
    - ETL other uses.
  - Recovery:
    - Db2 containers are handled by Db2 backup.
    - If used for non Db2 files those need to be backed up outside using filesystem backup recovery tools
- /stage
  - Location: Foundation V7000 enclosure.
  - Use: Customer choice.
  - Recovery: If used for non Db2 files those need to be backed up outside using filesystem backup recovery tools
- /opmfs
  - Location: Foundation Flash
  - Use: OPM. After FP4 if OPM is removed this space is reserved for future use.
- /usr/IBM/dwe/appserver\_001:
  - Location: Foundation V7000:
  - Use: This filesystem is no longer used as V1.1 FP2 but is still reserved for future use.
- Network Switch Configurations.
  - Backed up as part of Stage08 by the pflayer.
- SAN Switch Configurations
  - Backed up as part of Stage05.
- mkysb
  - Taken before starting the update.
  - Taken after Stage 6 (especially if this update is performed over a long time frame) for management LPARs.
  - Taken after Stage 8 (before rebuilding the mirror).

- Db2
  - The update should be arranged to be consistent with the customers current backup and recovery strategy.

## Risks and Mitigations

- Third Party Tooling and AIX
  - AIX will be updated as part of this fixpack. The following AIX packages will be updated and may impact third party tools that have dependencies on them.
    - OpenSSL and OpenSSH
      - Each update of these components contain fixes to address security vulnerabilities.
    - Perl is updated to 5.28 from 5.14.
      - AIX 7.1 TL5 SP7 includes significant updates to Perl in 5.28 with removed and deprecated features.  
<https://metacpan.org/pod/release/XSAWYERX/perl-5.28.0/pod/perlDelta.pod>
      - If there are third party or internal tools that are running on PDOA that depend on the system installed Perl these changes could cause unexpected output (deprecated messages) or errors.
- DB2
  - Db2 databases should be protected as part of a backup and restore strategy. If your PDOA environment is using Db2 V11.1 please review this page for compatibility across mod packs. <https://www.ibm.com/support/pages/compatibility-between-db2-luw-version-111-mod-packs-and-fix-packs>
  - This is particularly important on systems using Db2 V11.1 FP2 or earlier.
  - Db2 is the most commonly updated component in a PDOA system and the Db2 level should be checked to understand if there is already a special build applied and whether the level shipped in this fixpack contains that special build.
- Server Updates
  - Power Firmware (PFW): In the event of an issue with the power firmware the core environment can continue running in full production while a failed server is being addressed.
  - AIX and rootvg: In IBM Smart Analytics and IBM PureData System for Operational Analytics updates to AIX include breaking the internal rootvg mirror and using the alt\_disk\_install method to keep a copy of rootvg prior to the update. This is a common practice to provide a fast option to restore the system to a state just prior to the update for some issues with corruption or boot issues. In systems running for 5 or more years it is highly recommended that recent mkysyb are taken prior to breaking the mirror and stored offsite (all hosts in the appliance should have mkysyb taken near the same time to ensure that the appliance is consistent upon restore). It is also recommended to take mkysyb right after the OS is updated before restoring the mirror. It is then recommended to restore the mirrors as soon as possible. This readme includes explicit instructions to take mkysybs.
  - One advantage of the new methodology is that updates to the OS are done incrementally with each host being updated in quiesced mode. Any issues with the update on the server can be addressed while the database is up and servicing the

business.

- **Storage Enclosures**
  - In the appliance the storage enclosures are protected by redundant canisters and RAID arrays. Access to the storage enclosures is protected through redundant MPIO connections from the servers through redundant SAN switches. In the past it is possible to encounter canister errors (this has improved dramatically since V1.0.0.4) which can degrade the enclosure during an update. In this fixpack the methodology is to only put a subset of enclosures at risk. While this can elongate the time necessary to update all the storage enclosures, since this method allows for no downtime (just reduced workload) this update can be spread over the course of several days. In the case of canister failures, the local parts depot will have enough replacements to replace the at risk canisters quickly. Before a system can be returned to full production all enclosures must be online with two canisters in healthy state, however it is no longer necessary to update all enclosures before resuming production workloads.
- **SAN Switches**
  - SAN switch failures during updates are rare. However, it is recommended to backup the current SAN Switch configuration prior to beginning the SAN switch update and there are instructions provided in Phase 5 of Stage 2 to do that
- **Security Updates**
  - Many security updates are tightening the default behaviors of many components. This is most often seen in Java applications, sshd and ssh default configuration settings, SSL certificate handling, and GSKit handling. In this update the fixpack is removing many security vectors by removing unused software components. It also includes security related updates to SSH and SSL within the appliance that may lead to issues with outside connectivity to the system.
- **Networking**
  - During the update the platform layer will backup the network configuration to `/BCU_share/net_switch_backup/`
  - HMCs are accessible from corporate network connections as well as 1 connection to one 1Gb internal switch. If that internal switch is down, then the associated HMC will not be able to manage the servers nor connect to any internal ip address. However, the other HMC will be able to take on that role.
  - SAN Switches have one, and only one, network connection to a 1 1Gb switch. If that 1Gb switch is down it will not be possible to access that SAN, however it will still provide full access to the SAN fabric.
  - V7000 and Flash900 Storage enclosures. Each enclosure has 1 connection to each 1Gb switch. This can provide access to the enclosure via service ips (these are assigned to each canister). In the event of a 1Gb switch failure access to the management ip or floating ip address may not be available if the configuration node is on a canister connected to the failed switch. This can be rectified by stopping the configuration node

and having that duty moved to the other canister. This does not impact the ability of a canister to provide full access to all available bandwidth.

- Each server has 2 1-Gb connections, 1 to each 1Gb switch, for the purposes of HMC management of the server. Each management LPAR has 2\*10Gb connections (1 per 10Gb switch) and each core LPAR has 4\*10Gb connections (2 per 10Gb switch) configured in an etherchannel.
- The best practice for external network connection uplinks in PDOA V1.1 systems is to have at least 4 connections (2 per 10Gb switch) for corporate access and at least 2 connections (1 per 10Gb switch) for backup or other network access. During the network switch updates all 4 switches are rebooted in parallel resulting in a short full network outage during the update.

## STAGE 1 - Prerequisites

### Stage 1 Description

This is an important opportunity to take a good look at your environment. This is like the preview step used in the automated fixpack. It is recommended that these prerequisite steps are done in the week or two prior to starting Stage 2. This will allow time to address issues with hardware and any questions about the system.

#### Steps/Phases

- Phase 1: Checking the system.

#### Outage Requirements

- There are no outage requirements for this stage.

#### Time Per Step

- Phase 1: Budget an hour to run the steps. Perform these steps up to a week prior to the update to accommodate any issues that may be found.

#### Risk Mitigation

- N/A

#### Backout Options

- N/A

## Phase 1: Checking the system.

1. Login as root on the management host.
2. Command: Change the working directory.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

3. Command: Verify PDOA1.1 FP3 is installed on the cluster. The `appl_ls_cat` command should show 4.0.7.0 as the latest version and it should be committed. The example output shows a GA->FP1->FP3 scenario. If 4.0.7.0 is not the latest level contact IBM Support.

```
appl_ls_cat
```

Example Output:

| \$ appl_ls_cat |         |           |                                                                  |
|----------------|---------|-----------|------------------------------------------------------------------|
| NAME           | VERSION | STATUS    | DESCRIPTION                                                      |
| bwr0           | 4.0.4.0 | Committed | Updates for IBM_PureData_System_for_Operational_Analytics        |
| bwr1           | 4.0.5.0 | Committed | Updates for IBM_PureData_System_for_Operational_Analytics_DB2105 |
| bwr2           | 4.0.7.0 | Committed | Updates for IBM_PureData_System_for_Operational_Analytics        |

4. The `stage01_phase01_checking_the_system.sh` tool can be used to check the system. This tool will do the following:
  - Log and stderr output is available in `/BCU_share/support/FP8_FP4/log/`
  - Displays the `appl_ls_cat` output.
  - Check for fiber channel path health.
  - Check for password validation.
  - Check for evidence of the PDOA Console which should have been removed in FP2.
  - Check for evidence of IBM Systems Director which should have been removed in FP2.
  - Check the status of the hardware as seen by pflayer.
  - Check for evidence of Warehouse Tools which should have been removed in FP2.
5. Command: Run the tool: (~10 minutes per rack)

```
./stage01_phase01_checking_the_system.sh
```

Example output:

```
$ ./stage01_phase01_checking_the_system.sh
20201117_223836 (flashdancehostname01:stage01_phase01_checking_the_system.sh): Starting date: Tue Nov 17 22:38:36 IST 2020.
20201117_223836 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
20201117_223836 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Running test
/BCU_share/FP8_FP4/fixpack_tools/application/check_console.sh *****
20201117_223837 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Completed test
/BCU_share/FP8_FP4/fixpack_tools/application/check_console.sh with result Passed *****
20201117_223837 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
20201117_223837 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Running test
/BCU_share/FP8_FP4/fixpack_tools/application/check_devicestatus.sh *****
20201117_225217 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Completed test
/BCU_share/FP8_FP4/fixpack_tools/application/check_devicestatus.sh with result Passed *****
20201117_225217 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
20201117_225217 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Running test
/BCU_share/FP8_FP4/fixpack_tools/application/check_director.sh *****
20201117_225218 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Completed test
/BCU_share/FP8_FP4/fixpack_tools/application/check_director.sh with result Passed *****
20201117_225218 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
20201117_225218 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
```

## STAGE 1 - Prerequisites

```
20201117_225218 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Running test
/BCU_share/FP8_FP4/fixpack_tools/application/check_fcpaths.sh *****
20201117_225220 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Completed test
/BCU_share/FP8_FP4/fixpack_tools/application/check_fcpaths.sh with result Passed *****
20201117_225220 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
20201117_225220 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
20201117_225220 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Running test
/BCU_share/FP8_FP4/fixpack_tools/application/check_fixpacks.sh *****
20201117_225221 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Completed test
/BCU_share/FP8_FP4/fixpack_tools/application/check_fixpacks.sh with result Passed *****
20201117_225221 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
20201117_225221 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Running test
/BCU_share/FP8_FP4/fixpack_tools/application/check_passwords.sh *****
20201117_225247 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Completed test
/BCU_share/FP8_FP4/fixpack_tools/application/check_passwords.sh with result Passed *****
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh):
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Running test
/BCU_share/FP8_FP4/fixpack_tools/application/check_warehousetools.sh *****
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): ***** Completed test
/BCU_share/FP8_FP4/fixpack_tools/application/check_warehousetools.sh with result Failed *****
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh):

20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): Test Results
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): check_console.sh Validation
Passed
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): check_devicestatus.sh Validation
Passed
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): check_director.sh Validation
Passed
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): check_fcpaths.sh Validation
Passed
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): check_fixpacks.sh Validation
Passed
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): check_passwords.sh Validation
Passed
20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): check_warehousetools.sh Validation
Failed

20201117_225248 (flashdancehostname01:stage01_phase01_checking_the_system.sh): Starting date: Tue Nov 17 22:38:36 IST 2020
Ending Date: Tue Nov 17 22:52:48 IST 2020.
```

## STAGE 1 - Prerequisites

6. Examine the output of the tool. All tests should show Passed except for `check_warehousetools.sh` due to a bug in the FP6\_FP2 readme removal instructions. For other failures, see `/BCU_share/support/FP8_FP4/log/stage01_phase01_checking_the_system.sh*.stderr` for more details.

- a. Console Check Failures:

- i. This will most likely be due to the existence of 'mi\*' commands in the path. This is easily overlooked. Check the FP6\_FP2 Readme for instructions on how to ensure the console is safely removed from the management host.

```
20210127_004703 (kf5hostname01:check_console.sh): Checking for PDOA console mi commands.
20210127_004704 (kf5hostname01:check_console.sh): Warning: the PDOA Console command mistart has been found.
20210127_004704 (kf5hostname01:check_console.sh): Warning: the PDOA Console command mistop has been found.
20210127_004704 (kf5hostname01:check_console.sh): Warning: the PDOA Console command mistatus has been found.
20210127_004704 (kf5hostname01:check_console.sh): Checking for PDOA console smash applications.
20210127_004704 (kf5hostname01:check_console.sh): Checking for PDOA console Db2 Artifacts.
no db2greg in /usr/bin /etc /usr/sbin /usr/ucb /pschome/db2psc/bin /usr/bin/X11 /sbin .
20210127_004704 (kf5hostname01:check_console.sh): Warning: The PDOA Console has been found. Consult the V1.0
FP6/V1.1 FP2 readme for instructions on how to remove this console.
```

- b. Device Status Failures:

- i. This uses the `appl_ls_hw` commands to check the hardware for Online status. This will check the health of your platform layer database which impacts several of the firmware updates in this fixpack.

- c. System Director detection failures:

- i. Most likely errors are related to left over installed software.

```
kf5hostname01: Path: /usr/lib/objrepos
kf5hostname01: tivoli.tivguid 1.3.4.1 COMMITTED IBM Tivoli GUID on AIX
kf5hostname01:
```

- d. FC Path failures:

- i. This detects fiber channel paths that are not enabled on all AIX hosts in the system.

- e. Fixpack Failure:

- i. This looks for 4.0.7.0 in the `appl_ls_cat` output.

- f. Check Passwords:

- i. This validates that the platform layer password registry is still valid. This is required for many of the firmware updates managed by the platform layer.

- g. Warehouse Tools:

- i. This checks for the existence of Warehouse Tools artifacts. The instructions in FP6\_FP2's readme were incomplete and left the following resources defined in the TSA management domain. This creates no harm to the system as the resources are not managed. These resources will be removed as part of Stage 09 when the management domain is dropped.

```
20210127_010105 (kf5hostname01:check_warehousetools.sh): Checking for Warehouse Tools Resources
"db2whse_ha_kf5hostname01_type1.adminconsole-rs":
"db2whse_ha_kf5hostname01_type1.adminconsole-rs":
"db2whse_ha_kf5hostname01_type1.adminconsole-rs":
20210127_010105 (kf5hostname01:check_warehousetools.sh): Warning: Warehouse Tools resources discovered in the
management domain.
```

## STAGE 1 - Prerequisites

7. Command: Check to verify that there are no logical volumes in rootvg with 12 or more characters. Any LV on rootvg with 12 characters or more will need to be renamed to allow the alt\_disk\_install command to successfully clone rootvg.

```
dsh -n ${ALL} 'max=11;lsvg -l rootvg | egrep -v "^rootvg:|^LV NAME" | while read lvn rest;do l=$(printf ${lvn} | wc -c);if [ ${l} -gt ${max} ];then echo "${lvn} exceeds ${max} chars at ${l} characters long.";fi;done' | dshbak -c
```

### Example Output: (Healthy)

```
$ dsh -n ${ALL} 'max=11;lsvg -l rootvg | egrep -v "^rootvg:|^LV NAME" | while read lvn rest;do l=$(printf ${lvn} | wc -c);if [ ${l} -gt ${max} ];then echo "${lvn} exceeds ${max} chars at ${l} characters long.";fi;done' | dshbak -c
```

```
(0) root @ kf5hostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### Example Output: (1 LV with 12 characters)

```
$ dsh -n ${ALL} 'max=11;lsvg -l rootvg | egrep -v "^rootvg:|^LV NAME" | while read lvn rest;do l=$(printf ${lvn} | wc -c);if [ ${l} -gt ${max} ];then echo "${lvn} exceeds ${max} chars at ${l} characters long.";fi;done' | dshbak -c
```

```
HOSTS -----
kf5hostname01
-----
12charlv0000 exceeds 11 chars at      12 characters long.
```

8. Check your SSH Client Settings. OpenSSH is updated as part of the AIX 7.1 TL5 SP2 update and as per this [technote link](#). This impacts the ssh client behavior as determined by the files /.ssh/config (root), /etc/ssh/ssh\_config (global). For any questions regarding SSH configuration details please contact IBM Support.

PDOA V1.0 FP5 IF01 and PDOA V1.1 FP1 IF01 (aka: FP5\_FP1 to FP5\_FP1\_IF01) customers would have experienced connectivity issues to the BNT switches from the management host after updating AIX on the management host.

PDOA V1.0 FP5->FP6 and PDOA V1.1 FP1->FP2 (FP5\_FP1 to FP6\_FP2) customers would see the same issue. After completing the update another hidden symptom would appear in SAN connectivity as the settings meant to fix BNT access do not work with the SANs. This is usually not recognized until preparing for FP7\_FP3 when the password validation check is run.

PDOA V1.0 FP5->F7, FP6->FP7 and PDOA V1.1 FP1->FP3, FP2->FP3 (aka: FP5\_FP1->FP7\_FP3 and FP6\_FP2->FP7\_FP3) customers would experience BNT issues after updating AIX, SAN issues after updating the SAN switches, and V7K/Flash issues in the middle of the update for the storage leading to a failure.

After testing a V1.1 FP1->FP3 scenario it was found the following settings are recommended for root's /.ssh/config file after Stage 6. This is only needed on AIX hosts that need to connect to the BNT switches. For FP5\_FP1 customers these settings cannot be added until after AIX is updated on the management host as part of Stage 6 as the options are not valid until AIX is updated.

## STAGE 1 - Prerequisites

- a. Command: Obtain the list of ip addresses should match the list of ips. This list may include 4 or 8 entries. Use the following command:

```
appl_ls_hw -r net -M
```

Example Output:

```
$ appl_ls_hw -r net -M
NAME      HOSTNAME      IP          MODULE      STATUS      DESCRIPTION
net0      mgt_switch1   172.23.1.254 Online      IBM System Networking RackSwitch
net1      mgt_switch2   172.23.1.253 Online      IBM System Networking RackSwitch
net2      fcm_switch1   172.23.1.252 Online      IBM System Networking RackSwitch
net3      fcm_switch2   172.23.1.251 Online      IBM System Networking RackSwitch
```

- b. Create the file `/.ssh/config` on the management host. This is the easiest way to add specific settings for the BNT hosts for the root user. Note that PDOA does not enable key based authentication from root on the management host to the BNT switches even though BNT switch firmware updates have enabled that feature. The `PubkeyAuthentication no` option is required when applying OpenSSH version 7.5.102.2000 which prevents the ssh session from crashing when connecting to the BNT switches. This was released at the end of 2019 by AIX. This step will only enable access to the switches by the root user.

```
$ cat /.ssh/config
Match host "172.23.1.251,172.23.1.252,172.23.1.253,172.23.1.254"
    HostKeyAlgorithms +ssh-dss
    PubkeyAcceptedKeyTypes +ssh-dss
    PubkeyAuthentication no
```

- c. Check the `/etc/ssh/ssh_config` file for similar settings. This file may have been updated as part of an earlier fixpack. See item d if these settings appear in that file.

## STAGE 1 - Prerequisites

- d. If it is desired to use these Match settings in the /etc/ssh/ssh\_config file for global use then the Match stanza should be entered early in the file and in addition a Match host \* needs to be added after this stanza. This is due to the way the ssh client handles configuration parameters where it uses the 'first' available setting in the file.

In the file find the segment:

```
# configuration file, and defaults at the end.  
  
# Site-wide defaults for various options  
  
# Host *
```

And change it by adding the Match stanza before the '# Host \*' lines and then uncomment the "# Host \*" line as below.

```
# configuration file, and defaults at the end.  
Match host "172.23.1.251,172.23.1.252,172.23.1.253,172.23.1.254"  
    HostKeyAlgorithms +ssh-dss  
    PubkeyAcceptedKeyTypes +ssh-dss  
    PubkeyAuthentication no  
  
# Site-wide defaults for various options  
  
Host *
```

## STAGE 1 - Prerequisites

9. Also impacted by the SSH updates is the ssh daemon behavior as represented by the `/etc/ssh/sshd_config` file.

Many of the security related parameters have updated default settings. During testing, the default changes created issues for the fixpack instructions, and it recommended to explicitly set the following variables in `sshd_config` and `ssh_config`.

Verify `/etc/ssh/sshd_config` settings are explicitly set.

`PermitRootLogin` is required to be “yes” on all hosts during the fixpack to allow the proper functioning of the `pplayer` commands throughout the update process.

After the update is complete, the `PermitRootLogin` setting can be set to “without-password” which will still allow `dsh` and `GPFS` to function as expected. Some platform layer commands will not function, however, with this setting.

Also check `sshd_config` on all hosts for the PDOA known issue KIG00067 in our Known Issues technote. <https://www.ibm.com/support/pages/node/872628>. These issues should have been discovered after V1.1 FP2 or V1.1 FP3 was applied, but are easy to miss unless the system log is frequently checked.

## STAGE 1 - Prerequisites

10. Command: Check the health of the storage enclosures. The following command, run as root on the management host, will show the event log for all storage enclosures in the environment. This command is run again as part of Stage 4 but attending to issues earlier can help prevent disruptions in plans. Use the pre-emptive PMR or SF ticket to address any issues listed by the command.

```
./check_storage.sh
```

### Example Output:

```
$ ./check_storage.sh
20201118_003647 (flashdancehostname01:check_storage.sh): Checking the storage status.
**** 172.23.1.181 ****
**** 172.23.1.182 ****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
secondary_object_type secondary_object_id
134 200214060932 internal 0 alert no 085153 3087 Quorum device error
**** 172.23.1.183 ****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
934 201118003559 io_grp 0 io_grp0 alert no 072901 1052 Inter-canister PCIe
link degraded
**** 172.23.1.184 ****
**** 172.23.1.185 ****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
847 200214072150 enclosure 1 alert no 045102 1260 SAS cable fault type 2
**** 172.23.1.186 ****

(1) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

11. Command: PDOA V1.1 Servers were shipped between 2015 and included a new feature called Update Access Keys. These keys have expiration dates that expire after 3 years. This is described in the technote <https://www.ibm.com/support/pages/how-complete-uak-expiration-updates-required-ibm-puredata-system-operational-analytics-v11-power8-hardware>. It is recommend to check your keys running the following command. During our internal testing with V1.1 FP4 we did not encounter any errors with updating power firmware with expired keys using the updlic command line call.

```
ssh -n hscroot@$(appl_ls_hw -r hmc -A M_IP_address < /dev/null | sed 's|'|g' | head -1) 'lssyscfg -r sys -F name | sed "s|,| |g" | while read m;do lslic -m $m -F update_access_key_exp_date;done | sort'
```

### Example output:

```
$ ssh -n hscroot@$(appl_ls_hw -r hmc -A M_IP_address < /dev/null | sed 's|'|g' | head -1) 'lssyscfg -r sys -F name | sed "s|,| |g" | while read m;do lslic -m $m -F update_access_key_exp_date;done | sort'
09/29/2018
09/29/2018
09/29/2018
09/29/2018
09/29/2018
```

## STAGE 1 - Prerequisites

12. Early V1.1 FP3 customers updating to the 9.1.941 HMC level have experienced daily SRCE3325009 alerts after updates related to domain naming issues. Verify that your HMC has a valid hostname and DNS entry. This is documented here. <https://www.ibm.com/support/pages/callhome-src-e3325009-reported-version-9>.

- a. Command: The following command shows the HMC network settings.

```
appl_ls_hw -r hmc -A M_IP_address | sed 's|'|g' | while read ip;do echo "*** ${ip} ***";ssh -n hscroot@${ip} 'lshmc -n - Fhostname:domain:nameserver:dns:domainsuffix';done
```

Example Output:

```
$ appl_ls_hw -r hmc -A M_IP_address | sed 's|'|g' | while read ip;do echo "*** ${ip} ***";ssh -n hscroot@${ip} 'lshmc -n - Fhostname:domain:nameserver:dns:domainsuffix';done
*** 172.23.1.245 ***
dsshmc49:torolab.ibm.com:9.26.32.5,9.26.33.5:enabled:localhost,torolab.ibm.com,canlab.ibm.com
*** 172.23.1.246 ***
dsshmc50:torolab.ibm.com:9.26.32.5,9.26.33.5:enabled:localhost,torolab.ibm.com,canlab.ibm.com
```

- b. Command: The following command will check the ability of each hmc to look its own hostname in DNS.

```
appl_ls_hw -r hmc -A M_IP_address | sed 's|'|g' | while read ip;do echo "*** ${ip} ***";ssh -n hscroot@${ip} 'lshmc -n - Fhostname | while read h;do host $h;done';done
```

Example Output:

```
$ appl_ls_hw -r hmc -A M_IP_address | sed 's|'|g' | while read ip;do echo "*** ${ip} ***";ssh -n hscroot@${ip} 'lshmc -n - Fhostname | while read h;do host $h;done';done
*** 172.23.1.245 ***
dsshmc49.torolab.ibm.com has address 9.26.18.135
*** 172.23.1.246 ***
dsshmc50.torolab.ibm.com has address 9.26.18.136

(0) root @ flashdancehostname01: 7.1.0.0: /
```

## STAGE 2 - Updating Pflayer

### Stage 2 Description

#### Steps/Phases

- Phase 1: Ensuring recent mksysb backups have been taken.
- Phase 2: Using the alt\_disk\_install mechanism to create a local backup for faster recovery.
- Phase 3: Update AIX on the management host.
- Phase 4: Update the platform layer with important FP7\_FP3 updates.
- Phase 5: Backup the SAN Switch Configuration

#### Outage Requirements

- The Management host will be quiesced during the AIX update. Access to /BCU\_share and to the Platform Layer will be interrupted during Phase 3. DPM resources can be moved (*failed over*) to the management standby host.

#### Time Per Step

- Phase 1: mksysb times vary depending on the method used. In the lab this process takes between 30 minutes to an hour for each host when backed up to the /stage filesystem.
- Phase 2: 30 Minutes.
- Phase 3: 60 Minutes.
- Phase 4: 10 Minutes.
- Phase 5: 10 Minutes.

#### Risk Mitigation

- mksysb and alt\_disk\_install mechanism.
- The mksysb step and the alt\_disk step may exercise the internal disks in a way that can reveal errors. Like the system check, do this step early enough to allow time to address any issues with the internal disks on the Power 8 servers.

#### Backout Options

- Use alt\_disk\_install to boot off the system prior to the removal steps or mksysb restores.

## Phase 1: mkysb

During this update the internal disk mirror on the management hosts will be removed with updates taking place on one hdisk and a copy of the disk before this update will be started on the other. It is, therefore, recommended to take mkysb's of both management hosts before beginning Phase 2. This script uses '/stage' as it is accessible to all hosts, is directly accessible by the admin and admin standby hosts, and generally has enough space to hold mkysbs. The one drawback is that NIM does not support GPFS filesystems. Once mkysb's are taken, it is recommended to copy those outside of the environment.

1. Login to the management node as the root user.
2. If using screen, invoke the screen session using the screen -r *sessionname*.
3. Command: Ensure that the current working directory is correct.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

4. The following scripts will run mkysb to /stage/backups/FP8\_FP4/<timestamp>/<hostname> for all hosts. The first script ensures the '/stage' filesystem is mounted on all hosts. The second script runs the mkysb commands and backs up the /image.data and /bosinst.data files for all hosts.

- a. Command: Ensure all hosts have access to the /stage filesystem which is the target for the mkysbs.

```
./enable_stage.sh
```

Example Output: (All hosts show already mounted.)

```
$ ./enable_stage.sh
20210301_123313 (kf5hostname01:enable_stage.sh): Checking for /stage on all hosts.
20210301_123314 (kf5hostname01:enable_stage.sh): Success: The /stage filesystem is mounted on all hosts.
20210301_123314 (kf5hostname01:enable_stage.sh): enable_stage.sh completed with rc=0.
```

Example Output: (One host missing mount and the script successfully mounts /stage.)

```
$ ./enable_stage.sh
20210301_123513 (kf5hostname01:enable_stage.sh): Checking for /stage on all hosts.
20210301_123514 (kf5hostname01:enable_stage.sh): Warning: The following hosts are missing /stage mounts.
kf5hostname02: Warning: Missing /stage mount.
20210301_123514 (kf5hostname01:enable_stage.sh): Attempting to mount /stage on all hosts.
20210301_123515 (kf5hostname01:enable_stage.sh): Checking for /stage on all hosts.
20210301_123516 (kf5hostname01:enable_stage.sh): Success: The /stage filesystem is mounted on all hosts.
20210301_123516 (kf5hostname01:enable_stage.sh): enable_stage.sh completed with rc=0.
```

## STAGE 2 - Updating Pflayer

- b. Command: Run the script to take mksysbs from all hosts.

```
./stage02_phase01_mksysb.sh
```

Example Output: (Abridged):

```
$ ./stage02_phase01_mksysb.sh
20210127_153007 (kf5hostname01:stage02_phase01_mksysb.sh): Starting date: Wed Jan 27 15:30:07 -02 2021.
20210127_153007 (kf5hostname01:stage02_phase01_mksysb.sh): Verifying /stage is mounted on all nodes.
20210127_153007 (kf5hostname01:enable_stage.sh): Checking for /stage on all hosts.
20210127_153008 (kf5hostname01:enable_stage.sh): Success: The /stage filesystem is mounted on all hosts.
20210127_153008 (kf5hostname01:enable_stage.sh): enable_stage.sh completed with rc=0.
20210127_153008 (kf5hostname01:stage02_phase01_mksysb.sh): Looking for mkssyb backups in /stage/backups/FP8_FP4/.
find: 0652-010 The starting directory is not valid.
20210127_153008 (kf5hostname01:stage02_phase01_mksysb.sh): Running mksysb on all hosts to
/stage/backups/FP8_FP4/20210127_153008.
...
kf5hostname01:
kf5hostname01: Creating information file (/image.data) for rootvg.
kf5hostname01:
kf5hostname01: Creating list of files to back up.
kf5hostname01: .....
kf5hostname01: Backing up 206775 files.....
kf5hostname01: 77353 of 206775 files (37%).....
kf5hostname01: 179387 of 206775 files (86%).....
kf5hostname01:
kf5hostname01: 206775 of 206775 files (100%)
kf5hostname01: 0512-038 mksysb: Backup Completed Successfully.
```

The output of this script is logged automatically to the following file.

```
/BCU_share/support/FP8_FP4/log/stage02_phase01_mksysb.sh_<hostname>_<timestamp>.log
```

- c. Command: Verify mksysbs have been taken. Each host should have three files (bosinst.data, image.data, hostname.mksysb).

```
find /stage/backups/FP8_FP4/ -type f | sort
```

Example Output:

```
$ find /stage/backups/FP8_FP4/ -type f | sort
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname01/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname01/flashdancehostname01.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname01/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname02/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname02/flashdancehostname02.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname02/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname03/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname03/flashdancehostname03.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname03/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname04/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname04/flashdancehostname04.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname04/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname05/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname05/flashdancehostname05.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname05/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname06/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname06/flashdancehostname06.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname06/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname07/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname07/flashdancehostname07.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname07/image.data
```

## Phase 2: alt\_disk\_install

1. Verify the status of rootvg on the management hosts. The two commands below show that rootvg has two disks and that, except for the sysdump logical volume, all logical volumes are mirrored with 1 LP to 2 PP ratio. All LVs should be syncd and none should indicate that they are 'stale'. If there are 'stale' LVs contact IBM Support for further guidance and do not proceed to further steps until the 'stale' LVs are resolved.

- a. Command: Verify rootvg spans two hdisks and both have PV States as Active.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg -p rootvg" | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg -p rootvg" | dshbak -c
HOSTS -----
kf5hostname01
-----
rootvg:
PV_NAME      PV STATE      TOTAL PPs   FREE PPs   FREE DISTRIBUTION
hdisk0       active        532         231        103..00..00..21..107
hdisk1       active        532         338        106..18..01..106..107

HOSTS -----
kf5hostname03
-----
rootvg:
PV_NAME      PV STATE      TOTAL PPs   FREE PPs   FREE DISTRIBUTION
hdisk0       active        532         331        106..26..01..91..107
hdisk1       active        532         338        106..18..01..106..107
```

## STAGE 2 - Updating Pflayer

### b. Command: Verify all rootvg LVs are synced.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg -l rootvg" | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg -l rootvg" | dshbak -c
HOSTS -----
kf5hostname01
-----
rootvg:
LV NAME      TYPE      LPs      PPs      PVs  LV STATE  MOUNT POINT
hd5          boot      1         2         2  closed/syncd  N/A
hd6          paging    64        128        2  open/syncd    N/A
hd8          jfs2log   1         2         2  open/syncd    N/A
hd4          jfs2      7         14        2  open/syncd    /
hd2          jfs2      20        40        2  open/syncd    /usr
hd9var       jfs2      9         18        2  open/syncd    /var
hd3          jfs2      5         10        2  open/syncd    /tmp
hd1          jfs2      29        58        2  open/syncd    /home
hd10opt      jfs2      29        48        2  open/syncd    /opt
hd11admin    jfs2      1         2         2  open/syncd    /admin
lg_dumplv    sysdump   7         7         1  open/syncd    N/A
livedump     jfs2      1         2         2  open/syncd    /var/adm/ras/livedump
hd7          sysdump   3         6         2  closed/syncd  N/A
fslv00       jfs2      20        40        2  open/syncd    /BCU_fs
fslv01       jfs2      40        80        2  open/syncd    /BCU_share_stage2a
paging00     paging    64        128        2  open/syncd    N/A

HOSTS -----
kf5hostname03
-----
rootvg:
LV NAME      TYPE      LPs      PPs      PVs  LV STATE  MOUNT POINT
hd5          boot      1         2         2  closed/syncd  N/A
hd6          paging    64        128        2  open/syncd    N/A
hd8          jfs2log   1         2         2  open/syncd    N/A
hd4          jfs2      5         10        2  open/syncd    /
hd2          jfs2      20        40        2  open/syncd    /usr
hd9var       jfs2      9         18        2  open/syncd    /var
hd3          jfs2      5         10        2  open/syncd    /tmp
paging00     paging    64        128        2  open/syncd    N/A
hd10opt      jfs2      15        30        2  open/syncd    /opt
hd11admin    jfs2      1         2         2  open/syncd    /admin
lg_dumplv    sysdump   7         7         1  open/syncd    N/A
livedump     jfs2      1         2         2  open/syncd    /var/adm/ras/livedump
hd7          sysdump   3         6         2  closed/syncd  N/A
fslv02       jfs2      5         10        2  open/syncd    /backup
```

## STAGE 2 - Updating Pflayer

2. Command: Use the following script to clone rootvg on the management and management standby hosts. Be sure to run this command using a screen session or through the console via vtmenu as this command is long running (about an hour for each run). This command typically takes between 15 and 45 minutes to run.

stdout is logged to /BCU\_share/support/FP8\_FP4/log/mirror\_utility.sh\_<host>\_<timestamp>.log  
stderr is logged to /BCU\_share/support/FP8\_FP4/log/mirror\_utility.sh\_<host>\_<timestamp>.log.stderr

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "/BCU_share/FP8_FP4/fixpack_tools/application/mirror_utility.sh -action clone" 2>&1 | dshbak -c
```

### Example Output: (Only from Management Host)

```
20201203_014058 (flashdancehostname01:mirror_utility.sh): Starting date: Thu Dec 3 01:40:58 IST 2020.
20201203014058: (mirror_utility.pl) Retrieving the current boot disk.
20201203014058: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
20201203014058: (mirror_utility.pl) Found boot disk is hdisk0.
20201203014058: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201203014058: (mirror_utility.pl) Retrieving Internal Disks.
20201203014058: (mirror_utility.pl) Retrieving Free Disks.
20201203014058: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201203014058: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201203014058: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201203014058: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201203014058: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201203014058: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201203014059: (mirror_utility.pl) Determining rootvg status.
20201203014059: (mirror_utility.pl) Attempting to clone rootvg.
20201203014059: (mirror_utility.pl) Attempting to reduce rootvg.
20201203014059: (mirror_utility.pl) Verifying target disk hdisk1 contains no logical volumes.
20201203014059: (mirror_utility.pl) hdisk1 has logical volumes to migrate to hdisk0.
20201203014059: (mirror_utility.pl) Running cmd 'migratepv hdisk1 hdisk0'.
20201203014733: (mirror_utility.pl) Returned rc = 0.
20201203014733: (mirror_utility.pl) Retrieving the current boot disk.
20201203014733: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
20201203014733: (mirror_utility.pl) Found boot disk is hdisk0.
20201203014733: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201203014733: (mirror_utility.pl) Retrieving Internal Disks.
20201203014734: (mirror_utility.pl) Retrieving Free Disks.
20201203014734: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201203014734: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201203014734: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201203014734: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201203014734: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201203014734: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201203014734: (mirror_utility.pl) Determining rootvg status.
20201203014734: (mirror_utility.pl) rootvg is not reduced and is reducible.
20201203014734: (mirror_utility.pl) Running cmd 'reducevg rootvg hdisk1'.
20201203014735: (mirror_utility.pl) Returned rc = 0.
20201203014735: (mirror_utility.pl) Retrieving the current boot disk.
20201203014735: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
20201203014735: (mirror_utility.pl) Found boot disk is hdisk0.
20201203014735: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201203014736: (mirror_utility.pl) Retrieving Internal Disks.
20201203014736: (mirror_utility.pl) Retrieving Free Disks.
20201203014736: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201203014736: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201203014736: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201203014736: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201203014736: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201203014736: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201203014736: (mirror_utility.pl) Determining rootvg status.
20201203014736: (mirror_utility.pl) Rootvg is clonable.
20201203014736: (mirror_utility.pl) Running cmd 'alt_disk_install -C -D hdisk1'.
20201203023928: (mirror_utility.pl) Returned rc = 0.
20201203023928: (mirror_utility.pl) Updating bootlist.
20201203023928: (mirror_utility.pl) Returned rc = 0.
20201203023928: (mirror_utility.pl) Retrieving the current boot disk.
20201203023928: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
20201203023928: (mirror_utility.pl) Found boot disk is hdisk0.
20201203023928: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201203023928: (mirror_utility.pl) Retrieving Internal Disks.
20201203023928: (mirror_utility.pl) Retrieving Free Disks.
20201203023929: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201203023929: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201203023929: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201203023929: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201203023929: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201203023929: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
```

## STAGE 2 - Updating Pflayer

```
20201203023929: (mirror_utility.pl) Determining rootvg status.  
20201203_023929 (flashdancehostname01:mirror_utility.sh): Starting date: Thu Dec 3 01:40:58 IST 2020 Ending Date: Thu Dec 3  
02:39:29 IST 2020.  
20201203_023929 (flashdancehostname01:mirror_utility.sh): mirror_utility.sh completed with rc=0.
```

## STAGE 2 - Updating Pflayer

3. Before proceeding with the update, verify that the unmirror operation has completed on both management hosts. The output below shows only one hdisk associated with rootvg and that the LP to PP ratio is now 1 to 1. Verify that altinst\_rootvg exists on both hosts and that the bootlist has been modified to include both internal disks.

- a. Command: Verify only one hdisk is assigned to rootvg.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg -p rootvg" | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg -p rootvg" | dshbak -c
HOSTS -----
kf5hostname01
-----
rootvg:
PV_NAME          PV STATE          TOTAL PPs   FREE PPs   FREE DISTRIBUTION
hdisk0            active              532         231         103..00..00..21..107

HOSTS -----
kf5hostname03
-----
rootvg:
PV_NAME          PV STATE          TOTAL PPs   FREE PPs   FREE DISTRIBUTION
hdisk0            active              532         331         106..26..01..91..107
```

- c. Command: Verify all LVs in rootvg are Syncd and have only 1 PV assigned.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg -l rootvg" | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg -l rootvg" | dshbak -c
HOSTS -----
kf5hostname01
-----
rootvg:
LV NAME          TYPE      LPs    PPs    PVs  LV STATE    MOUNT POINT
hd5              boot      1      1      1    closed/syncd N/A
hd6              paging    64     64     1    open/syncd  N/A
hd8              jfs2log   1      1      1    open/syncd  N/A
hd4              jfs2      7      7      1    open/syncd  /
hd2              jfs2      20     20     1    open/syncd  /usr
hd9var           jfs2      9      9      1    open/syncd  /var
hd3              jfs2      5      5      1    open/syncd  /tmp
hd1              jfs2      29     29     1    open/syncd  /home
hd10opt          jfs2      29     29     1    open/syncd  /opt
hd11admin        jfs2      1      1      1    open/syncd  /admin
lg_dump1v        sysdump   7      7      1    open/syncd  N/A
livedump         jfs2      1      1      1    open/syncd  /var/adm/ras/livedump
hd7              sysdump   3      3      1    closed/syncd N/A
fslv00           jfs2      20     20     1    open/syncd  /BCU_fs
fslv01           jfs2      40     40     1    open/syncd  /BCU_share_stage2a
paging00         paging    64     64     1    open/syncd  N/A

HOSTS -----
kf5hostname03
-----
rootvg:
LV NAME          TYPE      LPs    PPs    PVs  LV STATE    MOUNT POINT
hd5              boot      1      1      1    closed/syncd N/A
hd6              paging    64     64     1    open/syncd  N/A
hd8              jfs2log   1      1      1    open/syncd  N/A
hd4              jfs2      5      5      1    open/syncd  /
hd2              jfs2      20     20     1    open/syncd  /usr
hd9var           jfs2      9      9      1    open/syncd  /var
hd3              jfs2      5      5      1    open/syncd  /tmp
paging00         paging    64     64     1    open/syncd  N/A
hd10opt          jfs2      15     15     1    open/syncd  /opt
hd11admin        jfs2      1      1      1    open/syncd  /admin
lg_dump1v        sysdump   7      7      1    open/syncd  N/A
livedump         jfs2      1      1      1    open/syncd  /var/adm/ras/livedump
hd7              sysdump   3      3      1    closed/syncd N/A
fslv02           jfs2      5      5      1    open/syncd  /backup
```

## STAGE 2 - Updating Pflayer

- d. Command: Verify that all management thosts have altinst\_rootvg created.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg | grep altinst_rootvg" | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lsvg | grep altinst_rootvg" | dshbak -c
HOSTS -----
kf5hostname01, kf5hostname03
-----
altinst_rootvg
```

- e. Command: Verify that the bootlist contains two hdisk.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "bootlist -m normal -o" | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "bootlist -m normal -o" | dshbak -c
HOSTS -----
kf5hostname01, kf5hostname03
-----
hdisk0 blv=hd5 pathid=0
hdisk1 blv=hd5 pathid=0
```

2. Command: Backup the NIM Database on the management host to the /stage backup directory.

```
/usr/lpp/bos.sysmgt/nim/methods/m_backup_db /stage/backups/FP8_FP4/${hostname}_NIMDB_Backup.$(date "+%Y%m%d%H%M%S")
```

Example Output:

```
$ /usr/lpp/bos.sysmgt/nim/methods/m_backup_db /stage/backups/FP8_FP4/${hostname}_NIMDB_Backup.$(date "+%Y%m%d%H%M%S")
a ./etc/objrepos/nim_attr 24 blocks.
a ./etc/objrepos/nim_attr.vc 24 blocks.
a ./etc/objrepos/nim_object 8 blocks.
a ./etc/objrepos/nim_object.vc 8 blocks.
a ./etc/NIM.level 1 blocks.
a ./etc/niminfo 1 blocks.
a ./etc/NIM.primary.cpid 1 blocks.

(0) root @ kf5hostname01: 7.1.0.0: /BCU_share/support/FP8_FP4/log
```

3. Command: Verify the NIM DB was backed up.

```
ls -la /stage/backups/FP8_FP4/${hostname}_NIMDB_Backup.*
```

Example Output:

```
$ ls -la /stage/backups/FP8_FP4/${hostname}_NIMDB_Backup.*
-rw-r--r--  1 root    system      40960 Jan 29 13:14 /stage/backups/FP8_FP4/kf5hostname01_NIMDB_Backup.20210129131410
```

## **Phase 3: Update AIX on the management host.**

AIX 7.1 TL5 SP7 updates the system Perl from 5.10 to 5.28. This update causes FP7\_FP3 and all earlier pplayer versions to fail. As part of FP8\_FP4 testing the AIX update to the management host is being moved to Stage 02 before the update to pplayer.

During this stage the management host services will have a small outage while the host is rebooted.

- E-mail alerting for call-home.
- Access to /BCU\_share
- Platform Layer appl\* commands.
- DPM, if used, can be failed over to the management standby host.

## STAGE 2 - Updating Pflayer

Phase 3: Step 1: Stop DPM and Management Domain or failover DPM on the management host.

### 1. Check DPM State.

- Command: Use hals to check the state and CURRENT location of services.

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
=====+=====+=====+=====+=====+=====+=====+
```

- If PDOA is not currently at V1.1 FP3 proceed to 3 to stop the domain.
- If DPM is required and is running on the Management host proceed to 2 to failover DPM. If DPM is already running on the Standby Management host then proceed to 4.
- If DPM is not required and not online proceed to 3 to stop the domain.

### 2. Failover DPM:

- Command: Run the failover command.

```
hafailover $(hostname) DPM
```

Example Output:

```
$ hafaillver $(hostname) DPM
Moving resources from flashdancehostname01 to flashdancehostname03
.....Failed to start all resources. Check state
with hals
```

- If failover succeeds proceed to 4.
- Command: If failover doesn't succeed, it is likely a timeout from hafaillver. Check: hals -mgmt

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online | Normal | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online | Normal | - |
=====+=====+=====+=====+=====+=====+=====+
```

### 3. Stop DPM and the Management Domain or skip to step 2 if Failing Over DPM.

- Command: Use hastopdpm to stop DPM.

```
hastopdpm
```

Example Output:

```
$ hastopdpm
Stopping DPM and DB2 instance.....Resources offline
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
| DB2DPM    | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
=====+=====+=====+=====+=====+=====+=====+
```

## STAGE 2 - Updating Pflayer

- b. Command: Use `hals -mgmt` to determine if the management domain is stopped.

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
none are available... returning
```

- c. Proceed to 4.

4. Command: Quiesce the management host. The quiesce node command will stop the domain, unmount GPFS filesystems (if not busy) and stop GPFS on the host where it is run. If there are sessions with open file descriptors on the quiesce target then the quiesce node operation will fail.

```
./quiesce_node.sh
```

Example Output:

```
$ cd /BCU_share/FP8_FP4/fixpack_tools/application
$ ./quiesce_node.sh
20201203_060517 (flashdancehostname01:quiesce_node.sh): Starting date: Thu Dec 3 06:05:17 IST 2020.
20201203_060517 (flashdancehostname01:quiesce_node.sh): Attempting to quiesce host flashdancehostname01.
20201203_060517 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:17 IST 2020.
20201203_060518 (flashdancehostname01:check_server_state.sh): Service States:

20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:17 IST 2020 Ending Date: Thu Dec
3 06:05:18 IST 2020.
20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:18 IST 2020.
20201203_060518 (flashdancehostname01:check_server_state.sh): Domain state: 'Online'.
20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:18 IST 2020 Ending Date: Thu Dec
3 06:05:18 IST 2020.
20201203_060518 (flashdancehostname01:quiesce_node.sh): Force stopping the domain on this host.
20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:18 IST 2020.
20201203_060518 (flashdancehostname01:check_server_state.sh): Domain state: 'Pending offline'.
20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:18 IST 2020 Ending Date: Thu Dec
3 06:05:18 IST 2020.
20201203_060528 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:28 IST 2020.
20201203_060528 (flashdancehostname01:check_server_state.sh): Domain state: 'Offline'.
20201203_060528 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:28 IST 2020 Ending Date: Thu Dec
3 06:05:28 IST 2020.
20201203_060528 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:28 IST 2020.
20201203_060531 (flashdancehostname01:check_server_state.sh): GPFS State: 'active'.
20201203_060531 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:28 IST 2020 Ending Date: Thu Dec
3 06:05:31 IST 2020.
20201203_060532 (flashdancehostname01:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
Thu Dec 3 06:05:32 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
20201203_060542 (flashdancehostname01:quiesce_node.sh): Stopping GPFS on this host.
Thu Dec 3 06:05:42 IST 2020: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Thu Dec 3 06:05:47 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 2556398
Thu Dec 3 06:05:56 IST 2020: 6027-1345 mmshutdown: Finished
20201203_060556 (flashdancehostname01:quiesce_node.sh): Starting date: Thu Dec 3 06:05:17 IST 2020 Ending Date: Thu Dec 3
06:05:56 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 2 - Updating Pflayer

### Phase 3: Step 2: Update AIX on the management host.

#### 1. Command: Verify that AIX is ready to update on the management host.

```
./update_aix.sh
```

#### Example Output:

```
$ ./update_aix.sh
20201118_015841 (flashdancehostname01:update_aix.sh): Starting date: Wed Nov 18 01:58:41 IST 2020.
20201118_015841 (flashdancehostname01:update_aix.sh): Collecting the available aix details.
20201118_015841 (flashdancehostname01:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201118_015841 (flashdancehostname01:update_aix.sh): Version is '7100.5.1'.
20201118_015841 (flashdancehostname01:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.1' and received
'2'. '20201118_015841' (flashdancehostname01:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201118_015841 (flashdancehostname01:update_aix.sh): Version is '7100.5.4'.
20201118_015841 (flashdancehostname01:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.4' and received
'1'. '20201118_015841' (flashdancehostname01:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201118_015841 (flashdancehostname01:update_aix.sh): Version is '7100.5.7'.
20201118_015841 (flashdancehostname01:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.7' and received
'0'. '20201118_015841' (flashdancehostname01:update_aix.sh): There is an available update.
20201118_015841 (flashdancehostname01:update_aix.sh): This is the first version checked.
20201118_015841 (flashdancehostname01:update_aix.sh): The next update is version '7100.5.7' in directory
'/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201118_015841 (flashdancehostname01:update_aix.sh): Checking to see if 'flashdancehostname01' is eligible to update.
20201118_015841 (flashdancehostname01:update_aix.sh): Success: This host 'flashdancehostname01' is quiesced.
20201118_015841 (flashdancehostname01:update_aix.sh): Success: This host 'flashdancehostname01' has rootvg cloned.
20201118_015841 (flashdancehostname01:update_aix.sh): Success: This host 'flashdancehostname01' has available updates.
20201118_015841 (flashdancehostname01:update_aix.sh): Verifying rpm repository health.
20201118_015841 (flashdancehostname01:update_aix.sh): Success: This host 'flashdancehostname01' has a consistent rpm repository.
20201118_015841 (flashdancehostname01:update_aix.sh): Starting date: Wed Nov 18 01:58:41 IST 2020 Ending Date: Wed Nov 18
01:58:43 IST 2020.
```

#### 2. The output indicates:

- AIX 7.1 TL5 SP4 is the current version on the management host.
- AIX 7.1 TL5 SP1, AIX 7.1 TL5 SP4 and AIX 7.1 TL5 SP7 updates are available updates.
- AIX 7.1 TL5 SP7 is the next update to be applied.
  - Note: PDOA V1.1 FP1 customers. It is mandatory to apply AIX 7.1 TL5 SP1 first from the PDOA V1.1 FP2 image. This script will find that level (as it did above) and install that level first as part of the update.
- The management node is eligible to update.
- There is an alternate vg clone for rootvg on this host.
- The management node is quiesced. All services, domains, GPFS filesystem and GPFS cluster services are not running on this host.
- There are no duplicate issues in the rpm repository.

## STAGE 2 - Updating Pflayer

3. Command: Update AIX on this host. The next command will run the installp preview and the update and then will automatically reboot the host if there are no errors. This command will periodically show the last 10 relevant lines from the /var/adm/ras/install\_all\_updates.log file in stdout and to the log/stderr files in /BCU\_share/support/FP8\_FP4/logs. This should not be run in a parallel when the management host is updated as the management host will be rebooted with loss of access to /BCU\_share during that time.

```
./update_aix.sh update
```

### Example Output:

```
$. /update_aix.sh update
20201203_061313 (flashdancehostname01:update_aix.sh): Starting date: Thu Dec 3 06:13:13 IST 2020.
20201203_061313 (flashdancehostname01:update_aix.sh): Collecting the available aix details.
20201203_061313 (flashdancehostname01:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201203_061313 (flashdancehostname01:update_aix.sh): Version is '7100.5.1'.
20201203_061313 (flashdancehostname01:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.1' and received '2'.
20201203_061313 (flashdancehostname01:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201203_061313 (flashdancehostname01:update_aix.sh): Version is '7100.5.4'.
20201203_061313 (flashdancehostname01:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.4' and received '1'.
20201203_061313 (flashdancehostname01:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201203_061313 (flashdancehostname01:update_aix.sh): Version is '7100.5.7'.
20201203_061313 (flashdancehostname01:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.7' and received '0'.
20201203_061313 (flashdancehostname01:update_aix.sh): There is an available update.
20201203_061313 (flashdancehostname01:update_aix.sh): This is the first version checked.
20201203_061313 (flashdancehostname01:update_aix.sh): The next update is version '7100.5.7' in directory
'/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201203_061313 (flashdancehostname01:update_aix.sh): Checking to see if 'flashdancehostname01' is eligible to update.
20201203_061314 (flashdancehostname01:update_aix.sh): Success: This host 'flashdancehostname01' is quiesced.
20201203_061314 (flashdancehostname01:update_aix.sh): Success: This host 'flashdancehostname01' has rootvg cloned .
20201203_061314 (flashdancehostname01:update_aix.sh): Success: This host 'flashdancehostname01' has available updates .
20201203_061314 (flashdancehostname01:update_aix.sh): Verifying rpm repository health.
20201203_061315 (flashdancehostname01:update_aix.sh): Success: This host 'flashdancehostname01' has a consistent rpm repository.
20201203_061315 (flashdancehostname01:update_aix.sh): Running 'update_all -pd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' to
preview the aix
update.
20201203_061327 (flashdancehostname01:update_aix.sh): Success: Preview completed successfully.
20201203_061327 (flashdancehostname01:update_aix.sh): Running 'update_all -cYd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' to
execute the aix
update.
20201203_061327 (flashdancehostname01:update_aix.sh): PID for 'update_all -cYd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' is
'2490804'.
20201203_061327 (flashdancehostname01:update_aix.sh): Waiting on '2490804' to complete. For current status check
'/var/adm/ras/install_all_updates.log' on host 'flashdancehostname01'.
(0:300): Update not found. Sleeping for 5 seconds before next check.
(5:300): Update not found. Sleeping for 5 seconds before next check.
(10:300): Update not found. Sleeping for 5 seconds before next check.
(15:300): Update not found. Sleeping for 5 seconds before next check.
Found pid '2490804'.
PID      TTY      TIME  CMD
2490804  pts/1    0:00  ksh
Thu Dec 3 06:13:47 IST 2020: flashdancehostname01 update status duration (0 seconds).
installp: APPLYING software for:
Filesets processed: 38 of 39 (Total time: 43 secs).
installp: APPLYING software for:
Finished processing all filesets. (Total time: 45 secs).
install_all_updates: Result = SUCCESS
install_all_updates: Result = SUCCESS
installp: APPLYING software for:
Finished processing all filesets. (Total time: 16 secs).
installp: COMMITTING software for:
Finished processing all filesets. (Total time: 17 secs).
PID      TTY      TIME  CMD
2490804  pts/1    0:00  ksh
Thu Dec 3 06:14:47 IST 2020: flashdancehostname01 update status duration (60 seconds).
install_all_updates: Result = SUCCESS
installp: APPLYING software for:
Finished processing all filesets. (Total time: 16 secs).
installp: COMMITTING software for:
Finished processing all filesets. (Total time: 17 secs).
installp: bosboot verification completed.
installp: APPLYING software for:
Filesets processed: 1 of 260 (Total time: 8 secs).
Filesets processed: 1 of 260 (Total time: 9 secs).
...
20201203_064728 (flashdancehostname01:update_aix.sh): PID '2490804' completed with rc='0'. For more information consult the
update log '/var/adm/ras/install_all_updates.log'.
20201203_064728 (flashdancehostname01:update_aix.sh): AIX update completed. Issuing shutdown instructions after 1 minute.
PID      TTY      TIME  CMD
Update process completed.
Thu Dec 3 06:47:54 IST 2020: flashdancehostname01 update status duration (2047 seconds).
installp: COMMITTING software for:
Filesets processed: 200 of 202 (Total time: 32 mins 49 secs).
```

## STAGE 2 - Updating Pflayer

```
installp: COMMITTING software for:  
Filesets processed: 201 of 202 (Total time: 32 mins 50 secs).  
installp: COMMITTING software for:  
Finished processing all filesets. (Total time: 32 mins 50 secs).  
installp: bosboot verification completed.  
installp: bosboot process completed.  
installp: * * * A T T E N T I O N ! ! !  
install_all_updates: Result = SUCCESS
```

## STAGE 2 - Updating Pflayer

4. Login to the management host as the root user.
5. If using screen then enter the screen session using '`screen -r sessionname`'.
6. Command: Ensure that the current working directory is correct.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

7. Command: Verify level and successful installation from `install_all_updates.log`.

```
oslevel -s
```

### Example Output:

```
$ oslevel -s  
7100-05-07-2038
```

4. Command: Tail the `installp` log to verify the update was a success.

```
tail -10 /var/adm/ras/install_all_updates.log
```

### Example Output:

```
$ tail -10 /var/adm/ras/install_all_updates.log  
  
* * * A T T E N T I O N * * *  
System boot image has been updated. You must reboot the system  
after install_all_updates completes to properly integrate the updates.  
  
install_all_updates: Checking for recommended maintenance level 7100-05.  
install_all_updates: Executing /usr/bin/oslevel -rf, Result = 7100-05  
install_all_updates: Verification completed.  
install_all_updates: Log file is /var/adm/ras/install_all_updates.log  
install_all_updates: Result = SUCCESS
```

## STAGE 2 - Updating Pflayer

### Phase 3: Step 3: Applying AIX Hyper

Just prior to this fixpack release AIX released a HIPER notification for IJ29552. The URL for the link is [http://www14.software.ibm.com/webapp/set2/subscriptions/onvdq?mode=18&ID=6780&myns=aix&mynp=OCOE609&mync=E&cm\\_sp=aix- -OCOE609- -E](http://www14.software.ibm.com/webapp/set2/subscriptions/onvdq?mode=18&ID=6780&myns=aix&mynp=OCOE609&mync=E&cm_sp=aix- -OCOE609- -E)

Review the APAR link to determine if your system is using LAM authentication. LAM is described in the AIX 7.1 Knowledge Center link

[https://www.ibm.com/support/knowledgecenter/ssw\\_aix\\_71/security/pam\\_lam.html](https://www.ibm.com/support/knowledgecenter/ssw_aix_71/security/pam_lam.html).

This efix will require the system to be rebooted to take effect.

This is also a good opportunity to apply any other fixes on the management host.

1. Login to the management host as the root user.
2. If using screen then enter the screen session using 'screen -r sessionname'.
3. Command: Change the current working directory.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

4. Command: Verify the efix information.

```
emgr -d -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
```

#### Example Output:

```
$ emgr -d -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
+-----+
Efix Manager Initialization
+-----+
Initializing log /var/adm/ras/emgr.log ...
Efix package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
MD5 generating command is /usr/bin/csum
MD5 checksum is d1037fddf4781f799a64df2e665b1eb3
Accessing efix metadata ...
Verifying efix control file ...

+-----+
Efix Attributes
+-----+
LABEL:          IJ29552s7b
EFIX FILES:     1

FILE NUMBER:    1
LOCATION:        /usr/ccs/lib/libc.a

+-----+
Operation Summary
+-----+
Log file is /var/adm/ras/emgr.log

EPKG NUMBER    LABEL          OPERATION          RESULT
=====
1              IJ29552s7b      DISPLAY           SUCCESS

Return Status = SUCCESS

(0) root @ kf5hostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/AIX/ifixes
```

## STAGE 2 - Updating Pflayer

### 5. Command: Preview the efix installation.

```
emgr -p -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
```

#### Example Output:

```
$ emgr -p -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
*****
EFI MANAGER PREVIEW START
*****

+-----+
| Efix Manager Initialization |
+-----+
| Initializing log /var/adm/ras/emgr.log ... |
| Efix package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z |
| MD5 generating command is /usr/bin/csum |
| MD5 checksum is d1037fddf4781f799a64df2e665b1eb3 |
| Accessing efix metadata ... |
| Processing efix label "IJ29552s7b" ... |
| Verifying efix control file ... |
+-----+

+-----+
| Installp Prerequisite Verification |
+-----+
| Verifying prerequisite file ... |
| Checking prerequisites ... |
+-----+

Prerequisite Number: 1
  Fileset: bos.rte.libc
  Minimal Level: 7.1.5.35
  Maximum Level: 7.1.5.35
  Actual Level: 7.1.5.35
  Type: PREREQ
  Requisite Met: yes

All prerequisites have been met.

+-----+
| Processing APAR reference file |
+-----+
| ATTENTION: Interim fix is enabled for automatic removal by installp. |
+-----+

+-----+
| Efix Attributes |
+-----+
| LABEL: IJ29552s7b |
| PACKAGING DATE: Wed Dec 9 15:40:31 CST 2020 |
| ABSTRACT: IJ29552 LOAD MODULE AUTH ISSUES |
| PACKAGER VERSION: 7 |
| VUID: 00F7CD554C00120915123120 |
| REBOOT REQUIRED: yes |
| BUILD BOOT IMAGE: yes |
| PRE-REQUISITES: yes |
| SUPERSEDE: no |
| PACKAGE LOCKS: no |
| EZE PREREQS: no |
| FIX TESTED: no |
| ALTERNATE PATH: None |
| EFI FILES: 1 |
+-----+

Install Scripts:
  PRE_INSTALL: no
  POST_INSTALL: no
  PRE_REMOVE: no
  POST_REMOVE: no

File Number: 1
  LOCATION: /usr/ccs/lib/libc.a
  FILE TYPE: Standard (file or executable)
  INSTALLER: installp
  SIZE: 25264
  ACL: DEFAULT
  CKSUM: 39000
  PACKAGE: bos.rte.libc
  MOUNT INST: no

+-----+
| Efix Description |
+-----+
| IJ29552 - some lam module logins break at latest service packs |
+-----+

+-----+
| Efix Lock Management |
+-----+
| Checking locks for file /usr/ccs/lib/libc.a ... |
+-----+
```

## STAGE 2 - Updating Pflayer

```
All files have passed lock checks.

+-----+
Space Requirements
+-----+
Checking space requirements ...

Space statistics (in 512 byte-blocks):
File system: /usr, Free: 23787472, Required: 59938, Deficit: 0.
File system: /tmp, Free: 9643456, Required: 98847, Deficit: 0.

+-----+
Reboot Processing
+-----+

*** NOTICE ***
This efix package requires the target system to be rebooted after the current
operation is complete. It is recommended that you reboot the target system as
soon as possible after installation to avoid disruption of current functionality.

*****
EFIX MANAGER PREVIEW END
*****

+-----+
Operation Summary
+-----+
Log file is /var/adm/ras/emgr.log

EPKG NUMBER      LABEL                OPERATION            RESULT
=====
1                IJ29552s7b          INSTALL PREVIEW      SUCCESS

ATTENTION: system reboot will be required by the actual (not preview) operation.
Please see the "Reboot Processing" sections in the output above or in the
/var/adm/ras/emgr.log file.

Return Status = SUCCESS

(0) root @ kf5hostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/AIX/ifixes
```

## STAGE 2 - Updating Pflayer

### 6. Command: Quiesce the management host.

```
./quiesce_node.sh
```

#### Example Output:

```
$ ./quiesce_node.sh
20201203_060517 (flashdancehostname01:quiesce_node.sh): Starting date: Thu Dec 3 06:05:17 IST 2020.
20201203_060517 (flashdancehostname01:quiesce_node.sh): Attempting to quiesce host flashdancehostname01.
20201203_060517 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:17 IST 2020.
20201203_060518 (flashdancehostname01:check_server_state.sh): Service States:

20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:17 IST 2020 Ending Date: Thu Dec
3 06:05:18 IST 2020.
20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:18 IST 2020.
20201203_060518 (flashdancehostname01:check_server_state.sh): Domain state: 'Online'.
20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:18 IST 2020 Ending Date: Thu Dec
3 06:05:18 IST 2020.
20201203_060518 (flashdancehostname01:quiesce_node.sh): Force stopping the domain on this host.
20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:18 IST 2020.
20201203_060518 (flashdancehostname01:check_server_state.sh): Domain state: 'Pending offline'.
20201203_060518 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:18 IST 2020 Ending Date: Thu Dec
3 06:05:18 IST 2020.
20201203_060528 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:28 IST 2020.
20201203_060528 (flashdancehostname01:check_server_state.sh): Domain state: 'Offline'.
20201203_060528 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:28 IST 2020 Ending Date: Thu Dec
3 06:05:28 IST 2020.
20201203_060528 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:28 IST 2020.
20201203_060531 (flashdancehostname01:check_server_state.sh): GPFS State: 'active'.
20201203_060531 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 3 06:05:28 IST 2020 Ending Date: Thu Dec
3 06:05:31 IST 2020.
20201203_060532 (flashdancehostname01:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
Thu Dec 3 06:05:32 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
20201203_060542 (flashdancehostname01:quiesce_node.sh): Stopping GPFS on this host.
Thu Dec 3 06:05:42 IST 2020: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Thu Dec 3 06:05:47 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 2556398
Thu Dec 3 06:05:56 IST 2020: 6027-1345 mmshutdown: Finished
20201203_060556 (flashdancehostname01:quiesce_node.sh): Starting date: Thu Dec 3 06:05:17 IST 2020 Ending Date: Thu Dec 3
06:05:56 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 2 - Updating Pflayer

### 7. Command: Apply the efix.

```
emgr -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
```

#### Example Output:

```
$ emgr -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
+-----+
Efix Manager Initialization
+-----+
Initializing log /var/adm/ras/emgr.log ...
Efix package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
MD5 generating command is /usr/bin/csum
MD5 checksum is d1037fddf4781f799a64df2e665b1eb3
Accessing efix metadata ...
Processing efix label "IJ29552s7b" ...
Verifying efix control file ...

+-----+
Installp Prerequisite Verification
+-----+
Verifying prerequisite file ...
Checking prerequisites ...

Prerequisite Number: 1
  Fileset: bos.rte.libc
  Minimal Level: 7.1.5.35
  Maximum Level: 7.1.5.35
  Actual Level: 7.1.5.35
  Type: PREREQ
  Requisite Met: yes

All prerequisites have been met.

+-----+
Processing APAR reference file
+-----+
ATTENTION: Interim fix is enabled for automatic removal by installp.

+-----+
Efix Attributes
+-----+
LABEL:                IJ29552s7b
PACKAGING DATE:       Wed Dec  9 15:40:31 CST 2020
ABSTRACT:             IJ29552 LOAD MODULE AUTH ISSUES
PACKAGER VERSION:     7
VUID:                 00F7CD554C00120915123120
REBOOT REQUIRED:       yes
BUILD BOOT IMAGE:     yes
PRE-REQUISITES:       yes
SUPERSEDE:            no
PACKAGE LOCKS:         no
E2E PREREQS:          no
FIX TESTED:           no
ALTERNATE PATH:       None
EFIX FILES:           1

Install Scripts:
  PRE_INSTALL:         no
  POST_INSTALL:        no
  PRE_REMOVE:          no
  POST_REMOVE:         no

File Number:          1
  LOCATION:            /usr/ccs/lib/libc.a
  FILE TYPE:           Standard (file or executable)
  INSTALLER:           installp
  SIZE:                25264
  ACL:                 DEFAULT
  CKSUM:               39000
  PACKAGE:             bos.rte.libc
  MOUNT INST:          no

+-----+
Efix Description
+-----+
IJ29552 - some lam module logins break at latest service packs

+-----+
Efix Lock Management
+-----+
Checking locks for file /usr/ccs/lib/libc.a ...

All files have passed lock checks.
```

## STAGE 2 - Updating Pflayer

```
+-----+
Space Requirements
+-----+
Checking space requirements ...

Space statistics (in 512 byte-blocks):
File system: /usr, Free: 24100320, Required: 59938, Deficit: 0.
File system: /tmp, Free: 9643456, Required: 98847, Deficit: 0.

+-----+
Efik Installation Setup
+-----+
Unpacking efik package file ...
Initializing efik installation ...

+-----+
Efik State
+-----+
Setting efik state to: INSTALLING

+-----+
File Archiving
+-----+
Saving all files that will be replaced ...
Save directory is: /usr/emgrdata/efixdata/IJ29552s7b/save
File 1: Saving /usr/ccs/lib/libc.a as EFSAVE1 ...

+-----+
Efik File Installation
+-----+
Installing all efik files:
Installing efik file #1 (File: /usr/ccs/lib/libc.a) ...

Total number of efik files installed is 1.
All efik files installed successfully.

+-----+
Package Locking
+-----+
Processing package locking for all files.
File 1: locking installp fileset bos.rte.libc.

All package locks processed successfully.

+-----+
Reboot Processing
+-----+

*** NOTICE ***
This efik package requires the target system to be rebooted after the current
bosboot: Boot image is 53276 512 byte blocks. you reboot the target system as
Successfully rebuilt boot image.ion to avoid disruption of current functionality.

+-----+
Efik State
+-----+
Setting efik state to: REBOOT REQUIRED

+-----+
Boot Image Processing
+-----+
Rebuilding boot image ...

+-----+
Operation Summary
+-----+
Log file is /var/adm/ras/emgr.log

EPKG NUMBER      LABEL                OPERATION            RESULT
=====
1                IJ29552s7b          INSTALL             SUCCESS

ATTENTION: system reboot is required. Please see the "Reboot Processing"
sections in the output above or in the /var/adm/ras/emgr.log file.

Return Status = SUCCESS

(0) root @ kf5hostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 2 - Updating Pflayer

### 8. Command: Reboot the management host.

```
(nohup shutdown +0 -r &)
```

#### Example Output:

```
$ (nohup shutdown +0 -r &)
[1]      6160670

(0) root @ kf5hostname01: 7.1.0.0: /
$ Sending nohup output to nohup.out.

Broadcast message from root@kf5hostname01 (tty) at 18:47:11 ...

shutdown: PLEASE LOG OFF NOW !!!
System maintenance is in progress.
All processes will be killed now.

Broadcast message from root@kf5hostname01 (tty) at 18:47:11 ...

shutdown: THE SYSTEM IS BEING SHUT DOWN NOW

(0) root @ kf5hostname01: 7.1.0.0: /
$ exit
```

### 9. Login as root on the management host when it is available.

### 10. Command: Verify the efix is installed.

```
emgr -l
```

#### Example Output:

```
$ emgr -l

ID  STATE LABEL          INSTALL TIME      UPDATED BY ABSTRACT
===  =====
1   S      IJ29552s7b 03/02/21 18:43:47      IJ29552 LOAD MODULE AUTH ISSUES

STATE codes:
S = STABLE
M = MOUNTED
U = UNMOUNTED
Q = REBOOT REQUIRED
B = BROKEN
I = INSTALLING
R = REMOVING
T = TESTED
P = PATCHED
N = NOT PATCHED
SP = STABLE + PATCHED
SN = STABLE + NOT PATCHED
QP = BOOT IMAGE MODIFIED + PATCHED
QN = BOOT IMAGE MODIFIED + NOT PATCHED
RQ = REMOVING + REBOOT REQUIRED
```

## STAGE 2 - Updating Pflayer

Phase 3: Step 3: Restore Screen Sessions if using screen.

1. Login to the management host as root.
2. Command: Check screen sessions: `screen -ls`

```
$ screen -ls
There is a screen on:
      3276858.fprun  (Dead ???)
Remove dead screens with 'screen -wipe'.
1 Socket in /tmp/screens/S-root.
```

3. Command: Remove dead screens: `screen -wipe`

```
$ screen -wipe
There is a screen on:
      3276858.fprun  (Removed)
1 socket wiped out.
No Sockets found in /tmp/screens/S-root.
```

4. Command: Restore screen sessions for fprun and fplog checking on the management host.

```
$ screen -S fprun -h 50000
```

5. Command: Change working directory to fixpack application directory.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

6. Use `<ctrl>+a d` to disconnect from fprun session.
7. Recreate fplog screen session.

```
$ screen -S fplog -h 50000
```

8. Change fplog working directory to logging directory.

```
cd /BCU_share/support/FP8_FP4/log
```

9. Use `<ctrl>+a d` to disconnect from fplog session.

10. Check sessions: `screen -ls`

```
$ screen -ls
There are screens on:
      2622164.fplog  (Detached)
      2687784.fprun  (Detached)
2 Sockets in /tmp/screens/S-root.
```

## STAGE 2 - Updating Pflayer

### Phase 3: Step 4: Restart domain on management node if using DPM.

1. Login to the management host as the root user.
2. If using screen then enter the screen session using 'screen -r sessionname'.
3. Command: Ensure that the current working directory is correct.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

4. Command: If using OPM check domain status:

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online | Standby Offline | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online | Standby Offline | - |
=====+=====+=====+=====+=====+=====+=====+
```

5. Command: Start domains on management:

```
./unquiesce_node.sh
```

Example Output:

```
$ ./unquiesce_node.sh
20201203_095534 (flashdancehostname01:unquiesce_node.sh): Starting date: Thu Dec 3 09:55:34 IST 2020.
20201203_095534 (flashdancehostname01:unquiesce_node.sh): Attempting to unquiesce host flashdancehostname01.
20201203_095659 (flashdancehostname01:unquiesce_node.sh): Successfully unquiesced host.
20201203_095659 (flashdancehostname01:unquiesce_node.sh): Starting date: Thu Dec 3 09:55:34 IST 2020 Ending Date: Thu Dec 3
09:56:59 IST 2020.
```

6. Command: Check the domain status:

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online | Normal | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online | Normal | - |
=====+=====+=====+=====+=====+=====+=====+
```

7. Command: Failback DPM. Requires DPM Outage. Replace *hostname* with hostname of standby management host. hafaileover command frequently times out before DPM successfully fails over. Check with hals -mgmt.

```
hafaileover hostname DPM
```

Example Output:

```
$ hafaileover flashdancehostname03 DPM
Moving resources from flashdancehostname03 to flashdancehostname01
.....Failed to start all resources. Check state with hals
```

STAGE 2 - Updating Pflayer

8. Command: Verify DPM failed over.

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
MANAGEMENT DOMAIN
```

| COMPONENT | PRIMARY              | STANDBY              | CURRENT              | OPSTATE | HA STATUS | RG REQUESTS |
|-----------|----------------------|----------------------|----------------------|---------|-----------|-------------|
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online  | Normal    | -           |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online  | Normal    | -           |

## STAGE 2 - Updating Pflayer

Phase 3: Step 5: Verify platform layer failure after AIX 7.1 TL5 SP7 update.

1. Command: Attempt to use platform layer command `appl_ls_cat`. This is expected and will be fixed in Phase 4.

`appl_ls_cat`

### Example Output:

```
$ appl_ls_cat
Can't locate Log/Log4perl.pm in @INC (you may need to install the Log::Log4perl module) (@INC contains:
/opt/ibm/aixappl/pflayer/lib /opt/ibm/smart/pfmgmt/lib /usr/opt/perl5/lib/site_perl/5.28.1/aix-thread-multi
/usr/opt/perl5/lib/site_perl/5.28.1 /usr/opt/perl5/lib/5.28.1/aix-thread-multi /usr/opt/perl5/lib/5.28.1) at
/opt/ibm/aixappl/pflayer/lib/ISAS/Logger.pm line 12.
BEGIN failed--compilation aborted at /opt/ibm/aixappl/pflayer/lib/ISAS/Logger.pm line 12.
Compilation failed in require at /opt/ibm/aixappl/pflayer/lib/ExecWrapper.pm line 21.
BEGIN failed--compilation aborted at /opt/ibm/aixappl/pflayer/lib/ExecWrapper.pm line 21.
Compilation failed in require at /opt/ibm/aixappl/pflayer/lib/ExecWrapper/Exec.pm line 23.
BEGIN failed--compilation aborted at /opt/ibm/aixappl/pflayer/lib/ExecWrapper/Exec.pm line 23.
Compilation failed in require at /opt/ibm/aixappl/pflayer/lib/ODM.pm line 13.
BEGIN failed--compilation aborted at /opt/ibm/aixappl/pflayer/lib/ODM.pm line 13.
Compilation failed in require at /opt/ibm/aixappl/pflayer/bin/appl_ls_cat line 16.
BEGIN failed--compilation aborted at /opt/ibm/aixappl/pflayer/bin/appl_ls_cat line 16.
```

## Phase 4: pplayer update

1. Command: Update Pflayer. Installation time is approximately 4 to 5 mins.

```
installp -acXYgd /BCU_share/FP8_FP4/software/Pflayer/PlatformControl-Pflayer.*.bff PlatformControl-Pflayer.rte
```

Example Output:

```
$ installp -acXygd /BCU_share/PF8_FTP8/software/Pfplayer/PlatformControl-Pflayer.*.bff PlatformControl-Pflayer.rte
+-----+
|               Pre-installation Verification...               |
+-----+
Verifying selections...done
Verifying requisites...done
Results...

SUCCESES
-----
Filesets listed in this section passed pre-installation verification
and will be installed.

Selected Filesets
-----
PlatformControl-Pflayer.rte 4.0.8.0          # IBM Systems Director Platfor...

<< End of Success Section >>

+-----+
|             BUILDDATE Verification ...             |
+-----+
Verifying build dates...done
FILESET STATISTICS
-----
    1 Selected to be installed, of which:
      1 Passed pre-installation verification
----
    1 Total to be installed

+-----+
|           Installing Software...           |
+-----+

installp: APPLYING software for:
        PlatformControl-Pflayer.rte 4.0.8.0

Restoring files, please wait.
1124 files restored.
1944 files restored.
Success : Product_version field set to 10.1.0.20120814 in Product_Record for Solution_version = 4.0.4.0 AND Product_type=ISW  AND
Sub_module_list LIKE *Management*.
Success : Product_version field set to 10.1.0.20120814_10.1.0.2..0 in Product_Record for Solution_version = 4.0.4.0 AND
Product_type=ISW  AND Sub_module_list LIKE *Admin*.
Success : Change 'User_type=Predefined_adm' of class 'User_Record' done
Success : Sub_module_list field set to Management,Mgmt_Standby,Admin,Admin_Standby>Data,Standby,User in Product_Record for
Logical_name=gpfis0.
Success : Product_version field set to 10.5.0.5..0 in Product_Record for Solution_version = 4.0.4.0 AND Product_type=DB2  AND
Sub_module_list LIKE *Management*.
Success : Product_version field set to 10.5.0.20141125_10.5.0.5..0 in Product_Record for Solution_version = 4.0.4.0 AND
Product_type=ISW  AND Sub_module_list LIKE *Management*.
Success : Product_version field set to 10.5.0.20141125_10.5.0.5..0 in Product_Record for Solution_version = 4.0.4.0 AND
Product_type=ISW  AND Sub_module_list LIKE *Admin*.
Success : Sub module list field set to Management in Product_Record for Product_type=OPM.
Success : Operation field set to uninstall in Product_Record for Product_type=DirectorServer.
Success : Operation field set to uninstall in Product_Record for Product_type=CAS.
Finished processing all filesets.  (Total time: 3 mins 7 secs).

+-----+
|                   Summaries:                   |
+-----+

Installation Summary
-----
Name                               Level            Part            Event            Result
-----
PlatformControl-Pflayer.rte 4.0.8.0          USR              APPLY            SUCCESS
```

## STAGE 2 - Updating Pflayer

### 2. Command: Verify pflayer function: appl\_ls\_cat

**appl\_ls\_cat**

Example Output:

```
$ appl_ls_cat
NAME          VERSION          STATUS          DESCRIPTION
bwr0          4.0.4.0          Committed       Updates for IBM_PureData_System_for_Operational_Analytics
bwr1          4.0.5.0          Committed       Updates for IBM_PureData_System_for_Operational_Analytics_DB2105
bwr2          4.0.7.0          Committed       Updates for IBM_PureData_System_for_Operational_Analytics
```

## Phase 5: Backup SAN Configuration

1. Command: As root on management. Create the backup directory.

```
mkdir /BCU_share/san_switch_backup
```

2. Command: Collect the ip addresses for the SAN Switches.

```
appl_ls_hw -r san -A M_IP_address
```

Example Output:

```
$ appl_ls_hw -r san -A M_IP_address
"172.23.1.161"
"172.23.1.162"
"172.23.1.163"
"172.23.1.164"
```

3. Command: Assign the IAN management ip to the mgmtip shell variable.

```
mgmtip=$(lsattr -a netaddr -EOL enl1 | grep -v "#");echo $mgmtip
```

Example Output:

```
$ mgmtip=$(lsattr -a netaddr -EOL enl1 | grep -v "#");echo $mgmtip
172.23.1.1
```

4. Command: Generate the configupload commands for each of the SAN switches. These will be used to cut and paste into the appropriate san switch session. Copy from the two lines below from 'd=' to 'done'.

```
d=$(date +%Y%m%d%H%M%S);for ip in $(appl_ls_hw -r san -A M_IP_address | sed 's|\"||g');do echo "configupload -all -p scp \${mgmtip}\",\"root\", \"/BCU_share/san_switch_backup/\${ip}_\${d}_prefp4.cfg\"";done
```

Example Output:

```
$ d=$(date +%Y%m%d%H%M%S);for ip in $(appl_ls_hw -r san -A M_IP_address | sed 's|\"||g');do echo "configupload -all -p scp \${mgmtip}\",\"root\", \"/BCU_share/san_switch_backup/\${ip}_\${d}_prefp4.cfg\"";done

configupload -all -p scp "172.23.1.1","root","/BCU_share/san_switch_backup/172.23.1.161_20210222153517_prefp4.cfg"
configupload -all -p scp "172.23.1.1","root","/BCU_share/san_switch_backup/172.23.1.162_20210222153517_prefp4.cfg"
configupload -all -p scp "172.23.1.1","root","/BCU_share/san_switch_backup/172.23.1.163_20210222153517_prefp4.cfg"
configupload -all -p scp "172.23.1.1","root","/BCU_share/san_switch_backup/172.23.1.164_20210222153517_prefp4.cfg"
```

## STAGE 2 - Updating Pflayer

5. For each ip address login to the switch and cut/paste the appropriate backup commands for that ip address. Root on management has key based access to the admin user on all SAN switches, however you will need the root password to allow the SAN to upload its configuration to the management host.

- a. Command: Establish an ssh session from root on management to the admin account on the san switch.

```
$ ssh admin@172.23.1.161
```

- b. Command: At the SAN switch prompt copy the corresponding configupload generate command. You will need the root password from the management host to respond to the password prompt.

```
F-SAN1:FID128:admin> configupload -all -p scp
"172.23.1.1","root","/BCU_share/san_switch_backup/172.23.1.161_20210222153517_prefp4.cfg"
root@172.23.1.1's password:
root@172.23.1.1's password:

configUpload complete: All selected config parameters are uploaded
```

- c. Command: exit the session.

```
F-SAN1:FID128:admin> exit
logout
Connection to 172.23.1.161 closed.
```

- d. Repeat these steps for all SAN switches in the environment.

6. Command: Verify that all SAN switch configurations are backed up.

```
ls -l /BCU_share/san_switch_backup/
```

Example output:

```
$ ls -l /BCU_share/san_switch_backup/

total 272
-rw-r--r-- 1 root system 28409 Feb 22 15:37 172.23.1.161_20210222153517_prefp4.cfg
-rw-r--r-- 1 root system 28411 Feb 22 15:38 172.23.1.162_20210222153517_prefp4.cfg
-rw-r--r-- 1 root system 39931 Feb 22 15:38 172.23.1.163_20210222153517_prefp4.cfg
-rw-r--r-- 1 root system 39931 Feb 22 15:39 172.23.1.164_20210222153517_prefp4.cfg
```

7. Command: Verify no mistakes in cut and paste. Filename ip address should match lookupName.

```
grep http.lookupName /BCU_share/san_switch_backup/*prefp4.cfg
```

Example Output:

```
$ grep http.lookupName /BCU_share/san_switch_backup/*prefp4.cfg

/BCU_share/san_switch_backup/172.23.1.161_20210222153517_prefp4.cfg:http.lookupName:172.23.1.161
/BCU_share/san_switch_backup/172.23.1.162_20210222153517_prefp4.cfg:http.lookupName:172.23.1.162
/BCU_share/san_switch_backup/172.23.1.163_20210222153517_prefp4.cfg:http.lookupName:172.23.1.163
/BCU_share/san_switch_backup/172.23.1.164_20210222153517_prefp4.cfg:http.lookupName:172.23.1.164
```

## STAGE 3 - Updating HMC

### Stage 3 Description

Every environment has two redundant HMCs to manage the Power servers. The two HMC components are updated one at a time. During the update one HMC may be unavailable until the update completes. Once the first HMC update completes, the second HMC will not be able to manage the Power servers until it is updated.

#### Phases/Steps

- Phase 1: Preparation
- Phase 2: Update HMC1
- Phase 3: Update HMC2
- Phase 4: Verification

#### Outage Requirements

- No outage requirements for this stage.

#### Time Per Step

- Phase 1: 10 to 15 minutes
- Phase 2: Approximately 2.5 Hours
- Phase 3: Approximately 2.5 Hours
- Phase 4: Less than a minute.

#### Risk Mitigation

- There is at least one HMC active throughout the update process.

#### Backout Options

- With help from IBM Support it is possible to reinstall HMCs to prior firmware levels if required.

#### Direct V1.1 FP1 to V1.1 FP4 Scenarios

- If you are updating from FP5\_FP1 then you must apply the FP6\_FP2 HMC updates first as they are required. The steps for this are not included in this readme. Please contact IBM for more information about the steps needed in this scenario.

## Phase 1: Preparation

1. Login to the management host as the root user.
2. If you are using screen, then enter the screen session used for log tracking using 'screen -r sessionname'. In the lab we use 'fplog' for this screen session.
3. Command: In the logging session, whether screen or a separate session, initiate a tail of the platform layer log file. Note that the log file will wrap so it may be necessary to <ctrl>-c the tail and then run the command again to read from the new log file.

```
tail -f /BCU_share/aixappl/pflayer/log/platform_layer.log
```

4. Login to the management node as the root user in a new session, or exit the above session using <ctrl>-a d to get back to non-screen based session.
5. If using screen, in the new or existing session, enter the session used to run the fixpack commands using screen -r sessionname.
6. Ensure the current working directory is correct.

```
$ cd /BCU_share/FP8_FP4/fixpack_tools/application
```

7. Command: Run the following to validate the HMC updates. There are 4 updates available for each HMC listed as \_2.iso to \_5.iso. The example output below does not show the \_5.iso. The return code should be '0' for each HMC. The most common error in validation is due to available disk space. For this fixpack the validation looks for 1.5 times the size of the ISO update file free on '/' to pass validation.

```
./stage03_hmc_update.sh validate
```

### Example Output:

```
$ ./stage03_hmc_update.sh validate
20201125_040051 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 04:00:51 IST 2020.
20201125_040052 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_040052 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_040057 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_040057 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
[25 Nov 2020 04:00:57,889] <5898962 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP931_2.iso is applicable
[25 Nov 2020 04:00:57,890] <5898962 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP941_3.iso is applicable
[25 Nov 2020 04:00:57,890] <5898962 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/MH01853_91931_4.iso is applicable
20201125_040057 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_040057 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_040103 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_040103 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
[25 Nov 2020 04:01:03,902] <4980840 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP931_2.iso is applicable
[25 Nov 2020 04:01:03,902] <4980840 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP941_3.iso is applicable
[25 Nov 2020 04:01:03,902] <4980840 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/MH01853_91931_4.iso is applicable
20201125_040103 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 04:00:51 IST 2020 Ending Date: Wed Nov
25 04:01:03 IST 2020.
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## Phase 2: Update HMC1

1. **Command: Prepare:** In the same directory and session run the following to prepare hmc0. This will re-run the validation and then will reboot the HMC. If the HMC does not boot in an hour contact IBM support as it will be necessary to have a CE/SSR access the system through a support ticket. If you are using a vtmenu session to run this command then verify it is run through the hmc associated with hmc1 as the prepare command and the later installation commands will also reboot the hmc as part of the updates.

```
./stage03_hmc_update.sh prepare hmc0
```

### Example Output:

```
$ ./stage03_hmc_update.sh prepare hmc0
20201125_041013 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 04:10:13 IST 2020.
20201125_041014 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_041014 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_041020 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_041020 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
[25 Nov 2020 04:10:19,927] <3801426 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP931_2.iso is applicable
[25 Nov 2020 04:10:19,928] <3801426 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP941_3.iso is applicable
[25 Nov 2020 04:10:19,928] <3801426 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/MH01853_91931_4.iso is applicable
20201125_041020 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
prepare -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_041020 (flashdancehostname01:stage03_hmc_update.sh): -----
Prepare succeeded for HMC 172.23.1.245
20201125_041924 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_041924 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
prepare -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
20201125_041924 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 04:10:13 IST 2020 Ending Date: Wed Nov
25 04:19:24 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

2. **Command: Update.** The update will take between 60 to 90 minutes and will include four updates and four reboots. This command will need to be run at least two times due to a timing issue after the SP931 update.

```
./stage03_hmc_update.sh install hmc0
```

### Example Output:

```
$ ./stage03_hmc_update.sh install hmc0
20201125_042332 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 04:23:32 IST 2020.
20201125_042333 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_042333 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_042339 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_042339 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
[25 Nov 2020 04:23:39,072] <4128942 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP931_2.iso is applicable
[25 Nov 2020 04:23:39,072] <4128942 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP941_3.iso is applicable
[25 Nov 2020 04:23:39,072] <4128942 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/MH01853_91931_4.iso is applicable
20201125_042339 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
install -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_042339 (flashdancehostname01:stage03_hmc_update.sh): -----
SNMP string exist on HMC: 172.23.1.245
20201125_050149 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_050149 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
install -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
20201125_050149 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 04:23:32 IST 2020 Ending Date: Wed Nov
25 05:01:49 IST 2020.
```

## STAGE 3 - Updating HMC

3. Command: Run the update again to finish applying the rest of the images.

```
./stage03_hmc_update.sh install hmc0
```

### Example Output:

```
$ ./stage03_hmc_update.sh install hmc0
20201125_081438 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 08:14:38 IST 2020.
20201125_081439 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_081439 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_081445 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_081445 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
[25 Nov 2020 08:14:44,992] <3801608 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP941_4.iso is applicable
20201125_081445 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
install -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_081445 (flashdancehostname01:stage03_hmc_update.sh): -----
SNMP string exist on HMC: 172.23.1.245
20201125_084220 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_084220 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
install -l hmc0 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
20201125_084220 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 08:14:38 IST 2020   Ending Date: Wed Nov
25 08:42:20 IST 2020.
```

4. The return code of the outer script is not reliable, so be sure to look at the log entry for the result:

*Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl\_ctrl\_hmc update -install -l hmc0 -f /BCU\_share/FP8\_FP4/firmware/hmc/CR8/image/imports returned '0'.*

5. Command: Check the version on hmc0.

```
appl_ls_hw -l hmc0 -A M_IP_address | sed 's|'|g' | while read ip;do ssh -n hscroot@$ip 'lshmc -V';done
```

### Example Output:

```
$ appl_ls_hw -l hmc0 -A M_IP_address | sed 's|'|g' | while read ip;do ssh -n hscroot@$ip 'lshmc -V';done
"version= Version: 9
  Release: 1
    Service Pack: 942
HMC Build level 2011270432
MH01810 - HMC V9R1 M930
MH01831 - HMC V9R1 M931
MH01853 - Required fix for HMC V9R1 M910+ to install M940
MH01859 - HMC V9R1 M941
MH01876 - HMC V9R1 M942
", "base_version=V9R1
"
```

## Phase 3: Update HMC2

1. Command: Perform steps 2 and 3 (preparation and installation) on the secondary HMC which should have the logical name hmc1 to complete the update operation. This will reboot this hmc and should take about 15 minutes. If you are using a vtmenu session to run this command then verify it is run through the hmc associated with hmc0 as the prepare command and the later installation commands will also reboot the hmc as part of the updates.

```
./stage03_hmc_update.sh prepare hmc1
```

### Example Output:

```
$ ./stage03_hmc_update.sh prepare hmc1
20201125_090522 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 09:05:22 IST 2020.
20201125_090523 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_090523 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_090529 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_090529 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
[25 Nov 2020 09:05:29,421] <6553608 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP931_2.iso is applicable
[25 Nov 2020 09:05:29,422] <6553608 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/MH01853_91931_3.iso is applicable
[25 Nov 2020 09:05:29,422] <6553608 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP941_4.iso is applicable
20201125_090529 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
prepare -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_090529 (flashdancehostname01:stage03_hmc_update.sh): -----
Prepare succeeded for HMC 172.23.1.246
20201125_091553 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_091553 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
prepare -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
20201125_091553 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 09:05:22 IST 2020 Ending Date: Wed Nov
25 09:15:53 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

2. Command: Run the update. Like hmc1 this update should take about 60 to 90 minutes with several reboots. This command will likely need to be run at least two times due to a timing issue after the SP931 update.

```
./stage03_hmc_update.sh install hmc1
```

### Example Output:

```
$ ./stage03_hmc_update.sh install hmc1
20201125_091927 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 09:19:27 IST 2020.
20201125_091928 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_091928 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_091934 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_091934 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
validate -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
[25 Nov 2020 09:19:34,177] <3867330 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP931_2.iso is applicable
[25 Nov 2020 09:19:34,177] <3867330 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/MH01853_91931_3.iso is applicable
[25 Nov 2020 09:19:34,178] <3867330 CTRL DEBUG flashdancehostname01>
/BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports/HMC_Update_V9R1_SP941_4.iso is applicable
20201125_091934 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
install -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports.
20201125_091934 (flashdancehostname01:stage03_hmc_update.sh): -----
SNMP string exist on HMC: 172.23.1.246
20201125_103056 (flashdancehostname01:stage03_hmc_update.sh): -----
20201125_103056 (flashdancehostname01:stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_hmc update -
install -l hmc1 -f /BCU_share/FP8_FP4/firmware/hmc/CR8/image/imports returned '0'.
20201125_103056 (flashdancehostname01:stage03_hmc_update.sh): Starting date: Wed Nov 25 09:19:27 IST 2020 Ending Date: Wed Nov
25 10:30:56 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 3 - Updating HMC

If no error repeat the command to apply the rest of the updates.

### 3. Command: Run the update again to apply the rest of the updates.

```
./stage03_hmc_update.sh install hmc1
```

Example Output:

```
$ ./stage03_hmc_update.sh install hmc1
20201014_212617 (stage03_hmc_update.sh): Starting date: Wed Oct 14 21:26:17 EDT 2020.
20201014_212618 (stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmnds/appl_ctrl_hmc update -validate -l hmc0 -f
/BCU_share/FP7_FP3/firmware/hmc/CR8/image/imports.
20201014_212618 (stage03_hmc_update.sh): -----
20201014_212623 (stage03_hmc_update.sh): -----
20201014_212623 (stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmnds/appl_ctrl_hmc update -validate -l hmc0 -f
/BCU_share/FP7_FP3/firmware/hmc/CR8/image/imports returned '1'.
20201014_212623 (stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmnds/appl_ctrl_hmc update -validate -l hmc1 -f
/BCU_share/FP7_FP3/firmware/hmc/CR8/image/imports.
20201014_212623 (stage03_hmc_update.sh): -----
20201014_212630 (stage03_hmc_update.sh): -----
20201014_212630 (stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmnds/appl_ctrl_hmc update -validate -l hmc1 -f
/BCU_share/FP7_FP3/firmware/hmc/CR8/image/imports returned '0'.
[14 Oct 2020 21:26:30,336] <4326262 CTRL DEBUG b30i01> /BCU_share/FP7_FP3/firmware/hmc/CR8/image/imports/HMC_Recovery_V9R191_1
is applicable
[14 Oct 2020 21:26:30,336] <4326262 CTRL DEBUG b30i01>
/BCU_share/FP7_FP3/firmware/hmc/CR8/image/imports/HMC_Update_V9R193_SP0_2.iso is applicable
20201014_212630 (stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmnds/appl_ctrl_hmc update -install -l hmc1 -f
/BCU_share/FP7_FP3/firmware/hmc/CR8/image/imports.
20201014_212630 (stage03_hmc_update.sh): -----
Use of uninitialized value in concatenation (.) or string at /opt/ibm/aixappl/pfplayer/lib/Ctrl/Updates/HMC.pm line 504.
SNMP string exist on HMC: 172.24.1.246
20201014_221420 (stage03_hmc_update.sh): -----
20201014_221420 (stage03_hmc_update.sh): Running /opt/ibm/aixappl/pfplayer/bin/icmnds/appl_ctrl_hmc update -install -l hmc1 -f
/BCU_share/FP7_FP3/firmware/hmc/CR8/image/imports returned '0'.
20201014_221420 (stage03_hmc_update.sh): Starting date: Wed Oct 14 21:26:17 EDT 2020 Ending Date: Wed Oct 14 22:14:20 EDT 2020.
```

### 4. Command: Verify the second hmc, labeled hmc1, is updated.

```
appl_ls_hw -l hmc1 -A M_IP_address | sed 's|'|g' | while read ip;do ssh -n hscroot@$ip 'lshmc -V';done
```

Example Output:

```
$ appl_ls_hw -l hmc1 -A M_IP_address | sed 's|'|g' | while read ip;do ssh -n hscroot@$ip 'lshmc -V';done
"version= Version: 9
  Release: 1
  Service Pack: 942
HMC Build level 2011270432
MH01810 - HMC V9R1 M930
MH01831 - HMC V9R1 M931
MH01853 - Required fix for HMC V9R1 M910+ to install M940
MH01859 - HMC V9R1 M941
MH01876 - HMC V9R1 M942
", "base_version=V9R1
"
```

## Phase 4: Verification of the update.

1. Command: Verify HMC firmware levels in the lines with `FWLevel` using query command below:

```
appl_ls_hw -r hmc -A Logical_name | xargs -n 1 ${PL_ROOT}/bin/icmds/appl_ctrl_hmc query -l
```

### Example Output: (for CR8 to CR9 Models)

```
$ appl_ls_hw -r hmc -A Logical_name | xargs -n 1 ${PL_ROOT}/bin/icmds/appl_ctrl_hmc query -l
Details:
FWLevel: 9.1.942
ManagedSystems: ["FDNstby-8286-42A-SN2168C1V","Stby-Data-8284-22A-SN216B42V","Data1-8284-22A-SN216B47V","Data2-8284-22A-SN216B44V","FDNactive-8286-42A-SN2168BFV"]
Architecture: x86_64
HostName: dsshmc49
ArchitectureManaged: ppc
SerialNumber: 840A7BD
MachineType: 7042
Corporate_IP: 9.26.18.135
Model: CR8
EficesApplied: ["MH01810 - HMC V9R1 M930
","MH01831 - HMC V9R1 M931
","MH01853 - Required fix for HMC V9R1 M910+ to install M940
","MH01859 - HMC V9R1 M941
","MH01876 - HMC V9R1 M942
"]
PLLogicalName: hmc0
Status: Online
Description: Hardware Management Console
AccessState: Unlocked
IPv4Address: ["172.23.1.245","172.16.0.1","9.26.18.135"]
Manufacturer: IBM
TotalManagedSystems: 5
Details:
Architecture: x86_64
FWLevel: 9.1.942
IPv4Address: ["172.23.1.246","172.17.0.2","9.26.18.136"]
PLLogicalName: hmc1
ManagedSystems: ["FDNstby-8286-42A-SN2168C1V","Stby-Data-8284-22A-SN216B42V","FDNactive-8286-42A-SN2168BFV","Data2-8284-22A-SN216B44V","Data1-8284-22A-SN216B47V"]
Description: Hardware Management Console
Status: Online
TotalManagedSystems: 5
HostName: dsshmc50
AccessState: Unlocked
Manufacturer: IBM
Corporate_IP: 9.26.18.136
SerialNumber: 21E717C
Model: CR8
EficesApplied: ["MH01810 - HMC V9R1 M930
","MH01831 - HMC V9R1 M931
","MH01853 - Required fix for HMC V9R1 M910+ to install M940
","MH01859 - HMC V9R1 M941
","MH01876 - HMC V9R1 M942
"]
MachineType: 7042
ArchitectureManaged: ppc
```

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

### Stage 4 Description

New in V1.1 FP4 are tools to help manage the update risks related to updating storage enclosures. The script './stage04\_storage\_update.sh' replaces the complexities related to managing storage updates.

The following will illustrate the storage enclosure update strategy using a 12.5 DN V1.1 system. Note that the order of the storage ids will not necessarily be guaranteed to match the order within the racks.

1. The following command shows a listing of V1.1 Storage Enclosures. Using a 12.5 DN example here helps illustrate the strategy. V1.0 customers can have up to 18.5 DN and V1.1 customers may have up to 24.5 DN which both represent 7 racks or frames worth of equipment.

```
$ appl_ls_hw -r storage -M
```

| NAME      | HOSTNAME     | IP           | MODULE | STATUS | DESCRIPTION                      |
|-----------|--------------|--------------|--------|--------|----------------------------------|
| storage0  | pdoaV7_00    | 172.23.1.181 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage1  | pdoaFlash_00 | 172.23.1.182 |        | Online | IBM FlashSystem 900 Storage      |
| storage2  | pdoaV7_01    | 172.23.1.183 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage3  | pdoaFlash_01 | 172.23.1.184 |        | Online | IBM FlashSystem 900 Storage      |
| storage4  | pdoaV7_02    | 172.23.1.185 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage5  | pdoaFlash_02 | 172.23.1.186 |        | Online | IBM FlashSystem 900 Storage      |
| storage6  | pdoaV7_03    | 172.23.1.187 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage7  | pdoaFlash_03 | 172.23.1.188 |        | Online | IBM FlashSystem 900 Storage      |
| storage8  | pdoaV7_04    | 172.23.1.189 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage9  | pdoaFlash_04 | 172.23.1.190 |        | Online | IBM FlashSystem 900 Storage      |
| storage10 | pdoaV7_05    | 172.23.1.191 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage11 | pdoaFlash_05 | 172.23.1.192 |        | Online | IBM FlashSystem 900 Storage      |
| storage12 | pdoaV7_06    | 172.23.1.193 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage13 | pdoaFlash_06 | 172.23.1.194 |        | Online | IBM FlashSystem 900 Storage      |
| storage14 | pdoaV7_07    | 172.23.1.195 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage15 | pdoaFlash_07 | 172.23.1.196 |        | Online | IBM FlashSystem 900 Storage      |
| storage16 | pdoaV7_08    | 172.23.1.197 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage17 | pdoaFlash_08 | 172.23.1.198 |        | Online | IBM FlashSystem 900 Storage      |
| storage18 | pdoaV7_09    | 172.23.1.199 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage19 | pdoaFlash_09 | 172.23.1.200 |        | Online | IBM FlashSystem 900 Storage      |
| storage20 | pdoaV7_10    | 172.23.1.201 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage21 | pdoaFlash_10 | 172.23.1.202 |        | Online | IBM FlashSystem 900 Storage      |
| storage22 | pdoaV7_11    | 172.23.1.203 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage23 | pdoaFlash_11 | 172.23.1.204 |        | Online | IBM FlashSystem 900 Storage      |
| storage24 | pdoaV7_12    | 172.23.1.205 |        | Online | IBM Storwize V7000 FAB-1 Storage |
| storage25 | pdoaFlash_12 | 172.23.1.206 |        | Online | IBM FlashSystem 900 Storage      |

2. The platform layer can update all storage enclosures of the same type in parallel. However, to reduce the risks of having to replace canisters during the update there is a goal to limit the number of enclosures updated at any single time. A good rule of thumb is to update only 3 or 4 enclosures at a time. A further strategy to reduce the impact of errors that could hit in the field is to run a test run on the Foundation Enclosures first.
3. Note that the enclosures used for the single test and those assigned to the groups are more or less arbitrary. The ratio of enclosures to update is picked assuming that at any one time it is possible for 1 of 3 or 1 of 4 enclosure may experience a problem that could require support to intervene or canister replacements. Customers who are less risk adverse may decide to increase the # of enclosures per parallel cycle to help reduce the time. For the model below, expect to take about an hour for each update expect to take 8 hours for the example below.

#### STAGE 4 - Storage firmware update for both V7000 and FlashSystem

4. From a planning perspective it is possible to run the updates while the system is running with low I/O requirements and then put the system back into full production when that update completes. It is not necessary to update all enclosures between full production usage.
  - a. Foundation Updates V7000/Flash900 update test.
    - i. Update 1: storage0
    - ii. Update 2: storage1 [ V1.1 customers only ]
  - b. First round of core updates are dedicated for the V7000 enclosures. The model simply takes the first N enclosures that have not yet been updated. For V1.0 we use N=3 and for V1.1 we use N=4. Below we see N=4 or 4 enclosures per update.
    - i. Update 3: storage2,storage4,storage6,storage8
    - ii. Update 4: storage10,storage12,storage14,storage16
    - iii. Update 5: storage18,storage20,storage22,storage24
  - c. Second round of core updates take care of Flash900 enclosures. V1.1 customers only. This strategy updates 4 enclosures per update.s
    - i. Update 6: storage3,storage5,storage7,storage9
    - ii. Update 7: storage11,storage13,storage15,storage17
    - iii. Update 8: storage19,storage21,storage23,storage25

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

### Phases/Steps

- Stage 4 Phase 1: Preparation
- Stage 4 Phase 2: V7000 and Flash900 Updates
- Stage 4 Phase 3: Validation

### Outage Requirements

- No outage requirements for this stage, however an outage could be taken. Storage firmware upgrades can be done when there is minimal workload on the system. System can be up and running.
- During the update however, the I/O capacity of the appliance will be reduced while storage canisters are rebooted to apply updated firmware.

### Time Per Phase/Step

- Phase 1: The commands take a few minutes to run per enclosure. If there are any issues with the storage allow time to address any issues that appear in the eventlog.
- Phase 2:
  - Using Default Risk Option
    - V1.1 Foundation V7000 90 Mins
    - V1.1 Data V7000 (sets of 3) 90 Min / set.
    - V1.1 Foundation Flash900 90 Mins
    - V1.1 Data Flash900 (sets of 3) 90 Min /set.
- Phase 3: 10 Minutes.

### Risk Mitigation

- V7000 gen1, gen2 and Flash900 storage enclosures support concurrent updates however the I/O workload needs to be low to minimal.
- With a default risk profile. Only some of the storage will be updated at any point in time. This reduces the risk of hitting issues in the field impacting large number of enclosure canisters which could require canister replacements.

### Backout Options

- Firmware downgrades are not recommended and may not be possible with Storage Enclosures. Once the firmware is updated on the storage enclosures there will be no reasonable way to return to older firmware.

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

## Phase 1: Preparation

1. Login to a screen or vtmenu console session as root on the management host.
2. Command: Change the working directory.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

3. Command: Run the following to check the eventlog status. Contact IBM support to help resolve errors. This step is a repeat of steps taken in Stage 1.

```
./check_storage.sh
```

### Example Output:

```
$ ./check_storage.sh
20201204_225608 (flashdancehostname01:check_storage.sh): Checking the storage status.
**** 172.23.1.181 ****
**** 172.23.1.182 ****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
secondary_object_type secondary_object_id
134 200214060932 internal 0 alert no 085153 3087 Quorum device error
**** 172.23.1.183 ****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
934 201204224810 io_grp 0 io_grp0 alert no 072901 1052 Inter-canister PCIE
link degraded
**** 172.23.1.184 ****
**** 172.23.1.185 ****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
847 200214072150 enclosure 1 alert no 045102 1260 SAS cable fault type 2
**** 172.23.1.186 ****

(1) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

4. Command: Use the following command to check to see if there are any battery charging cycles running or End of Life warnings. If any batteries show 'yes' for the end\_of\_life\_warning open a PMR to have the battery replaced.

```
./check_storage_battery.sh
```

### Example Output:

```
$ ./check_storage_battery.sh
20201204_230314 (Flashdancehostname01:check_storage_battery.sh): Checking the storage status.
**** 172.23.1.181 ****
enclosure_id battery_id status charging_status recondition_needed percent_charged end_of_life_warning
2 1 online idle no 100 no
2 2 online idle no 100 no
**** 172.23.1.182 ****
enclosure_id battery_id status charging_status recondition_needed percent_charged end_of_life_warning
1 1 online idle no 96 no
1 2 online idle no 91 no
**** 172.23.1.183 ****
enclosure_id battery_id status charging_status recondition_needed percent_charged end_of_life_warning
1 1 online idle no 100 no
1 2 online idle no 100 no
**** 172.23.1.184 ****
enclosure_id battery_id status charging_status recondition_needed percent_charged end_of_life_warning
1 1 online idle no 100 no
1 2 online idle no 91 no
**** 172.23.1.185 ****
enclosure_id battery_id status charging_status recondition_needed percent_charged end_of_life_warning
2 1 online idle no 100 no
2 2 online idle no 100 no
**** 172.23.1.186 ****
enclosure_id battery_id status charging_status recondition_needed percent_charged end_of_life_warning
1 1 online idle no 100 no
1 2 online idle no 95 no

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

5. Command: Run the following validation steps on all storage enclosures. Enclosures that are already updated will not appear in the list. Enclosures that fail the storage test update procedure will have non-zero return codes.

```
./stage04_storage_update.sh validate
```

Example output:

```
$ ./stage04_storage_update.sh validate
20201204_230753 (flashdancehostname01:stage04_storage_update.sh): Starting date: Fri Dec 4 23:07:53 IST 2020.
20201204_230801 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmcs/appl_ctrl_storage_update -validate -l storage0,storage2,storage4 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image -t 8.2.1.11'
STORAGE:storage2:172.23.1.183:0:
STORAGE:storage0:172.23.1.181:0:
STORAGE:storage4:172.23.1.185:0:
20201204_231003 (flashdancehostname01:stage04_storage_update.sh): Ran command
'/opt/ibm/aixappl/pflayer/bin/icmcs/appl_ctrl_storage_update -validate -l storage0,storage2,storage4 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image -t 8.2.1.11' with rc='0'.
20201204_231003 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmcs/appl_ctrl_storage_update -validate -l storage1,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7'
STORAGE:storage5:172.23.1.186:0:
STORAGE:storage3:172.23.1.184:0:
STORAGE:storage1:172.23.1.182:0:
20201204_231221 (flashdancehostname01:stage04_storage_update.sh): Ran command
'/opt/ibm/aixappl/pflayer/bin/icmcs/appl_ctrl_storage_update -validate -l storage1,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7' with rc='0'.
20201204_231221 (flashdancehostname01:stage04_storage_update.sh): Storage Status Lines:
0 0 0 0 0
20201204_231221 (flashdancehostname01:stage04_storage_update.sh): Starting date: Fri Dec 4 23:07:53 IST 2020 Ending Date: Fri
Dec 4 23:12:21 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

- a. If there is an error use the following to collect and compress the pflayer logs in /BCU\_share/support/FP8\_FP4/log/pflayer and provide this tgz file to support.

```
./getFPLogs.sh Stage04_Validate
```

Example output:

```
$ ./getFPLogs.sh Stage04_Validate
20201204_231427 (flashdancehostname01:getFPLogs.sh): Starting date: Fri Dec 4 23:14:27 IST 2020.
20201204_231427 (flashdancehostname01:getFPLogs.sh): Creating compressed file
/BCU_share/support/FP8_FP4/log/pflayer/20201204_231427_Stage04_Validate_BCU_share_aixappl.tgz...
```

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

6. Command: If there are no error run the prepare steps on all enclosures. `./stage04_storage_update.sh prepare`. This step will re-run the validation and will fail on any validation errors.

```
./stage04_storage_update.sh prepare
```

Example output:

```
$ ./stage04_storage_update.sh prepare
20201204_231837 (flashdancehostname01:stage04_storage_update.sh): Starting date: Fri Dec 4 23:18:37 IST 2020.
20201204_231845 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -validate -l storage0,storage2,storage4 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image -t 8.2.1.11'
STORAGE:storage0:172.23.1.181:0:
STORAGE:storage2:172.23.1.183:0:
STORAGE:storage4:172.23.1.185:0:
20201204_232046 (flashdancehostname01:stage04_storage_update.sh): Ran command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -validate -l storage0,storage2,storage4 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image -t 8.2.1.11' with rc='0'.
20201204_232046 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -validate -l storage1,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7'
STORAGE:storage5:172.23.1.186:0:
STORAGE:storage1:172.23.1.182:0:
STORAGE:storage3:172.23.1.184:0:
20201204_232305 (flashdancehostname01:stage04_storage_update.sh): Ran command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -validate -l storage1,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7' with rc='0'.
20201204_232305 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -prepare -l storage0,storage2,storage4 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image'
STORAGE:storage4:172.23.1.185:0:
STORAGE:storage2:172.23.1.183:0:
STORAGE:storage0:172.23.1.181:0:
20201204_232345 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -prepare -l storage1,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image'
STORAGE:storage1:172.23.1.182:0:
STORAGE:storage3:172.23.1.184:0:
STORAGE:storage5:172.23.1.186:0:
20201204_232511 (flashdancehostname01:stage04_storage_update.sh): Storage Status Lines:
0 0 0 0 0 0
20201204_232511 (flashdancehostname01:stage04_storage_update.sh): Starting date: Fri Dec 4 23:18:37 IST 2020 Ending Date: Fri
Dec 4 23:25:11 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

- a. If there is an error use `./getFPLogs.sh Stage04_Prep` to collect and compress the pflayer logs in `/BCU_share/support/FP8_FP4/log/pflayer` and provide this tgz file to support.
- b. Otherwise proceed to the update Phase.

## Phase 2: Update V7000 and Flash900 Firmware

In this fixpack the `./stage04_storage_update.sh` script has multiple options for the update. It will run steps in order. Any error between processes will stop the update. The update can be resumed and will skip enclosures that have updated already. The recommended method is to follow the default model which reduces the number of enclosures at risk at any point in time.

- default
  - Validate All
  - Prepare All
  - Update Foundation V7000.
    - Enclosure and/or disks.
  - Update Data V7000s (3 at a time until all V7Ks are updated)
    - Enclosure and/or disks.
  - Update Foundation Flash
  - Update Data Flash (3 at a time until all V7Ks are updated.)
- doall
  - Validate All
  - Prepare All
  - Update All V7000s in parallel.
    - Enclosure and/or disks.
  - Update All Flash900s in parallel.
- storageN
  - Validate storageN
  - Prepare storageN
  - Update storageN.
    - May need to use `PDOA_OVERRIDE=Y` if validation fails on that enclosure.
    - If V7000 will update enclosure and/or disks.
    - Does not allow specifying multiple devices at the same time.

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

1. Command: The following command will update all storage enclosures using the default risk model.

```
./stage04_storage_update.sh default install
```

### Example Output:

```
$ ./stage04_storage_update.sh default install
20201205_024614 (flashdancehostname01:stage04_storage_update.sh): Starting date: Sat Dec 5 02:46:14 IST 2020.
20201205_024622 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -validate -l storage0,storage2,storage4 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image -t 8.2.1.11'
STORAGE:storage0:172.23.1.181:0:
STORAGE:storage2:172.23.1.183:0:
STORAGE:storage4:172.23.1.185:0:
20201205_024825 (flashdancehostname01:stage04_storage_update.sh): Ran command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -validate -l storage0,storage2,storage4 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image -t 8.2.1.11' with rc='0'.
20201205_024825 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -validate -l storage1,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7'
STORAGE:storage3:172.23.1.184:0:
STORAGE:storage1:172.23.1.182:0:
STORAGE:storage5:172.23.1.186:0:
20201205_025057 (flashdancehostname01:stage04_storage_update.sh): Ran command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -validate -l storage1,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7' with rc='0'.
20201205_025057 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -prepare -l storage0,storage2,storage4 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image'
STORAGE:storage4:172.23.1.185:0:
STORAGE:storage0:172.23.1.181:0:
STORAGE:storage2:172.23.1.183:0:
20201205_025136 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -prepare -l storage1,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image'
STORAGE:storage3:172.23.1.184:0:
STORAGE:storage5:172.23.1.186:0:
STORAGE:storage1:172.23.1.182:0:
20201205_025309 (flashdancehostname01:stage04_storage_update.sh): Running V7000 update to '8.2.1.11' for 'storage0'.
20201205_025309 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -install -l storage0 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image -t 8.2.1.11'
Details:
FWLevel: 8.2.1.11
SerialNumber: 782070G
Status: Online
Manufacturer: IBM
HostName: flashdancehostnameV7_00
PLLogicalName: storage0
Description: IBM Storwize V7000 FAB-1 Storage
IPv4Address: ["172.23.1.181"]
FWBuild: 147.20.2007010940000
AccessState: Unlocked
Model: 524
MachineType: 2076
STORAGE:storage0:172.23.1.181:0:
Details:
FWBuild: 147.20.2007010940000
AccessState: Unlocked
Model: 524
MachineType: 2076
Description: IBM Storwize V7000 FAB-1 Storage
IPv4Address: ["172.23.1.181"]
PLLogicalName: storage0
HostName: flashdancehostnameV7_00
Manufacturer: IBM
Status: Online
FWLevel: 8.2.1.11
SerialNumber: 782070G
STORAGE:storage0:172.23.1.181:0:Storage firmware update is successful.
20201205_041029 (flashdancehostname01:stage04_storage_update.sh): Ran V7000 update for '8.2.1.11'. Returned rc='0'.
20201205_041029 (flashdancehostname01:stage04_storage_update.sh): Running V7000 update to '8.2.1.11' for 'storage2,storage4'.
20201205_041029 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage_update -install -l storage2,storage4 -f
/BCU_share/FP8_FP4/firmware/storage/2076/image -t 8.2.1.11'
Details:
IPv4Address: ["172.23.1.185"]
Model: 524
HostName: flashdancehostnameV7_02
MachineType: 2076
AccessState: Unlocked
FWBuild: 147.20.2007010940000
Manufacturer: IBM
PLLogicalName: storage4
```

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

```
Status: Online
FWLevel: 8.2.1.11
SerialNumber: 782070P
Description: IBM Storwize V7000 FAB-1 Storage
Details:
Status: Online
FWLevel: 8.2.1.11
Description: IBM Storwize V7000 FAB-1 Storage
SerialNumber: 78207EX
IPv4Address: ["172.23.1.183"]
Model: 524
AccessState: Unlocked
HostName: flashdancehostnameV7_01
MachineType: 2076
FWBuild: 147.20.2007010940000
Manufacturer: IBM
PLLogicalName: storage2
STORAGE:storage4:172.23.1.185:0:
STORAGE:storage2:172.23.1.183:0:
Details:
Status: Online
FWLevel: 8.2.1.11
Description: IBM Storwize V7000 FAB-1 Storage
SerialNumber: 782070P
IPv4Address: ["172.23.1.185"]
Model: 524
FWBuild: 147.20.2007010940000
AccessState: Unlocked
HostName: flashdancehostnameV7_02
MachineType: 2076
Manufacturer: IBM
PLLogicalName: storage4
Details:
AccessState: Unlocked
MachineType: 2076
HostName: flashdancehostnameV7_01
FWBuild: 147.20.2007010940000
IPv4Address: ["172.23.1.183"]
Model: 524
PLLogicalName: storage2
Manufacturer: IBM
FWLevel: 8.2.1.11
Status: Online
Description: IBM Storwize V7000 FAB-1 Storage
SerialNumber: 78207EX
STORAGE:storage4:172.23.1.185:1:Storage firmware update failed.
STORAGE:storage2:172.23.1.183:0:Storage firmware update is successful.
20201205_052803 (flashdancehostname01:stage04_storage_update.sh): Ran V7000 update for '8.2.1.11'. Returned rc='1'.
20201205_052803 (flashdancehostname01:stage04_storage_update.sh): Storage Status Lines:
0 0 0 0 1 0
20201205_052803 (flashdancehostname01:stage04_storage_update.sh): Starting date: Sat Dec 5 02:46:14 IST 2020 Ending Date: Sat
Dec 5 05:28:03 IST 2020.
(1) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

Examine the line after *Storage Status Lines*: which contains a string of 0's and/or 1's. If a '1' appears there is a failure and there should be a line that says '*update failed*' earlier in the log. During testing it was revealed that the return code for the overall script does not reliably return a 0 or 1.

If there is no failure proceed to the next step.

If a failure occurs, capture the logs and contact IBM support.

a. Command: To collect platform layer logs run the following command.

```
./getFPLogs.sh Stage04_apply_failed_185
```

Example output:

```
20201205_181001 (flashdancehostname01:getFPLogs.sh): Starting date: Sat Dec 5 18:10:01 IST 2020.
20201205_181001 (flashdancehostname01:getFPLogs.sh): Creating compressed file
/BCU_share/support/FP8_FP4/log/pflayer/20201205_181001_Stage04_Apply_Flash_Succeeded_BCU_share_aixappl.tgz.
```

b. Upload the contents of the of the /BCU\_share/support/FP8\_FP4/log directory to IBM Support.

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

- c. Command: Once resolved, re-run the same command to resume the update.

```
./stage04_storage_update.sh default install
```

### Example Output:

```
$ ./stage04_storage_update.sh default install
20201205_055340 (flashdancehostname01:stage04_storage_update.sh): Starting date: Sat Dec 5 05:53:40 IST 2020.
20201205_055349 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage update -validate -l storagel,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7'
STORAGE:storage3:172.23.1.184:0:
STORAGE:storage1:172.23.1.182:0:
STORAGE:storage5:172.23.1.186:0:
20201205_055610 (flashdancehostname01:stage04_storage_update.sh): Ran command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage update -validate -l storagel,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7' with rc='0'.
20201205_055610 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage update -prepare -l storagel,storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image'
STORAGE:storage3:172.23.1.184:0:
STORAGE:storage5:172.23.1.186:0:
STORAGE:storage1:172.23.1.182:0:
20201205_055735 (flashdancehostname01:stage04_storage_update.sh): Running Flash update to '1.5.2.7' for 'storagel'.
20201205_055735 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage update -install -l storagel -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7'
Details:
  PLLogicalName: storagel
  IPv4Address: ["172.23.1.182"]
  Manufacturer: IBM
  FWBuild: 126.1.2002191825000.468.195
  Description: IBM FlashSystem 900 Storage
  HostName: flashdancehostnameFlash_00
  FWLevel: 1.5.2.7
  AccessState: Unlocked
  Status: Online
  Model: AE2
  MachineType: 9840
  SerialNumber: 1351359
STORAGE:storage1:172.23.1.182:0:
Details:
  Description: IBM FlashSystem 900 Storage
  FWBuild: 126.1.2002191825000.468.195
  Manufacturer: IBM
  FWLevel: 1.5.2.7
  HostName: flashdancehostnameFlash_00
  PLLogicalName: storagel
  IPv4Address: ["172.23.1.182"]
  Status: Online
  MachineType: 9840
  SerialNumber: 1351359
  Model: AE2
  AccessState: Unlocked
STORAGE:storage1:172.23.1.182:0:Storage firmware update is successful.
20201205_072735 (flashdancehostname01:stage04_storage_update.sh): Ran Flash update for '1.5.2.7'. Returned rc='0'.
20201205_072735 (flashdancehostname01:stage04_storage_update.sh): Running Flash update to '1.5.2.7' for 'storage3,storage5'.
20201205_072735 (flashdancehostname01:stage04_storage_update.sh): Running command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_storage update -install -l storage3,storage5 -f
/BCU_share/FP8_FP4/firmware/storage/AE2/image -t 1.5.2.7'
Details:
  Status: Online
  Manufacturer: IBM
  SerialNumber: 1351350
  Model: AE2
  FWLevel: 1.5.2.7
  FWBuild: 126.1.2002191825000.468.195
  Description: IBM FlashSystem 900 Storage
  HostName: flashdancehostnameFlash_01
  MachineType: 9840
  PLLogicalName: storage3
  AccessState: Unlocked
  IPv4Address: ["172.23.1.184"]
Details:
  SerialNumber: 1351360
  Manufacturer: IBM
  Status: Online
  FWLevel: 1.5.2.7
  Model: AE2
  HostName: flashdancehostnameFlash_02
  MachineType: 9840
  Description: IBM FlashSystem 900 Storage
  FWBuild: 126.1.2002191825000.468.195
  IPv4Address: ["172.23.1.186"]
  AccessState: Unlocked
  PLLogicalName: storage5
```

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

```
STORAGE:storage3:172.23.1.184:0:
STORAGE:storage5:172.23.1.186:0:
Details:
  PLLogicalName: storage3
  AccessState: Unlocked
  IPv4Address: ["172.23.1.184"]
  FWBuild: 126.1.2002191825000.468.195
  Description: IBM FlashSystem 900 Storage
  HostName: flashdancehostnameFlash_01
  MachineType: 9840
  FWLevel: 1.5.2.7
  Model: AE2
  Status: Online
  SerialNumber: 1351350
  Manufacturer: IBM
Details:
  HostName: flashdancehostnameFlash_02
  MachineType: 9840
  FWBuild: 126.1.2002191825000.468.195
  Description: IBM FlashSystem 900 Storage
  AccessState: Unlocked
  IPv4Address: ["172.23.1.186"]
  PLLogicalName: storage5
  Status: Online
  Manufacturer: IBM
  SerialNumber: 1351360
  Model: AE2
  FWLevel: 1.5.2.7
STORAGE:storage3:172.23.1.184:0:
STORAGE:storage5:172.23.1.186:0:
Details:
  Manufacturer: IBM
  SerialNumber: 1351350
  Status: Online
  Model: AE2
  FWLevel: 1.5.2.7
  Description: IBM FlashSystem 900 Storage
  FWBuild: 126.1.2002191825000.468.195
  HostName: flashdancehostnameFlash_01
  MachineType: 9840
  PLLogicalName: storage3
  IPv4Address: ["172.23.1.184"]
  AccessState: Unlocked
Details:
  FWLevel: 1.5.2.7
  Model: AE2
  Status: Online
  SerialNumber: 1351360
  Manufacturer: IBM
  AccessState: Unlocked
  IPv4Address: ["172.23.1.186"]
  PLLogicalName: storage5
  HostName: flashdancehostnameFlash_02
  MachineType: 9840
  FWBuild: 126.1.2002191825000.468.195
  Description: IBM FlashSystem 900 Storage
STORAGE:storage3:172.23.1.184:0:Storage firmware update is successful.
STORAGE:storage5:172.23.1.186:0:Storage firmware update is successful.
20201205_090304 (flashdancehostname01:stage04_storage_update.sh): Ran Flash update for '1.5.2.7'. Returned rc='0'.
20201205_090304 (flashdancehostname01:stage04_storage_update.sh): Storage Status Lines:
0 0 0 0 0
20201205_090304 (flashdancehostname01:stage04_storage_update.sh): Starting date: Sat Dec 5 05:53:40 IST 2020 Ending Date:
Sat Dec 5 09:03:04 IST 2020.
You have mail in /usr/spool/mail/root

(1) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

5. After the update is complete, a new feature on the V7000s is enabled call “Cloud Call Home”. The architecture of PDOA is not designed to work with this feature and all of the V7000s will show an error indicating a failure to connect to cloud call home servers. This feature needs to be disabled. PDOA will continue to use the e-mail based call home options for V7000 and Flash900 storage enclosures.

- a. Command: Verify the Cloud Call Home feature is enabled.

```
appl_ls_hw -r storage -A M_IP_address,Machine_type < /dev/null | grep "2076" | sed 's/||g' | cut -d, -f1 | while read ip;do  
echo " *** ${ip} ***";ssh -n superuser@${ip} 'lscloudcallhome';done
```

### Example Output:

```
$ appl_ls_hw -r storage -A M_IP_address,Machine_type < /dev/null | grep "2076" | sed 's/||g' | cut -d, -f1 | while read  
ip;do echo " *** ${ip} ***";ssh -n superuser@${ip} 'lscloudcallhome';done  
*** 172.23.1.181 ***  
status enabled  
connection error  
error_sequence_number 1261  
last_success  
last_failure 210212212923  
*** 172.23.1.183 ***  
status enabled  
connection error  
error_sequence_number 1571  
last_success  
last_failure 210212213129  
*** 172.23.1.185 ***  
status enabled  
connection error  
error_sequence_number 1545  
last_success  
last_failure 210212213426
```

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

### b. Command: Disable the Cloud Call Home Feature.

```
appl_ls_hw -r storage -A M_IP_address,Machine_type < /dev/null | grep "2076" | sed 's|'||g' | cut -d, -f1 | while read ip;do  
echo " *** ${ip} ***";ssh -n superuser@${ip} 'chcloudcallhome -disable';done
```

#### Example Output:

```
$ appl_ls_hw -r storage -A M_IP_address,Machine_type < /dev/null | grep "2076" | sed 's|'||g' | cut -d, -f1 | while read  
ip;do echo " *** ${ip} ***";ssh -n superuser@${ip} 'chcloudcallhome -disable';done  
  
*** 172.23.1.181 ***  
*** 172.23.1.183 ***  
*** 172.23.1.185 ***
```

### c. Verify the Cloud Call Home Features are now disabled.

```
appl_ls_hw -r storage -A M_IP_address,Machine_type < /dev/null | grep "2076" | sed 's|'||g' | cut -d, -f1 | while read ip;do  
echo " *** ${ip} ***";ssh -n superuser@${ip} 'lscloudcallhome';done
```

#### Example Output:

```
$ appl_ls_hw -r storage -A M_IP_address,Machine_type < /dev/null | grep "2076" | sed 's|'||g' | cut -d, -f1 | while read  
ip;do echo " *** ${ip} ***";ssh -n superuser@${ip} 'lscloudcallhome';done  
*** 172.23.1.181 ***  
status disabled  
connection  
error_sequence_number  
last_success  
last_failure 210212212923  
*** 172.23.1.183 ***  
status disabled  
connection  
error_sequence_number  
last_success  
last_failure 210212213129  
*** 172.23.1.185 ***  
status disabled  
connection  
error_sequence_number  
last_success  
last_failure 210212213426  
  
(0) root @ flashdancehostname01: 7.1.0.0: /
```

## Phase 3: Validation

1. Command: Check the version status. V7000 levels should show 8.2.1.11 and Flash900 should show 1.5.2.7.

```
appl_ls_hw -r storage -A Logical_name,M_IP_address,FW_level,Description
```

Example Output:

```
$ appl_ls_hw -r storage -A Logical_name,M_IP_address,FW_level,Description
"storage0","172.23.1.181","8.2.1.11","IBM Storwize V7000 FAB-1 Storage"
"storage1","172.23.1.182","1.5.2.7","IBM FlashSystem 900 Storage"
"storage2","172.23.1.183","8.2.1.11","IBM Storwize V7000 FAB-1 Storage"
"storage3","172.23.1.184","1.5.2.7","IBM FlashSystem 900 Storage"
"storage4","172.23.1.185","8.2.1.11","IBM Storwize V7000 FAB-1 Storage"
"storage5","172.23.1.186","1.5.2.7","IBM FlashSystem 900 Storage"
```

(0) root @ flashdancehostname01: 7.1.0.0: /

2. Command: Check storage status.

```
./check_storage.sh
```

Example Output:

```
$ ./check_storage.sh
20201205_181914 (flashdancehostname01:check_storage.sh): Checking the storage status.
***** 172.23.1.181 *****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
1261 201205035431 cluster flashdancehostnameV7_00 alert no 989007 3201 Unable to
send to the cloud callhome servers
***** 172.23.1.182 *****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
secondary_object_type secondary_object_id
134 200214060932 internal 0 alert no 085153 3087 Quorum device error
***** 172.23.1.183 *****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
1571 201205051121 cluster flashdancehostnameV7_01 alert no 989007 3201 Unable to
send to the cloud callhome servers
1596 201205180454 io_grp 0 io_grp0 alert no 072901 1052 Inter-
canister PCIe link degraded
***** 172.23.1.184 *****
***** 172.23.1.185 *****
sequence_number last_timestamp object_type object_id object_name copy_id status fixed event_id error_code description
1530 201205042358 enclosure 1 alert no 045102 1260 SAS cable
fault type 2
1545 201205051349 cluster flashdancehostnameV7_02 alert no 989007 3201 Unable to
send to the cloud callhome servers
***** 172.23.1.186 *****
```

## STAGE 4 - Storage firmware update for both V7000 and FlashSystem

### 3. Check Fiber Channel Path Status.

```
./check_fcpaths.sh
```

#### Example Output:

```
$ ./check_fcpaths.sh
20201205_182125 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 5 18:21:25 IST 2020.
20201205_182125 (flashdancehostname01:check_fcpaths.sh): Collecting current histogram.
HOSTS -----
flashdancehostname01
-----
14 fscsi0:Enabled
14 fscsi2:Enabled
14 fscsi4:Enabled
14 fscsi6:Enabled

HOSTS -----
flashdancehostname03
-----
10 fscsi0:Enabled
10 fscsi2:Enabled
10 fscsi4:Enabled
10 fscsi6:Enabled

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
42 fscsi10:Enabled
42 fscsi11:Enabled
42 fscsi12:Enabled
42 fscsi13:Enabled
42 fscsi14:Enabled
42 fscsi15:Enabled
42 fscsi8:Enabled
42 fscsi9:Enabled

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
160 fscsi0:Enabled
160 fscsi12:Enabled
160 fscsi13:Enabled
160 fscsi14:Enabled
160 fscsi15:Enabled
160 fscsi1:Enabled
160 fscsi2:Enabled
160 fscsi3:Enabled
160 fscsi4:Enabled
160 fscsi8:Enabled
20201205_182126 (flashdancehostname01:check_fcpaths.sh): Checking for missing paths.
flashdancehostname01: 0
flashdancehostname03: 0
flashdancehostname06: 0
flashdancehostname02: 0
flashdancehostname04: 0
flashdancehostname07: 0
flashdancehostname05: 0
20201205_182127 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 5 18:21:25 IST 2020 Ending Date: Sat Dec 5
18:21:27 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 5 - SAN switch firmware update

### Stage 5 Description

#### Steps

- Stage 5 Phase 1: Enable FTP
- Stage 5 Phase 2: Switch Validation
- Stage 5 Phase 3: Update the SAN switches.
- Stage 5 Phase 4: Verify the SAN Switch Updates.
- Stage 5 Phase 5: Disable FTP

#### Outage Requirements

- No outage requirements for this stage. One SAN switch for each rack of servers will always be up during the SAN updates.
- During the update however the I/O capacity of the appliance will be reduced while while SAN switches are updated and rebooted to apply updated firmware.

#### Time Per Step

- Stage 5 Phase 1: 10 Minutes
- Stage 5 Phase 2: 10 Minutes
- Stage 5 Phase 3: 120 Minutes (2 hours)
- Stage 5 Phase 4: 10 Minutes
- Stage 5 Phase 5: 10 Minutes

#### Risk Mitigation

- SAN Switch failures are quite uncommon during firmware updates in our experience.
- All PDOA hosts are connected to the storage via two SAN switches with 4 or 5 connections to each SAN switch.

#### Backout Options

- Firmware downgrades are not recommended for SAN switches.

## Phase 1: Enable FTP On Management

SAN switch updates should be done in 2 sets. All even numbered first and then the odd numbered.

1. Login to the management node as a root user. If using screen attach to the fprun or the screen session used to run fixpack commands.
2. Command: Ensure the working directory is correct.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

3. Command: Enable FTP on the management node:  
Due to the changes with the sshd update on the management host it is necessary to use the FTP option to upload the SAN switch firmware image. This will be disabled once the SAN switch update is complete.

Uncomment below line in /etc/inetd.conf file

```
$ grep "[#^]ftp" /etc/inetd.conf
#ftp      stream  tcp6     nowait   root     /usr/sbin/ftpd      ftpd

To:

ftp      stream  tcp6     nowait   root     /usr/sbin/ftpd      ftpd

$ lssrc -t ftp
Service      Command      Description      Status
ftp          /usr/sbin/ftpd  ftpd             inoperative

$ startsrc -t ftp
0513-124 The ftp subserver has been started.
$ lssrc -t ftp
Service      Command      Description      Status
ftp          /usr/sbin/ftpd  ftpd             active
```

4. Command: Verify the root user is not in /etc/ftpusers. The root entry must be removed from this file if it exists.

```
grep -i root /etc/ftpusers
```

Example Output:

```
$ grep -i root /etc/ftpusers
grep: 0652-033 Cannot open /etc/ftpusers.
```

5. Command: Run FTP validation script. The return code should be 0.

```
./check_ftpserver.sh
```

Example Output:

```
$ ./check_ftpserver.sh
20201212_014631 (flashdancehostname01:check_ftpserver.sh): Starting date: Sat Dec 12 01:46:31 IST 2020.
20201212_014631 (flashdancehostname01:check_ftpserver.sh): Checking for ftp service in /etc/inetd.conf.
ftp      stream  tcp6     nowait   root     /usr/sbin/ftpd      ftpd
20201212_014631 (flashdancehostname01:check_ftpserver.sh): Checking to see if ftp service is listed as active.
ftp      /usr/sbin/ftpd      ftpd             active
20201212_014631 (flashdancehostname01:check_ftpserver.sh): FTP Service is active and enabled for root.
20201212_014631 (flashdancehostname01:check_ftpserver.sh): Starting date: Sat Dec 12 01:46:31 IST 2020    Ending Date: Sat Dec 12 01:46:31 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 5 - SAN switch firmware update

## Phase 2: Switch Validation

1. Command: Run the validation check. This will check all of the san switches in the environment.

```
./stage05_san_update.sh validate
```

### Example Output:

```
$ ./stage05_san_update.sh validate
20201212_014825 (flashdancehostname01:stage05_san_update.sh): Starting date: Sat Dec 12 01:48:25 IST 2020.
20201212_014827 (flashdancehostname01:stage05_san_update.sh): Running validate command
'/opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_san update -validate -l san0,san1,san2,san3 -f /BCU_share/FP8_FP4/firmware/san/40-1000569-11/image/v7.4.2e'.
SAN:san1:172.23.1.162:0:Validation of switch with IP 172.23.1.162 Successful
SAN:san3:172.23.1.164:0:Validation of switch with IP 172.23.1.164 Successful
SAN:san0:172.23.1.161:0:Validation of switch with IP 172.23.1.161 Successful
SAN:san2:172.23.1.163:0:Validation of switch with IP 172.23.1.163 Successful
20201212_014845 (flashdancehostname01:stage05_san_update.sh): Ran validate command
'/opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_san update -validate -l san0,san1,san2,san3 -f /BCU_share/FP8_FP4/firmware/san/40-1000569-11/image/v7.4.2e' with r
return code '0'.
20201212_014846 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 12 01:48:46 IST 2020.
20201212_014846 (flashdancehostname01:check_fcpaths.sh): Collecting current histogram.
HOSTS -----
flashdancehostname01
-----
14 fscsi0:Enabled
14 fscsi2:Enabled
14 fscsi4:Enabled
14 fscsi6:Enabled

HOSTS -----
flashdancehostname03
-----
10 fscsi0:Enabled
10 fscsi2:Enabled
10 fscsi4:Enabled
10 fscsi6:Enabled

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
42 fscsi10:Enabled
42 fscsi11:Enabled
42 fscsi12:Enabled
42 fscsi13:Enabled
42 fscsi14:Enabled
42 fscsi15:Enabled
42 fscsi8:Enabled
42 fscsi9:Enabled

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
160 fscsi0:Enabled
160 fscsi12:Enabled
160 fscsi13:Enabled
160 fscsi14:Enabled
160 fscsi15:Enabled
160 fscsi1:Enabled
160 fscsi2:Enabled
160 fscsi3:Enabled
160 fscsi4:Enabled
160 fscsi8:Enabled
20201212_014847 (flashdancehostname01:check_fcpaths.sh): Checking for missing paths.
flashdancehostname01: 0
flashdancehostname03: 0
flashdancehostname02: 0
flashdancehostname04: 0
flashdancehostname06: 0
flashdancehostname07: 0
flashdancehostname05: 0
20201212_014848 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 12 01:48:48 IST 2020 Ending Date: Sat Dec 12 01:48:48 IST 2020.
20201212_014848 (flashdancehostname01:check_ftpserver.sh): Starting date: Sat Dec 12 01:48:48 IST 2020.
20201212_014848 (flashdancehostname01:check_ftpserver.sh): Checking for ftp service in /etc/inetd.conf.
ftp stream tcp6 nowait root /usr/sbin/ftpd ftpd
20201212_014848 (flashdancehostname01:check_ftpserver.sh): Checking to see if ftp service is listed as active.
ftp /usr/sbin/ftpd ftpd active
20201212_014848 (flashdancehostname01:check_ftpserver.sh): FTP Service is active and enabled for root.
20201212_014848 (flashdancehostname01:check_ftpserver.sh): Starting date: Sat Dec 12 01:48:48 IST 2020 Ending Date: Sat Dec 12 01:48:48 IST 2020.
```

## STAGE 5 - SAN switch firmware update

20201212\_014848 (flashdancehostname01:stage05\_san\_update.sh): Starting date: Sat Dec 12 01:48:25 IST 2020 Ending Date: Sat Dec 12 01:48:48 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU\_share/FP8\_FP4/fixpack\_tools/application

## Phase 3: Update the SAN Switches

The stage05\_san\_update.sh script will run the validation and install steps for the san switches in parallel where only one SAN switch per environment is updated at a time. It takes about 2 hours to complete if there are no issues. If there is an error, once the error is addressed the command can be re-run to update the switches that are not yet updated. It is also possible to specify the exact SAN (san#) to update on the command line if necessary.

1. Command: Run the following command to to update the SAN switches.

```
./stage05_san_update.sh install
```

### Example Output:

```
$ ./stage05_san_update.sh install
20201212_015543 (flashdancehostname01:stage05_san_update.sh): Starting date: Sat Dec 12 01:55:43 IST 2020.
20201212_015544 (flashdancehostname01:stage05_san_update.sh): Running validate command
'/opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_san update -validate -l san0,san1,san2,san3 -f /BCU_share/FP8_FP4/firmware/san/40-1000569-11/image/v7.4.2e'.
SAN:san3:172.23.1.164:0:Validation of switch with IP 172.23.1.164 Successful
SAN:san1:172.23.1.162:0:Validation of switch with IP 172.23.1.162 Successful
SAN:san2:172.23.1.163:0:Validation of switch with IP 172.23.1.163 Successful
SAN:san0:172.23.1.161:0:Validation of switch with IP 172.23.1.161 Successful
20201212_015604 (flashdancehostname01:stage05_san_update.sh): Ran validate command
'/opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_san update -validate -l san0,san1,san2,san3 -f /BCU_share/FP8_FP4/firmware/san/40-1000569-11/image/v7.4.2e' with return code '0'.
20201212_015604 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 12 01:56:04 IST 2020.
20201212_015604 (flashdancehostname01:check_fcpaths.sh): Collecting current histogram.
HOSTS -----
flashdancehostname01
-----
14 fscsi0:Enabled
14 fscsi2:Enabled
14 fscsi4:Enabled
14 fscsi6:Enabled

HOSTS -----
flashdancehostname03
-----
10 fscsi0:Enabled
10 fscsi2:Enabled
10 fscsi4:Enabled
10 fscsi6:Enabled

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
42 fscsi10:Enabled
42 fscsi11:Enabled
42 fscsi12:Enabled
42 fscsi13:Enabled
42 fscsi14:Enabled
42 fscsi15:Enabled
42 fscsi8:Enabled
42 fscsi9:Enabled

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
160 fscsi0:Enabled
160 fscsi12:Enabled
160 fscsi13:Enabled
160 fscsi14:Enabled
160 fscsi15:Enabled
160 fscsi1:Enabled
160 fscsi2:Enabled
160 fscsi3:Enabled
160 fscsi4:Enabled
160 fscsi8:Enabled
20201212_015605 (flashdancehostname01:check_fcpaths.sh): Checking for missing paths.
flashdancehostname01: 0
flashdancehostname03: 0
flashdancehostname06: 0
flashdancehostname02: 0
flashdancehostname04: 0
flashdancehostname07: 0
flashdancehostname05: 0
```

## STAGE 5 - SAN switch firmware update

```
20201212_015606 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 12 01:56:04 IST 2020   Ending Date: Sat Dec 12 01:56:06 IST 2020.
20201212_015606 (flashdancehostname01:check_ftpserver.sh): Starting date: Sat Dec 12 01:56:06 IST 2020.
20201212_015606 (flashdancehostname01:check_ftpserver.sh): Checking for ftp service in /etc/inetd.conf.
ftp      stream tcp6     nowait  root    /usr/sbin/ftpd      ftpd
20201212_015606 (flashdancehostname01:check_ftpserver.sh): Checking to see if ftp service is listed as active.
ftp      /usr/sbin/ftpd      ftpd      active
20201212_015606 (flashdancehostname01:check_ftpserver.sh): FTP Service is active and enabled for root.
20201212_015606 (flashdancehostname01:check_ftpserver.sh): Starting date: Sat Dec 12 01:56:06 IST 2020   Ending Date: Sat Dec 12 01:56:06 IST 2020.
20201212_015606 (flashdancehostname01:stage05_san_update.sh): Risk tolerance default specified. Performing update on eligible even numbered sans and then odd numbered sans in parallel.
20201212_015606 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 12 01:56:06 IST 2020.
20201212_015606 (flashdancehostname01:check_fcpaths.sh): Collecting current histogram.
HOSTS -----
flashdancehostname01
-----
14 fscsi0:Enabled
14 fscsi2:Enabled
14 fscsi4:Enabled
14 fscsi6:Enabled

HOSTS -----
flashdancehostname03
-----
10 fscsi0:Enabled
10 fscsi2:Enabled
10 fscsi4:Enabled
10 fscsi6:Enabled

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
160 fscsi0:Enabled
160 fscsi12:Enabled
160 fscsi13:Enabled
160 fscsi14:Enabled
160 fscsi15:Enabled
160 fscsi1:Enabled
160 fscsi2:Enabled
160 fscsi3:Enabled
160 fscsi4:Enabled
160 fscsi8:Enabled

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
42 fscsi10:Enabled
42 fscsi11:Enabled
42 fscsi12:Enabled
42 fscsi13:Enabled
42 fscsi14:Enabled
42 fscsi15:Enabled
42 fscsi8:Enabled
42 fscsi9:Enabled
20201212_015608 (flashdancehostname01:check_fcpaths.sh): Checking for missing paths.
flashdancehostname01: 0
flashdancehostname03: 0
flashdancehostname06: 0
flashdancehostname02: 0
flashdancehostname04: 0
flashdancehostname07: 0
flashdancehostname05: 0
20201212_015609 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 12 01:56:06 IST 2020   Ending Date: Sat Dec 12 01:56:09 IST 2020.
20201212_015609 (flashdancehostname01:stage05_san_update.sh): Running update command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_san update -install -l san0,san2 -f /BCU_share/FP8_FP4/firmware/san/40-1000569-11/image/v7.4.2e'.
SNMP string exist on SAN: 172.23.1.161
SNMP string exist on SAN: 172.23.1.163
The switch update is successful for IP 172.23.1.161.
The switch update is successful for IP 172.23.1.163.
SAN:san0:172.23.1.161:0:update of switch with IP 172.23.1.161 Successful
SAN:san2:172.23.1.163:0:update of switch with IP 172.23.1.163 Successful
20201212_024722 (flashdancehostname01:stage05_san_update.sh): Ran update command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_san update -install -l san0,san2 -f /BCU_share/FP8_FP4/firmware/san/40-1000569-11/image/v7.4.2e' with return code '0'.
20201212_024722 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 12 02:47:22 IST 2020.
20201212_024722 (flashdancehostname01:check_fcpaths.sh): Collecting current histogram.
HOSTS -----
flashdancehostname01
-----
14 fscsi0:Enabled
14 fscsi2:Enabled
14 fscsi4:Enabled
14 fscsi6:Enabled

HOSTS -----
```

## STAGE 5 - SAN switch firmware update

```
flashdancehostname03
-----
10 fscsi0:Enabled
10 fscsi2:Enabled
10 fscsi4:Enabled
10 fscsi6:Enabled

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
42 fscsi10:Enabled
42 fscsi11:Enabled
42 fscsi12:Enabled
42 fscsi13:Enabled
42 fscsi14:Enabled
42 fscsi15:Enabled
42 fscsi8:Enabled
42 fscsi9:Enabled

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
160 fscsi0:Enabled
160 fscsi12:Enabled
160 fscsi13:Enabled
160 fscsi14:Enabled
160 fscsi15:Enabled
160 fscsi1:Enabled
160 fscsi2:Enabled
160 fscsi3:Enabled
160 fscsi4:Enabled
160 fscsi8:Enabled
20201212_024724 (flashdancehostname01:check_fcpaths.sh): Checking for missing paths.
flashdancehostname01: 0
flashdancehostname03: 0
flashdancehostname07: 0
flashdancehostname02: 0
flashdancehostname04: 0
flashdancehostname06: 0
flashdancehostname05: 0
20201212_024725 (flashdancehostname01:check_fcpaths.sh): Starting date: Sat Dec 12 02:47:22 IST 2020   Ending Date: Sat Dec 12
02:47:25 IST 2020.
20201212_024725 (flashdancehostname01:stage05_san_update.sh): Running update command
'/opt/ibm/aixappl/pflayer/bin/icmids/appl_ctrl_san update -install -l san1,san3 -f /BCU_share/FP8_FP4/firmware/san/40-1000569-
11/image/v7.4.2e'.
SNMP string exist on SAN: 172.23.1.164
SNMP string exist on SAN: 172.23.1.162
The switch update is successful for IP 172.23.1.164.
The switch update is successful for IP 172.23.1.162.
SAN:san3:172.23.1.164:0:update of switch with IP 172.23.1.164 Successful
SAN:san1:172.23.1.162:0:update of switch with IP 172.23.1.162 Successful
20201212_033838 (flashdancehostname01:stage05_san_update.sh): Ran update command
'/opt/ibm/aixappl/pflayer/bin/icmids/appl_ctrl_san update -install -l san1,san3 -f /BCU_share/FP8_FP4/firmware/san/40-1000569-
11/image/v7.4.2e' with return code '0'.
20201212_033838 (flashdancehostname01:stage05_san_update.sh): Starting date: Sat Dec 12 01:55:43 IST 2020   Ending Date: Sat Dec
12 03:38:38 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## Phase 4: Verify the SAN Switch Updates

The updated level should reflect v7.4.2e on all SANs as shown below. The number of SANs varies depending on the size of the environment.

1. Run the following command to verify the SAN Switch levels.

```
appl_ls_hw -r san -A Logical_name | xargs -n 1 ${PL_ROOT}/bin/icmds/appl_ctrl_san query -L
```

Example Output:

```
$ appl_ls_hw -r san -A Logical_name | xargs -n 1 ${PL_ROOT}/bin/icmds/appl_ctrl_san query -L
Details:
MachineType: -
Description: IBM System Storage Switch
Manufacturer: Brocade
IPv4Address: ["172.23.1.161"]
DeviceName: SAN01
AccessState: Unlocked
Model: 40-1000569-13
PLLogicalName: san0
FWLevel: v7.4.2e
SerialNumber: BRW2527K01G
Status: Online
Details:
Manufacturer: Brocade
Status: Online
DeviceName: SAN02
Model: 40-1000569-13
PLLogicalName: san1
AccessState: Unlocked
MachineType: -
SerialNumber: BRW2527K01F
FWLevel: v7.4.2e
IPv4Address: ["172.23.1.162"]
Description: IBM System Storage Switch
Details:
DeviceName: SAN03
AccessState: Unlocked
IPv4Address: ["172.23.1.163"]
Description: IBM System Storage Switch
Model: 40-1000569-13
Manufacturer: Brocade
Status: Online
FWLevel: v7.4.2e
SerialNumber: BRW2526K052
PLLogicalName: san2
MachineType: -
Details:
PLLogicalName: san3
MachineType: -
Description: IBM System Storage Switch
Status: Online
Manufacturer: Brocade
Model: 40-1000569-13
AccessState: Unlocked
DeviceName: SAN_SWITCH_4
SerialNumber: BRW2527K01D
FWLevel: v7.4.2e
IPv4Address: ["172.23.1.164"]

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## Phase 5: Disable FTP

1. Command: Undo changes done for enabling FTP on the management node as shown in the 3 commands below below:

Comment below line in `/etc/inetd.conf` file

```
#ftp      stream  tcp6    nowait  root    /usr/sbin/ftpd      ftpd
```

```
$ lssrc -t ftp
```

| Service | Command        | Description | Status |
|---------|----------------|-------------|--------|
| ftp     | /usr/sbin/ftpd | ftpd        | active |

```
$ stopsrc -t ftp
```

```
0513-127 The ftp subserver was stopped successfully.
```

```
$ lssrc -t ftp
```

| Service | Command | Description | Status      |
|---------|---------|-------------|-------------|
| ftp     |         |             | inoperative |

## STAGE 6 - Management stack upgrade

### Stage 6 Description

#### Steps

- Stage 6 Phase 1: Quiesce Management
- Stage 6 Phase 2: Update AIX on management standby.
- Stage 6 Phase 3: Update GPFS, TSA and DB2 on management hosts
- Stage 6 Phase 4: Update Fibre Channel Adapter and Card Adapter Firmware
- Stage 6 Phase 5: Restore Management To Service

#### Outage Requirements

- No core outage requirements during this stage.
- Warehouse Tools will be offline during the update.
- DPM will be offline during the update.
- The management domain will be offline during the update.
- GPFS filesystems will be offline during the update.

#### Time Per Step

- Stage 6 Phase 1: 10 to 15 minutes.
- Stage 6 Phase 2: 90 minutes
- Stage 6 Phase 3: 30 minutes for GPFS. 25 minutes for TSA, 45 Minutes for DB2
- Stage 6 Phase 4: 15 minutes.
- Stage 6 Phase 5: 10 to 15 minutes

#### Risk Mitigation

- alt\_disk\_install \_recovery can boot off previous level.
- mkysyb recovery

#### Backout Options

- Management host backout options will not be possible after GPFS has been committed.

During the management stack upgrade the warehouse will still be up and running. OPM and warehouse tools will be stopped and the management hosts will be rebooted.

## Phase 1: Quiesce Management

1. Command: Verify the state of the Management domain using:

```
hals -mgmt
```

Example Output when DPM is Online. If Online go to step 2.

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY          | STANDBY          | CURRENT          | OPSTATE          | HA STATUS        | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| DPM        | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online           | Normal           | -           |
| DB2DPM     | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online           | Normal           | -           |
=====+=====+=====+=====+=====+=====+=====+
```

Example output when DPM is Offline but the management domain is still online. Go to step 3.

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY          | STANDBY          | CURRENT          | OPSTATE          | HA STATUS        | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| DPM        | flashdancehostname01 | N/A              | N/A              | Offline          | Offline          | -           |
| DB2DPM     | flashdancehostname01 | N/A              | N/A              | Offline          | Offline          | -           |
=====+=====+=====+=====+=====+=====+=====+
```

Example output when the management domain is offline. Go to step 4.

```
$ hals -mgmt
none are available... returning
```

2. Command: Stop the DPM Services.

```
hastopdpm
```

Example Output:

```
$ hastopdpm
Stopping DPM and DB2 instance.....Resources offline
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY          | STANDBY          | CURRENT          | OPSTATE          | HA STATUS        | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| DPM        | flashdancehostname01 | N/A              | N/A              | Offline          | Offline          | -           |
| DB2DPM     | flashdancehostname01 | N/A              | N/A              | Offline          | Offline          | -           |
=====+=====+=====+=====+=====+=====+=====+
```

6. Command: Stop the management Domain. There is no output for this command.

```
hadomain -mgmt stop
```

Example Output:

```
$ hadomain -mgmt stop
```

7. Command: Verify the domain is offline.

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
none are available... returning
```

## STAGE 6 - Management stack upgrade

8. Unmount GPFS filesystems on the management host.
  - a. Check GPFS filesystem mount counts on management hosts.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'mount | grep -c mmfs'
```

Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'mount | grep -c mmfs'
flashdancehostname01: 5
flashdancehostname03: 5
```

- b. Unmount all GPFS filesystems on the management hosts.

```
/usr/lpp/mmfs/bin/mmumount all -a
```

Example output: Successful unmounts.

```
$ /usr/lpp/mmfs/bin/mmumount all -a
Tue Dec 15 22:08:45 IST 2020: 6027-1674 mmumount: Unmounting file systems ...

$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'mount | grep -c mmfs'
flashdancehostname01: 0
flashdancehostname03: 0
```

Example output: Unsuccessful unmounts with /db2home busy on one host.

```
$ /usr/lpp/mmfs/bin/mmumount all -a
Tue Dec 15 22:11:37 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
flashdancehostname01: GPFS: 6027-511 Cannot unmount /dev/db2home: The requested resource is busy.
flashdancehostname01: GPFS: 6027-511 Cannot unmount /dev/db2home: The requested resource is busy.
mmdsh: 6027-1615 flashdancehostname01 remote shell process had return code 1.
mmumount: 6027-1639 Command failed. Examine previous error messages to determine cause.

(1) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application

$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'mount | grep -c mmfs'
flashdancehostname01: 1
flashdancehostname03: 0
```

- c. If a filesystem can't be unmounted the easiest way to address it is to reboot the host or hosts that cannot unmount all GPFS filesystems. It is also possible to use 'fuser -c' on mounted filesystems to determine the pids still maintaining open file descriptors. On reboot GPFS will restart on that host and GPFS filesystems will be mounted. Repeat steps a and b after rebooting is complete. Do not attempt to force unmount filesystems nor stop GPFS without cleanly unmounting the filesystems.

## Phase 2: Update AIX on the management standby host

1. Login to the management host and use or initiate a screen session. This is a root session. In the lab we use a screen session labelled *fprun* which is started by root on the management host.

2. Command: Change the directory if not already to /BCU\_share/FP8\_FP4/fixpack\_tools/application

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

3. Ensure /BCU\_share is mounted using the ./enable\_bcushare.sh script.

```
./enable_bcushare.sh
```

### Example Output:

```
$ ./enable_bcushare.sh
20201215_225746 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20201215_225747 (flashdancehostname01:enable_bcushare.sh): Success: /BCU_share is mounted on all hosts.
20201215_225747 (flashdancehostname01:enable_bcushare.sh): enable_bcushare.sh completed with rc=0.
```

4. Verify the AIX is ready to update on the management host.

```
dsh -n ${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/update_aix.sh' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/update_aix.sh' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname03
-----
20201215_230204 (flashdancehostname03:update_aix.sh): Starting date: Tue Dec 15 23:02:04 IST 2020.
20201215_230204 (flashdancehostname03:update_aix.sh): Collecting the available aix details.
20201215_230204 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201215_230204 (flashdancehostname03:update_aix.sh): Version is '7100.5.1'.
20201215_230204 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.1' and received '2'.
20201215_230204 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201215_230204 (flashdancehostname03:update_aix.sh): Version is '7100.5.4'.
20201215_230204 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.4' and received '1'.
20201215_230204 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201215_230204 (flashdancehostname03:update_aix.sh): Version is '7100.5.7'.
20201215_230204 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.7' and received '0'.
20201215_230204 (flashdancehostname03:update_aix.sh): There is an available update.
20201215_230204 (flashdancehostname03:update_aix.sh): This is the first version checked.
20201215_230204 (flashdancehostname03:update_aix.sh): The next update is version '7100.5.7' in directory
'/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201215_230204 (flashdancehostname03:update_aix.sh): Checking to see if 'flashdancehostname03' is eligible to update.
20201215_230206 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' is quiesced.
20201215_230206 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has rootvg cloned .
20201215_230206 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has available updates .
20201215_230206 (flashdancehostname03:update_aix.sh): Verifying rpm repository health.
20201215_230206 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has a consistent rpm repository.
20201215_230206 (flashdancehostname03:update_aix.sh): Starting date: Tue Dec 15 23:02:04 IST 2020    Ending Date: Tue Dec 15
23:02:06 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

The output indicates:

- AIX 7.1 TL5 SP4 is the current version on the management standby host.
- AIX 7.1 TL5 SP1, AIX 7.1 TL5 SP4 and AIX 7.1 TL5 SP7 updates are available updates as seen by the script from FP6\_FP2, FP7\_FP3 and FP8\_FP4 directories.
- AIX 7.1 TL5 SP7 is the next update to be applied.
  - Note: PDOA V1.1 FP1 customers. It is mandatory to apply AIX 7.1 TL5 SP1 first from the PDOA V1.1 FP2 image. This script will find that level if FP2 is unpacked (as it did above) and install that level first as part of the update.

## STAGE 6 - Management stack upgrade

- The management standby node is eligible to update.
- There is an alternate vg clone for rootvg on this host.
- The management node is quiesced. All services, domains, GPFS filesystem and GPFS cluster services are not running on this host.
- There are no duplicate issues in the rpm repository.

## STAGE 6 - Management stack upgrade

5. Command: Update AIX on the management standby host. The next command will run the preview and the update and then will automatically reboot the host if there are no errors. This command will show no output until the command completes.

```
dsh -n ${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/update_aix.sh update' 2>&1 | dshbak -c
```

### Example Output:

- a. In a separate session such as the fplog screen session view the the logs are available. These can be tailed as listed below. The output will not be seen until the command exits. The stderr file shows the full installp output, the log file shows the same output as shown in b.

```
$ cd /BCU_share/support/FP8_FP4/log

$ ls -lrt | tail -2
-rw-r--r-- 1 root system 4348 Dec 15 23:08 update_aix.sh_flashdancehostname03_20201215_230621.log
-rw-r--r-- 1 root system 62073 Dec 15 23:08 update_aix.sh_flashdancehostname03_20201215_230621.log.stderr

$ tail -f update_aix.sh_flashdancehostname03_20201215_230621.log.stderr
```

- b. Note some output is omitted and replaced with '...'. The output shows a periodic check of the last 10 lines that report on the progress from the installp log /var/adm/ras/install\_all\_updates.log.

```
$ dsh -n ${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/update_aix.sh update' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname03
-----
20201215_230623 (flashdancehostname03:update_aix.sh): Starting date: Tue Dec 15 23:06:23 IST 2020.
20201215_230623 (flashdancehostname03:update_aix.sh): Collecting the available aix details.
20201215_230623 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201215_230623 (flashdancehostname03:update_aix.sh): Version is '7100.5.1'.
20201215_230623 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.1' and received '2'.
20201215_230623 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201215_230623 (flashdancehostname03:update_aix.sh): Version is '7100.5.4'.
20201215_230623 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.4' and received '1'.
20201215_230623 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201215_230623 (flashdancehostname03:update_aix.sh): Version is '7100.5.7'.
20201215_230623 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.7' and received '0'.
20201215_230623 (flashdancehostname03:update_aix.sh): There is an available update.
20201215_230623 (flashdancehostname03:update_aix.sh): This is the first version checked.
20201215_230623 (flashdancehostname03:update_aix.sh): The next update is version '7100.5.7' in directory
'/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201215_230623 (flashdancehostname03:update_aix.sh): Checking to see if 'flashdancehostname03' is eligible to update.
20201215_230625 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' is quiesced.
20201215_230625 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has rootvg cloned .
20201215_230625 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has available updates .
20201215_230625 (flashdancehostname03:update_aix.sh): Verifying rpm repository health.
20201215_230626 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has a consistent rpm
repository.
20201215_230626 (flashdancehostname03:update_aix.sh): Running 'update_all -pd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' to
preview the aix update.
20201215_230637 (flashdancehostname03:update_aix.sh): Success: Preview completed successfully.
20201215_230637 (flashdancehostname03:update_aix.sh): Running 'update_all -cYd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'
to execute the aix update.
20201215_230637 (flashdancehostname03:update_aix.sh): PID for 'update_all -cYd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'
is '2359668'.
20201215_230637 (flashdancehostname03:update_aix.sh): Waiting on '2359668' to complete. For current status check
'/var/adm/ras/install_all_updates.log' on host 'flashdancehostname03'.
(0:300): Update not found. Sleeping for 5 seconds before next check.
(5:300): Update not found. Sleeping for 5 seconds before next check.
(10:300): Update not found. Sleeping for 5 seconds before next check.
(15:300): Update not found. Sleeping for 5 seconds before next check.
Found pid '2359668'.
PID TTY TIME CMD
2359668 - 0:00 ksh
Tue Dec 15 23:06:57 IST 2020: flashdancehostname03 update status duration (0 seconds).
installp: APPLYING software for:
Filesets processed: 1 of 2 (Total time: 12 secs).
installp: APPLYING software for:
Finished processing all filesets. (Total time: 31 secs).
install_all_updates: Result = SUCCESS
install_all_updates: Result = SUCCESS
installp: APPLYING software for:
Finished processing all filesets. (Total time: 15 secs).
installp: COMMITTING software for:
```

## STAGE 6 - Management stack upgrade

```
Finished processing all filesets. (Total time: 16 secs).
...
installp: * * * A T T E N T I O N ! ! !
20201215_233907 (flashdancehostname03:update_aix.sh): PID '2359668' completed with rc='0'. For more information consult the
update log '/var/adm/ras/install_all_updates.log'.
20201215_233907 (flashdancehostname03:update_aix.sh): AIX update completed. Issuing shutdown instructions after 1 minute.
    PID    TTY    TIME CMD
Update process completed.
Tue Dec 15 23:40:04 IST 2020: flashdancehostname03 update status duration (1987 seconds).
installp: COMMITTING software for:
Filesets processed: 199 of 201 (Total time: 31 mins 18 secs).
installp: COMMITTING software for:
Filesets processed: 200 of 201 (Total time: 31 mins 19 secs).
installp: COMMITTING software for:
Finished processing all filesets. (Total time: 31 mins 19 secs).
installp: bosboot verification completed.
installp: bosboot process completed.
installp: * * * A T T E N T I O N ! ! !
install_all_updates: Result = SUCCESS
/BCU_share/FP8_FP4/fixpack_tools/application/update_aix.sh[267]: 5046280 Terminated
cat: 0652-050 Cannot open /BCU_share/support/FP8_FP4/log/update_aix.sh_flashdancehostname03_20201215_230621.log.rc.
rm: /BCU_share/support/FP8_FP4/log/update_aix.sh_flashdancehostname03_20201215_230621.log.rc: A file or directory in the
path name does not exist.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 6. Command: Verify the management standby node has restarted successfully.

```
ping -c 1 ${BCUMGMTSTDBY}
```

#### Example Output:

```
$ ping -c 1 ${BCUMGMTSTDBY}
PING flashdancehostname03: (172.23.1.3): 56 data bytes
64 bytes from 172.23.1.3: icmp_seq=0 ttl=255 time=0 ms
```

### 7. Command: Verify level and successful installation from install\_all\_updates.log. Both management nodes should now be updated to AIX 7.1 TL5 SP7.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'oslevel -s'
```

#### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'oslevel -s'
flashdancehostname01: 7100-05-07-2038
flashdancehostname03: 7100-05-07-2038
```

### 8. Command: Verify the installp log indicates a successful installation.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'tail -10 /var/adm/ras/install_all_updates.log' | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'tail -10 /var/adm/ras/install_all_updates.log' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----

* * * A T T E N T I O N * * *
System boot image has been updated. You must reboot the system
after install_all_updates completes to properly integrate the updates.

install_all_updates: Checking for recommended maintenance level 7100-05.
install_all_updates: Executing /usr/bin/oslevel -rf, Result = 7100-05
install_all_updates: Verification completed.
install_all_updates: Log file is /var/adm/ras/install_all_updates.log
install_all_updates: Result = SUCCESS
```

## STAGE 6 - Management stack upgrade

### 9. Command: Remount /BCU\_share using the utility script.

```
./enable_bcushare.sh
```

#### Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
$ ./enable_bcushare.sh
20201215_235055 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20201215_235056 (flashdancehostname01:enable_bcushare.sh): Warning: The following hosts are missing /BCU_share mounts.
flashdancehostname03: Warning: Missing /BCU_share mount.
20201215_235056 (flashdancehostname01:enable_bcushare.sh): Attempting to mount /BCU_share on all hosts.
20201215_235057 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20201215_235058 (flashdancehostname01:enable_bcushare.sh): Success: /BCU_share is mounted on all hosts.
20201215_235058 (flashdancehostname01:enable_bcushare.sh): enable_bcushare.sh completed with rc=0.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 11. Command: Quiesce the management standby to prepare for efix application.

```
dsh -n ${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/quiesce_node.sh'
```

#### Example Output:

```
$ dsh -n ${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/quiesce_node.sh'
kf5hostname03: 20210302_215338 (kf5hostname03:quiesce_node.sh): Starting date: Tue Mar 2 21:53:38 -03 2021.
kf5hostname03: 20210302_215338 (kf5hostname03:quiesce_node.sh): Attempting to quiesce host kf5hostname03.
kf5hostname03: 20210302_215338 (kf5hostname03:check_server_state.sh): Starting date: Tue Mar 2 21:53:38 -03 2021.
kf5hostname03: 20210302_215338 (kf5hostname03:check_server_state.sh): Service States:
kf5hostname03:
kf5hostname03:
kf5hostname03: 20210302_215338 (kf5hostname03:check_server_state.sh): Starting date: Tue Mar 2 21:53:38 -03 2021 Ending Date:
Tue Mar 2 21:53:38 -03 2021.
kf5hostname03: 20210302_215338 (kf5hostname03:check_server_state.sh): Starting date: Tue Mar 2 21:53:38 -03 2021.
kf5hostname03: 20210302_215338 (kf5hostname03:check_server_state.sh): Domain state: ''.
kf5hostname03: 20210302_215338 (kf5hostname03:check_server_state.sh): Starting date: Tue Mar 2 21:53:38 -03 2021 Ending Date:
Tue Mar 2 21:53:38 -03 2021.
kf5hostname03: 20210302_215338 (kf5hostname03:check_server_state.sh): Starting date: Tue Mar 2 21:53:38 -03 2021.
kf5hostname03: 20210302_215339 (kf5hostname03:check_server_state.sh): Domain state: ''.
kf5hostname03: 20210302_215339 (kf5hostname03:check_server_state.sh): Starting date: Tue Mar 2 21:53:38 -03 2021 Ending Date:
Tue Mar 2 21:53:39 -03 2021.
kf5hostname03: 20210302_215339 (kf5hostname03:check_server_state.sh): Starting date: Tue Mar 2 21:53:39 -03 2021.
kf5hostname03: 20210302_215341 (kf5hostname03:check_server_state.sh): Starting date: Tue Mar 2 21:53:39 -03 2021 Ending Date:
Tue Mar 2 21:53:41 -03 2021.
kf5hostname03: 20210302_215343 (kf5hostname03:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
kf5hostname03: Tue Mar 2 21:53:43 -03 2021: 6027-1674 mmumount: Unmounting file systems ...
kf5hostname03: 20210302_215349 (kf5hostname03:quiesce_node.sh): Stopping GPFS on this host.
kf5hostname03: Tue Mar 2 21:53:49 -03 2021: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
kf5hostname03: Tue Mar 2 21:53:54 -03 2021: 6027-1344 mmshutdown: Shutting down GPFS daemons
kf5hostname03: Shutting down!
kf5hostname03: 'shutdown' command about to kill process 2424922
kf5hostname03: Tue Mar 2 21:54:00 -03 2021: 6027-1345 mmshutdown: Finished
kf5hostname03: 20210302_215400 (kf5hostname03:quiesce_node.sh): Starting date: Tue Mar 2 21:53:38 -03 2021 Ending Date: Tue
Mar 2 21:54:00 -03 2021.
```

### 12. Command: Command: Verify the efix information on the management standby.

```
dsh -n ${BCUMGMTSTDBY} 'emgr -d -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z'
```

#### Example Output:

```
$ dsh -n ${BCUMGMTSTDBY} 'emgr -d -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z'
kf5hostname03: +-----+
kf5hostname03: Efif Manager Initialization
kf5hostname03: +-----+
kf5hostname03: Initializing log /var/adm/ras/emgr.log ...
kf5hostname03: Efif package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
kf5hostname03: MD5 generating command is /usr/bin/csum
kf5hostname03: MD5 checksum is d1037fddf4781f799a64df2e665b1eb3
kf5hostname03: Accessing efif metadata ...
kf5hostname03: Verifying efif control file ...
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efif Attributes
kf5hostname03: +-----+
kf5hostname03: LABEL: IJ29552s7b
```

## STAGE 6 - Management stack upgrade

```
kf5hostname03: EFI FILES:      1
kf5hostname03:
kf5hostname03: FILE NUMBER:    1
kf5hostname03:   LOCATION:    /usr/ccs/lib/libc.a
kf5hostname03: +-----+
kf5hostname03: Operation Summary
kf5hostname03: +-----+
kf5hostname03: Log file is /var/adm/ras/emgr.log
kf5hostname03:
kf5hostname03: EPKG NUMBER      LABEL          OPERATION      RESULT
kf5hostname03: =====
kf5hostname03: 1                IJ29552s7b    DISPLAY       SUCCESS
kf5hostname03:
kf5hostname03: Return Status = SUCCESS

(0) root @ kf5hostname01: 7.1.0.0: /BCU_share/test1
```

### 13. Command: Preview the efix installation.

```
dsh -n ${BCUMGMTSTDBY} 'emgr -p -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z'
```

#### Example Output:

```
$ dsh -n ${BCUMGMTSTDBY} 'emgr -p -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z'
kf5hostname03: *****
kf5hostname03: EFI MANAGER PREVIEW START
kf5hostname03: *****
kf5hostname03: +-----+
kf5hostname03: Efix Manager Initialization
kf5hostname03: +-----+
kf5hostname03: Initializing log /var/adm/ras/emgr.log ...
kf5hostname03: Efix package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
kf5hostname03: MD5 generating command is /usr/bin/csum
kf5hostname03: MD5 checksum is d1037fddf4781f799a64df2e665b1eb3
kf5hostname03: Accessing efix metadata ...
kf5hostname03: Processing efix label "IJ29552s7b" ...
kf5hostname03: Verifying efix control file ...
kf5hostname03: +-----+
kf5hostname03: Installp Prerequisite Verification
kf5hostname03: +-----+
kf5hostname03: Verifying prerequisite file ...
kf5hostname03: Checking prerequisites ...
kf5hostname03:
kf5hostname03: Prerequisite Number: 1
kf5hostname03:   Fileset: bos.rte.libc
kf5hostname03:   Minimal Level: 7.1.5.35
kf5hostname03:   Maximum Level: 7.1.5.35
kf5hostname03:   Actual Level: 7.1.5.35
kf5hostname03:   Type: PREREQ
kf5hostname03:   Requisite Met: yes
kf5hostname03:
kf5hostname03: All prerequisites have been met.
kf5hostname03: +-----+
kf5hostname03: Processing APAR reference file
kf5hostname03: +-----+
kf5hostname03: ATTENTION: Interim fix is enabled for automatic removal by installp.
kf5hostname03: +-----+
kf5hostname03: Efix Attributes
kf5hostname03: +-----+
kf5hostname03: LABEL:      IJ29552s7b
kf5hostname03: PACKAGING DATE:  Wed Dec  9 15:40:31 CST 2020
kf5hostname03: ABSTRACT:    IJ29552 LOAD MODULE AUTH ISSUES
kf5hostname03: PACKAGER VERSION: 7
kf5hostname03: VUID:        00F7CD554C00120915123120
kf5hostname03: REBOOT REQUIRED:  yes
kf5hostname03: BUILD BOOT IMAGE: yes
kf5hostname03: PRE-REQUISITES:  yes
kf5hostname03: SUPERSEDE:      no
kf5hostname03: PACKAGE LOCKS:   no
kf5hostname03: E2E PREREQS:     no
kf5hostname03: FIX TESTED:      no
kf5hostname03: ALTERNATE PATH:  None
kf5hostname03: EFI FILES:      1
kf5hostname03:
kf5hostname03: Install Scripts:
kf5hostname03:   PRE_INSTALL:   no
kf5hostname03:   POST_INSTALL:  no
kf5hostname03:   PRE_REMOVE:    no
```

## STAGE 6 - Management stack upgrade

```
kf5hostname03: POST_REMOVE: no
kf5hostname03:
kf5hostname03: File Number: 1
kf5hostname03: LOCATION: /usr/ccs/lib/libc.a
kf5hostname03: FILE TYPE: Standard (file or executable)
kf5hostname03: INSTALLER: installp
kf5hostname03: SIZE: 25264
kf5hostname03: ACL: DEFAULT
kf5hostname03: CKSUM: 39000
kf5hostname03: PACKAGE: bos.rte.libc
kf5hostname03: MOUNT INST: no
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efix Description
kf5hostname03: +-----+
kf5hostname03: IJ29552 - some lam module logins break at latest service packs
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efix Lock Management
kf5hostname03: +-----+
kf5hostname03: Checking locks for file /usr/ccs/lib/libc.a ...
kf5hostname03:
kf5hostname03: All files have passed lock checks.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Space Requirements
kf5hostname03: +-----+
kf5hostname03: Checking space requirements ...
kf5hostname03:
kf5hostname03: Space statistics (in 512 byte-blocks):
kf5hostname03: File system: /usr, Free: 28784168, Required: 59938, Deficit: 0.
kf5hostname03: File system: /tmp, Free: 9645736, Required: 98847, Deficit: 0.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Reboot Processing
kf5hostname03: +-----+
kf5hostname03:
kf5hostname03: *** NOTICE ***
kf5hostname03: This efix package requires the target system to be rebooted after the current
kf5hostname03: operation is complete. It is recommended that you reboot the target system as
kf5hostname03: soon as possible after installation to avoid disruption of current functionality.
kf5hostname03:
kf5hostname03: *****
kf5hostname03: EFIX MANAGER PREVIEW END
kf5hostname03: *****
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Operation Summary
kf5hostname03: +-----+
kf5hostname03: Log file is /var/adm/ras/emgr.log
kf5hostname03:
kf5hostname03: EPKG NUMBER LABEL OPERATION RESULT
kf5hostname03: =====
kf5hostname03: 1 IJ29552s7b INSTALL PREVIEW SUCCESS
kf5hostname03:
kf5hostname03: Return Status = SUCCESS
kf5hostname03: ATTENTION: system reboot will be required by the actual (not preview) operation.
kf5hostname03: Please see the "Reboot Processing" sections in the output above or in the
kf5hostname03: /var/adm/ras/emgr.log file.
```

### 14. Command: Apply the efix on the management standby.

```
dsh -n ${BCUMGMTSTDBY} 'emgr -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z'
```

#### Example Output:

```
$ dsh -n ${BCUMGMTSTDBY} 'emgr -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z'
kf5hostname03: +-----+
kf5hostname03: Efix Manager Initialization
kf5hostname03: +-----+
kf5hostname03: Initializing log /var/adm/ras/emgr.log ...
kf5hostname03: Efix package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
kf5hostname03: MD5 generating command is /usr/bin/csum
kf5hostname03: MD5 checksum is d1037fddf4781f799a64df2e665b1eb3
kf5hostname03: Accessing efix metadata ...
kf5hostname03: Processing efix label "IJ29552s7b" ...
kf5hostname03: Verifying efix control file ...
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Installp Prerequisite Verification
kf5hostname03: +-----+
kf5hostname03: Verifying prerequisite file ...
kf5hostname03: Checking prerequisites ...
```

## STAGE 6 - Management stack upgrade

```
kf5hostname03:
kf5hostname03: Prerequisite Number: 1
kf5hostname03:   Fileset: bos.rte.libc
kf5hostname03:   Minimal Level: 7.1.5.35
kf5hostname03:   Maximum Level: 7.1.5.35
kf5hostname03:   Actual Level: 7.1.5.35
kf5hostname03:   Type: PREREQ
kf5hostname03:   Requisite Met: yes
kf5hostname03:
kf5hostname03: All prerequisites have been met.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Processing APAR reference file
kf5hostname03: +-----+
kf5hostname03: ATTENTION: Interim fix is enabled for automatic removal by installp.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efix Attributes
kf5hostname03: +-----+
kf5hostname03: LABEL:                IJ29552s7b
kf5hostname03: PACKAGING DATE:      Wed Dec  9 15:40:31 CST 2020
kf5hostname03: ABSTRACT:            IJ29552 LOAD MODULE AUTH ISSUES
kf5hostname03: PACKAGER VERSION:    7
kf5hostname03: VUID:                00F7Cd554C00120915123120
kf5hostname03: REBOOT REQUIRED:      yes
kf5hostname03: BUILD BOOT IMAGE:    yes
kf5hostname03: PRE-REQUISITES:      yes
kf5hostname03: SUPERSEDE:           no
kf5hostname03: PACKAGE LOCKS:       no
kf5hostname03: E2E PREREQS:         no
kf5hostname03: FIX TESTED:          no
kf5hostname03: ALTERNATE PATH:      None
kf5hostname03: EFI FILES:           1
kf5hostname03:
kf5hostname03: Install Scripts:
kf5hostname03:   PRE_INSTALL:        no
kf5hostname03:   POST_INSTALL:       no
kf5hostname03:   PRE_REMOVE:         no
kf5hostname03:   POST_REMOVE:        no
kf5hostname03:
kf5hostname03: File Number:         1
kf5hostname03: LOCATION:             /usr/ccs/lib/libc.a
kf5hostname03: FILE TYPE:            Standard (file or executable)
kf5hostname03: INSTALLER:            installp
kf5hostname03: SIZE:                 25264
kf5hostname03: ACL:                  DEFAULT
kf5hostname03: CKSUM:                39000
kf5hostname03: PACKAGE:              bos.rte.libc
kf5hostname03: MOUNT INST:           no
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efix Description
kf5hostname03: +-----+
kf5hostname03: IJ29552 - some lam module logins break at latest service packs
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efix Lock Management
kf5hostname03: +-----+
kf5hostname03: Checking locks for file /usr/ccs/lib/libc.a ...
kf5hostname03:
kf5hostname03: All files have passed lock checks.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Space Requirements
kf5hostname03: +-----+
kf5hostname03: Checking space requirements ...
kf5hostname03:
kf5hostname03: Space statistics (in 512 byte-blocks):
kf5hostname03: File system: /usr, Free: 28784168, Required: 59938, Deficit: 0.
kf5hostname03: File system: /tmp, Free: 9645736, Required: 98847, Deficit: 0.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efix Installation Setup
kf5hostname03: +-----+
kf5hostname03: Unpacking efix package file ...
kf5hostname03: Initializing efix installation ...
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efix State
kf5hostname03: +-----+
kf5hostname03: Setting efix state to: INSTALLING
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: File Archiving
kf5hostname03: +-----+
kf5hostname03: Saving all files that will be replaced ...
kf5hostname03: Save directory is: /usr/emgrdata/efixdata/IJ29552s7b/save
kf5hostname03: File 1: Saving /usr/ccs/lib/libc.a as EFSAVE1 ...
```

## STAGE 6 - Management stack upgrade

```
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efix File Installation
kf5hostname03: +-----+
kf5hostname03: Installing all efix files:
kf5hostname03: Installing efix file #1 (File: /usr/ccs/lib/libc.a) ...
kf5hostname03:
kf5hostname03: Total number of efix files installed is 1.
kf5hostname03: All efix files installed successfully.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Package Locking
kf5hostname03: +-----+
kf5hostname03: Processing package locking for all files.
kf5hostname03: File 1: locking installp fileset bos.rte.libc.
kf5hostname03:
kf5hostname03: All package locks processed successfully.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Reboot Processing
kf5hostname03: +-----+
kf5hostname03:
kf5hostname03: *** NOTICE ***
kf5hostname03: This efix package requires the target system to be rebooted after the current
kf5hostname03: operation is complete. It is recommended that you reboot the target system as
kf5hostname03: soon as possible after installation to avoid disruption of current functionality.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Efix State
kf5hostname03: +-----+
kf5hostname03: Setting efix state to: REBOOT REQUIRED
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Boot Image Processing
kf5hostname03: +-----+
kf5hostname03: Rebuilding boot image ...
kf5hostname03: bosboot: Boot image is 53276 512 byte blocks.
kf5hostname03: Successfully rebuilt boot image.
kf5hostname03:
kf5hostname03: +-----+
kf5hostname03: Operation Summary
kf5hostname03: +-----+
kf5hostname03: Log file is /var/adm/ras/emgr.log
kf5hostname03:
kf5hostname03:
kf5hostname03: EPKG NUMBER      LABEL      OPERATION      RESULT
kf5hostname03: =====
kf5hostname03: 1                IJ29552s7b  INSTALL       SUCCESS
kf5hostname03:
kf5hostname03:
kf5hostname03: Return Status = SUCCESS
kf5hostname03: ATTENTION: system reboot is required. Please see the "Reboot Processing"
kf5hostname03: sections in the output above or in the /var/adm/ras/emgr.log file.
```

15. Apply any additional efixes on the management standby.

16. Command: Reboot the management standby host.

```
dsh -n ${BCUMGMTSTDBY} '(nohup shutdown +0 -r &)'
```

### Example Output:

```
$ dsh -n ${BCUMGMTSTDBY} '(nohup shutdown +0 -r &)'
kf5hostname03:
kf5hostname03: SHUTDOWN PROGRAM
kf5hostname03: Tue Mar  2 22:03:02 -03 2021
kf5hostname03: SNA daemon not running.
kf5hostname03: SNA Shutdown Complete
kf5hostname03: 0513-044 The sshd Subsystem was requested to stop.
kf5hostname03:
kf5hostname03: Wait for 'Rebooting...' before stopping.
kf5hostname03: Error reporting has stopped.
kf5hostname03: Advanced Accounting has stopped...
kf5hostname03: Process accounting has stopped.
kf5hostname03: nfs_clean: Stopping NFS/NIS Daemons
kf5hostname03: 0513-004 The Subsystem or Group, nfsd, is currently inoperative.
kf5hostname03: 0513-044 The biod Subsystem was requested to stop.
kf5hostname03: 0513-044 The rpc.lockd Subsystem was requested to stop.
kf5hostname03: 0513-044 The rpc.statd Subsystem was requested to stop.
kf5hostname03: 0513-004 The Subsystem or Group, gssd, is currently inoperative.
kf5hostname03: 0513-004 The Subsystem or Group, nfsrgyd, is currently inoperative.
kf5hostname03: 0513-004 The Subsystem or Group, rpc.mountd, is currently inoperative.
kf5hostname03: 0513-004 The Subsystem or Group, ypserv, is currently inoperative.
kf5hostname03: 0513-004 The Subsystem or Group, ypbind, is currently inoperative.
```

## STAGE 6 - Management stack upgrade

```
kf5hostname03: 0513-004 The Subsystem or Group, yppasswdd, is currently inoperative.
kf5hostname03: 0513-004 The Subsystem or Group, ypupdated, is currently inoperative.
kf5hostname03: 0513-004 The Subsystem or Group, nis_cachemgr, is currently inoperative.
kf5hostname03: 0513-004 The Subsystem or Group, rpc.nisd, is currently inoperative.
kf5hostname03: 0513-004 The Subsystem or Group, rpc.nispasswdd, is currently inoperative.
kf5hostname03: 0513-044 The xntpd Subsystem was requested to stop.
kf5hostname03: 0513-044 The hrd Subsystem was requested to stop.
kf5hostname03: 0513-044 The aso Subsystem was requested to stop.
kf5hostname03: 0513-044 The qdaemon Subsystem was requested to stop.
kf5hostname03: 0513-044 The writesrv Subsystem was requested to stop.
kf5hostname03: 0513-044 The clcomd Subsystem was requested to stop.
kf5hostname03: 0513-044 The cimsys Subsystem was requested to stop.
kf5hostname03: 0513-044 The pmperfrec Subsystem was requested to stop.
kf5hostname03: 0513-044 The ctrmc Subsystem was requested to stop.
kf5hostname03: 0513-044 The IBM.ERRM Subsystem was requested to stop.
kf5hostname03: 0513-044 The IBM.HostRM Subsystem was requested to stop.
kf5hostname03: 0513-044 The IBM.ConfigRM Subsystem was requested to stop.
kf5hostname03: 0513-044 The IBM.DRM Subsystem was requested to stop.
kf5hostname03: 0513-044 The IBM.MgmtDomainRM Subsystem was requested to stop.
kf5hostname03: 0513-044 The IBM.ServiceRM Subsystem was requested to stop.
kf5hostname03: 0513-044 The ctcas Subsystem was requested to stop.
kf5hostname03: All processes currently running will now be killed...
kf5hostname03: Connection to kf5hostname03 closed by remote host.
```

### 17. Command: Verify the efix is installed on the management standby.

```
dsh -n ${BCUMGMTSTDBY} 'emgr -l'
```

#### Example Output:

```
$ dsh -n ${BCUMGMTSTDBY} 'emgr -l'
kf5hostname03:
kf5hostname03: ID   STATE LABEL          INSTALL TIME    UPDATED BY ABSTRACT
kf5hostname03: ==  =====
kf5hostname03: 1    S    IJ29552s7b 03/02/21 21:58:07 IJ29552 LOAD MODULE AUTH ISSUES
kf5hostname03:
kf5hostname03: STATE codes:
kf5hostname03: S = STABLE
kf5hostname03: M = MOUNTED
kf5hostname03: U = UNMOUNTED
kf5hostname03: Q = REBOOT REQUIRED
kf5hostname03: B = BROKEN
kf5hostname03: I = INSTALLING
kf5hostname03: R = REMOVING
kf5hostname03: T = TESTED
kf5hostname03: P = PATCHED
kf5hostname03: N = NOT PATCHED
kf5hostname03: SP = STABLE + PATCHED
kf5hostname03: SN = STABLE + NOT PATCHED
kf5hostname03: QP = BOOT IMAGE MODIFIED + PATCHED
kf5hostname03: QN = BOOT IMAGE MODIFIED + NOT PATCHED
kf5hostname03: RQ = REMOVING + REBOOT REQUIRED
```

### 18. Command: Mount /BCU\_share after reboot.

```
./enable_bcushare.sh
```

#### Example Output:

```
$ ./enable_bcushare.sh
20210302_221953 (kf5hostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20210302_221954 (kf5hostname01:enable_bcushare.sh): Warning: The following hosts are missing /BCU_share mounts.
kf5hostname03: Warning: Missing /BCU_share mount.
20210302_221954 (kf5hostname01:enable_bcushare.sh): Attempting to mount /BCU_share on all hosts.
20210302_221955 (kf5hostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20210302_221956 (kf5hostname01:enable_bcushare.sh): Success: /BCU_share is mounted on all hosts.
20210302_221956 (kf5hostname01:enable_bcushare.sh): enable_bcushare.sh completed with rc=0.
```

## Phase 3: Update FC Adapter, Card Adapter and Network Adapter

1. Command: The management nodes will not have FC Adapter nor Network Adapter Updates. The following command will list all adapters that require updates. This list should only include FC adapters from Data Nodes. This command will be used again as part of Stage 7 to update FC adapters on all quiesced hosts.

```
./update_adapters.sh validate
```

Example Output:

```
$ ./update_adapters.sh validate
20201216_022908 (flashdancehostname01:update_adapters.sh): Starting date: Wed Dec 16 02:29:08 IST 2020.
20201216_022908 (flashdancehostname01:update_adapters.sh): Checking for available updates.
20201216_022908 (flashdancehostname01:update_adapters.sh): Checking for Quiesced hosts.
20201216_022915 (flashdancehostname01:update_adapters.sh): Checking for adapters that are eligible for updates.
20201216_022942 (flashdancehostname01:update_adapters.sh): The following is a list of all adapters requiring updates. Only
adapters on quiesced hosts will be updated.
20201216_022942 (flashdancehostname01:update_adapters.sh):

server2 flashdancehostname05 172.23.1.5 fc_adapter6 server2 7710322514101e04 0320080270
server2 flashdancehostname05 172.23.1.5 fc_adapter7 server2 7710322514101e04 0320080270
server2 flashdancehostname05 172.23.1.5 fc_adapter8 server2 7710322514101e04 0320080270
server2 flashdancehostname05 172.23.1.5 fc_adapter9 server2 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter0 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter1 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter2 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter3 server0 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter18 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter19 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter20 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter21 server5 7710322514101e04 0320080270

20201216_022942 (flashdancehostname01:update_adapters.sh): Starting date: Wed Dec 16 02:29:08 IST 2020 Ending Date: Wed Dec 16
02:29:42 IST 2020.

(1) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

2. Command: Validate the sissas adapters on the management hosts. This will list all adapters that should be updated and all adapters that would be updated on quiesced hosts.

```
./update_sissas.sh validate
```

Example Output:

```
$ ./update_sissas.sh validate
20201216_084105 (flashdancehostname01:update_sissas.sh): Starting date: Wed Dec 16 08:41:05 IST 2020.
20201216_084105 (flashdancehostname01:update_sissas.sh): Checking for available updates.
20201216_084106 (flashdancehostname01:update_sissas.sh): Checking for Quiesced hosts.
20201216_084113 (flashdancehostname01:update_sissas.sh): Checking for adapters that are eligible for updates.
20201216_084118 (flashdancehostname01:update_sissas.sh): The following is a list of all adapters requiring updates. Only adapters
on quiesced hosts will be updated.
20201216_084118 (flashdancehostname01:update_sissas.sh):

flashdancehostname06:172.23.1.6:sissas0:19512300
flashdancehostname06:172.23.1.6:sissas1:19512300
flashdancehostname03:172.23.1.3:sissas0:19512300
flashdancehostname05:172.23.1.5:sissas0:19512300
flashdancehostname05:172.23.1.5:sissas1:19512300
flashdancehostname02:172.23.1.2:sissas0:19512300
flashdancehostname04:172.23.1.4:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas1:19512300
flashdancehostname01:172.23.1.1:sissas0:19512300

20201216_084118 (flashdancehostname01:update_sissas.sh): The following adapters are eligible for updates. '
flashdancehostname03:172.23.1.3:sissas0:19512300
flashdancehostname01:172.23.1.1:sissas0:19512300'.
20201216_084118 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pflayer/bin/icmds/adapterfw
validate -i 172.23.1.3 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
```

## STAGE 6 - Management stack upgrade

```
20201216_084118 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pfplayer/bin/icmds/adapterfw
validate -i 172.23.1.1 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
20201216_084118 (flashdancehostname01:update_sissas.sh): Starting date: Wed Dec 16 08:41:05 IST 2020    Ending Date: Wed Dec 16
08:41:18 IST 2020.
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 3. Command: Update the management node adapters.

```
./update_sissas.sh update
```

#### Example Output:

```
$ ./update_sissas.sh update
20201216_085225 (flashdancehostname01:update_sissas.sh): Starting date: Wed Dec 16 08:52:25 IST 2020.
20201216_085225 (flashdancehostname01:update_sissas.sh): Checking for available updates.
20201216_085225 (flashdancehostname01:update_sissas.sh): Checking for Quiesced hosts.
20201216_085232 (flashdancehostname01:update_sissas.sh): Checking for adapters that are eligible for updates.
20201216_085236 (flashdancehostname01:update_sissas.sh): The following is a list of all adapters requiring updates. Only adapters
on quiesced hosts will be updated.
20201216_085236 (flashdancehostname01:update_sissas.sh):

flashdancehostname06:172.23.1.6:sissas0:19512300
flashdancehostname06:172.23.1.6:sissas1:19512300
flashdancehostname05:172.23.1.5:sissas0:19512300
flashdancehostname05:172.23.1.5:sissas1:19512300
flashdancehostname02:172.23.1.2:sissas0:19512300
flashdancehostname04:172.23.1.4:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas1:19512300
flashdancehostname01:172.23.1.1:sissas0:19512300

20201216_085236 (flashdancehostname01:update_sissas.sh): The following adapters are eligible for updates. '
flashdancehostname01:172.23.1.1:sissas0:19512300'.
20201216_085236 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pfplayer/bin/icmds/adapterfw -
validate -i 172.23.1.1 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
The adapter validation is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-
57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas0(172.23.1.1).
20201216_085238 (flashdancehostname01:update_sissas.sh): The following adapters are eligible for updates. '
flashdancehostname01:172.23.1.1:sissas0:19512300'.
20201216_085238 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pfplayer/bin/icmds/adapterfw -
update -i 172.23.1.1 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
The adapter update is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-
57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas0(172.23.1.1).
20201216_085334 (flashdancehostname01:update_sissas.sh): Starting date: Wed Dec 16 08:52:25 IST 2020    Ending Date: Wed Dec 16
08:53:34 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 4. Command: Verify the adapter versions. The management nodes should be at 19512b00.

```
/BCU_share/FP8_FP4/fixpack_tools/status/adapter_status.sh | grep sissas
```

#### Example Output:

```
$ /BCU_share/FP8_FP4/fixpack_tools/status/adapter_status.sh | grep sissas
flashdancehostname01: 172.23.1.1:sissas0: 53495351.19512b00: Customer Card ID Number.....57D7
flashdancehostname02: 172.23.1.2:sissas0: 53495351.19512300: Customer Card ID Number.....57D7
flashdancehostname03: 172.23.1.3:sissas0: 53495351.19512b00: Customer Card ID Number.....57D7
flashdancehostname04: 172.23.1.4:sissas0: 53495351.19512300: Customer Card ID Number.....57D7
flashdancehostname05: 172.23.1.5:sissas0: 53495351.19512300: Customer Card ID Number.....57D7
flashdancehostname05: sissas1: 53495351.19512300: Customer Card ID Number.....57D7
flashdancehostname06: 172.23.1.6:sissas0: 53495351.19512300: Customer Card ID Number.....57D7
flashdancehostname06: sissas1: 53495351.19512300: Customer Card ID Number.....57D7
flashdancehostname07: 172.23.1.7:sissas0: 53495351.19512300: Customer Card ID Number.....57D7
flashdancehostname07: sissas1: 53495351.19512300: Customer Card ID Number.....57D7
```

## Phase 4: Update GPFS on the management hosts

1. Ensure DPM services are offline.
2. Command: Quiesce the management hosts.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/quiesce_node.sh'
```

Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/quiesce_node.sh'
flashdancehostname01: 20201216_004545 (flashdancehostname01:quiesce_node.sh): Starting date: Wed Dec 16 00:45:45 IST 2020.
flashdancehostname01: 20201216_004545 (flashdancehostname01:quiesce_node.sh): Attempting to quiesce host flashdancehostname01.
flashdancehostname01: 20201216_004545 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 00:45:45 IST 2020.
flashdancehostname01: 20201216_004546 (flashdancehostname01:check_server_state.sh): Service States:
flashdancehostname01:
flashdancehostname01:
flashdancehostname01: 20201216_004546 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 00:45:45 IST 2020
Ending Date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname01: 20201216_004546 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname01: 20201216_004546 (flashdancehostname01:check_server_state.sh): Domain state: 'Offline'.
flashdancehostname01: 20201216_004546 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020
Ending Date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname01: 20201216_004546 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname01: 20201216_004546 (flashdancehostname01:check_server_state.sh): Domain state: 'Offline'.
flashdancehostname01: 20201216_004546 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020
Ending Date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname01: 20201216_004546 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname01: 20201216_004548 (flashdancehostname01:check_server_state.sh): GPFS State: 'active'.
flashdancehostname01: 20201216_004548 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020
Ending Date: Wed Dec 16 00:45:48 IST 2020.
flashdancehostname01: 20201216_004550 (flashdancehostname01:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
flashdancehostname01: Wed Dec 16 00:45:50 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
flashdancehostname01: 20201216_004555 (flashdancehostname01:quiesce_node.sh): Stopping GPFS on this host.
flashdancehostname01: Wed Dec 16 00:45:55 IST 2020: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
flashdancehostname01: Wed Dec 16 00:46:00 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
flashdancehostname01: Shutting down!
flashdancehostname01: 'shutdown' command about to kill process 1835568
flashdancehostname01: Wed Dec 16 00:46:09 IST 2020: 6027-1345 mmshutdown: Finished
flashdancehostname01: 20201216_004609 (flashdancehostname01:quiesce_node.sh): Starting date: Wed Dec 16 00:45:45 IST 2020
Ending Date: Wed Dec 16 00:46:09 IST 2020.
flashdancehostname03: 20201216_004546 (flashdancehostname03:quiesce_node.sh): Starting date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname03: 20201216_004546 (flashdancehostname03:quiesce_node.sh): Attempting to quiesce host flashdancehostname03.
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Service States:
flashdancehostname03:
flashdancehostname03:
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020
Ending Date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Domain state: 'Offline'.
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020
Ending Date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Domain state: 'Offline'.
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020
Ending Date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname03: 20201216_004546 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020.
flashdancehostname03: 20201216_004550 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 00:45:46 IST 2020
Ending Date: Wed Dec 16 00:45:50 IST 2020.
flashdancehostname03: 20201216_004552 (flashdancehostname03:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
flashdancehostname03: Wed Dec 16 00:45:52 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
flashdancehostname03: 20201216_004557 (flashdancehostname03:quiesce_node.sh): Stopping GPFS on this host.
flashdancehostname03: Wed Dec 16 00:45:57 IST 2020: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
flashdancehostname03: Wed Dec 16 00:46:02 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
flashdancehostname03: Shutting down!
flashdancehostname03: 'shutdown' command about to kill process 2491306
flashdancehostname03: Wed Dec 16 00:46:19 IST 2020: 6027-1345 mmshutdown: Finished
flashdancehostname03: 20201216_004619 (flashdancehostname03:quiesce_node.sh): Starting date: Wed Dec 16 00:45:46 IST 2020
Ending Date: Wed Dec 16 00:46:19 IST 2020.
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

3. Command: Validate GPFS updates on the management hosts. Output should show 4.2.3.17 on both hosts with at least 5.0.5.0 and 5.0.5.4 versions of GPFS available. The return code for the dsh command should be '0'. This will also extract the 5.0.5.0 version of GPFS.

## STAGE 6 - Management stack upgrade

```
dsh -f 1 -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh validate' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -f 1 -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh validate' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
20201216_015635 (flashdancehostname01:gpfs_utility.sh): Starting date: Wed Dec 16 01:56:34 IST 2020.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): Checking current gpfs version.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): Checking for available gpfs updates.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): There is an available update for this host.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): validate completed on this host.
20201216_015635 (flashdancehostname01:gpfs_utility.sh): Starting date: Wed Dec 16 01:56:34 IST 2020   Ending Date: Wed Dec 16
01:56:35 IST 2020.

HOSTS -----
flashdancehostname03
-----
20201216_015635 (flashdancehostname03:gpfs_utility.sh): Starting date: Wed Dec 16 01:56:35 IST 2020.
20201216_015635 (flashdancehostname03:gpfs_utility.sh): Checking current gpfs version.
20201216_015635 (flashdancehostname03:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20201216_015635 (flashdancehostname03:gpfs_utility.sh): Checking for available gpfs updates.
20201216_015635 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20201216_015635 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20201216_015635 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20201216_015636 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20201216_015636 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20201216_015636 (flashdancehostname03:gpfs_utility.sh): There is an available update for this host.
20201216_015636 (flashdancehostname03:gpfs_utility.sh): validate completed on this host.
20201216_015636 (flashdancehostname03:gpfs_utility.sh): Starting date: Wed Dec 16 01:56:35 IST 2020   Ending Date: Wed Dec 16
01:56:36 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## 4. Command: Update GPFS on the management hosts to 5.0.5.0.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh update' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh update' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
20201216_015854 (flashdancehostname01:gpfs_utility.sh): Starting date: Wed Dec 16 01:58:54 IST 2020.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): Checking current gpfs version.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): Checking for available gpfs updates.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): There is an available update for this host.
20201216_015854 (flashdancehostname01:gpfs_utility.sh): Verifying this host is ready to update.
20201216_015854 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 01:58:54 IST 2020.
20201216_015854 (flashdancehostname01:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
GPFS: 6027-501 /usr/lpp/mmfs/bin/mmfskxunload: module /usr/lpp/mmfs/bin/mmfs unloaded.
20201216_015855 (flashdancehostname01:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20201216_015857 (flashdancehostname01:check_server_state.sh): GPFS State: 'down'.
20201216_015857 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 01:58:54 IST 2020   Ending Date: Wed Dec 16
01:58:57 IST 2020.
20201216_015857 (flashdancehostname01:gpfs_utility.sh): Updating GPFS.
20201216_015857 (flashdancehostname01:gpfs_utility.sh): Running cmd 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0.pwraix.tar.gz_extract gpfs' to update gpfs to version
'5.0.5.0'.
20201216_020010 (flashdancehostname01:gpfs_utility.sh): The command 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0.pwraix.tar.gz_extract gpfs' returned '0'.
20201216_020010 (flashdancehostname01:gpfs_utility.sh): update completed on this host.
20201216_020010 (flashdancehostname01:gpfs_utility.sh): Starting date: Wed Dec 16 01:58:54 IST 2020   Ending Date: Wed Dec 16
02:00:10 IST 2020.

HOSTS -----
flashdancehostname03
-----
20201216_020011 (flashdancehostname03:gpfs_utility.sh): Starting date: Wed Dec 16 02:00:11 IST 2020.
```

## STAGE 6 - Management stack upgrade

```
20201216_020011 (flashdancehostname03:gpfs_utility.sh): Checking current gpfs version.
20201216_020011 (flashdancehostname03:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20201216_020011 (flashdancehostname03:gpfs_utility.sh): Checking for available gpfs updates.
20201216_020011 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20201216_020011 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20201216_020011 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20201216_020011 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20201216_020011 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20201216_020011 (flashdancehostname03:gpfs_utility.sh): There is an available update for this host.
20201216_020011 (flashdancehostname03:gpfs_utility.sh): Verifying this host is ready to update.
20201216_020011 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 02:00:11 IST 2020.
20201216_020011 (flashdancehostname03:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
GPFS: 6027-501 /usr/lpp/mmfs/bin/mmfskxunload: module /usr/lpp/mmfs/bin/mmfs unloaded.
20201216_020014 (flashdancehostname03:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20201216_020016 (flashdancehostname03:check_server_state.sh): GPFS State: 'down'.
20201216_020016 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 02:00:11 IST 2020 Ending Date: Wed Dec 16 02:00:16 IST 2020.
20201216_020016 (flashdancehostname03:gpfs_utility.sh): Updating GPFS.
20201216_020016 (flashdancehostname03:gpfs_utility.sh): Running cmd 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0.pwraix.tar.gz_extract gpfs' to update gpfs to version '5.0.5.0'.
20201216_020128 (flashdancehostname03:gpfs_utility.sh): The command 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0.pwraix.tar.gz_extract gpfs' returned '0'.
20201216_020128 (flashdancehostname03:gpfs_utility.sh): update completed on this host.
20201216_020128 (flashdancehostname03:gpfs_utility.sh): Starting date: Wed Dec 16 02:00:11 IST 2020 Ending Date: Wed Dec 16 02:01:28 IST 2020.
```

### 5. Command: Validate GPFS on the management hosts to 5.0.5.4. This will also extract the 5.0.5.0 version of GPFS.

```
dsh -f 1 -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh validate' 2>&1 | dshbak -c
```

#### Example Output:

```
$ dsh -f 1 -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh validate' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
20201216_020349 (flashdancehostname01:gpfs_utility.sh): Starting date: Wed Dec 16 02:03:49 IST 2020.
20201216_020349 (flashdancehostname01:gpfs_utility.sh): Checking current gpfs version.
20201216_020349 (flashdancehostname01:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20201216_020349 (flashdancehostname01:gpfs_utility.sh): Checking for available gpfs updates.
20201216_020349 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20201216_020349 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20201216_020349 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20201216_020349 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20201216_020349 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
x gpfs.gskit, 46392320 bytes, 90610 media blocks.
x U887459.gpfs.compression.bff, 86016 bytes, 168 media blocks.
x U888315.gpfs.docs.data.bff, 1956864 bytes, 3822 media blocks.
x U888316.gpfs.ext.bff, 6540288 bytes, 12774 media blocks.
x U888317.gpfs.base.bff, 88012800 bytes, 171900 media blocks.
x U888318.gpfs.msg.en_US.bff, 396288 bytes, 774 media blocks.
20201216_020351 (flashdancehostname01:gpfs_utility.sh): There is an available update for this host.
20201216_020351 (flashdancehostname01:gpfs_utility.sh): validate completed on this host.
20201216_020351 (flashdancehostname01:gpfs_utility.sh): Starting date: Wed Dec 16 02:03:49 IST 2020 Ending Date: Wed Dec 16 02:03:51 IST 2020.

HOSTS -----
flashdancehostname03
-----
20201216_020352 (flashdancehostname03:gpfs_utility.sh): Starting date: Wed Dec 16 02:03:52 IST 2020.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): Checking current gpfs version.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): Checking for available gpfs updates.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): There is an available update for this host.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): validate completed on this host.
20201216_020352 (flashdancehostname03:gpfs_utility.sh): Starting date: Wed Dec 16 02:03:52 IST 2020 Ending Date: Wed Dec 16 02:03:52 IST 2020.
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 6 - Management stack upgrade

### 6. Command: Update GPFS to 5.0.5.4 on the management hosts.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh update' 2>&1 | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh update' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
20201216_020646 (flashdancehostname01:gpfs_utility.sh): Starting date: Wed Dec 16 02:06:46 IST 2020.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): Checking current gpfs version.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): Checking for available gpfs updates.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): There is an available update for this host.
20201216_020646 (flashdancehostname01:gpfs_utility.sh): Verifying this host is ready to update.
20201216_020646 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 02:06:46 IST 2020.
20201216_020646 (flashdancehostname01:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20201216_020646 (flashdancehostname01:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20201216_020649 (flashdancehostname01:check_server_state.sh): GPFS State: 'down'.
20201216_020649 (flashdancehostname01:check_server_state.sh): Starting date: Wed Dec 16 02:06:46 IST 2020   Ending Date: Wed Dec 16 02:06:49 IST 2020.
20201216_020649 (flashdancehostname01:gpfs_utility.sh): Updating GPFS.
20201216_020649 (flashdancehostname01:gpfs_utility.sh): Running cmd 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' to update gpfs to version '5.0.5.4'.
20201216_020831 (flashdancehostname01:gpfs_utility.sh): The command 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' returned '0'.
20201216_020831 (flashdancehostname01:gpfs_utility.sh): update completed on this host.
20201216_020831 (flashdancehostname01:gpfs_utility.sh): Starting date: Wed Dec 16 02:06:46 IST 2020   Ending Date: Wed Dec 16 02:08:31 IST 2020.

HOSTS -----
flashdancehostname03
-----
20201216_020831 (flashdancehostname03:gpfs_utility.sh): Starting date: Wed Dec 16 02:08:31 IST 2020.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): Checking current gpfs version.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): Checking for available gpfs updates.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): There is an available update for this host.
20201216_020831 (flashdancehostname03:gpfs_utility.sh): Verifying this host is ready to update.
20201216_020832 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 02:08:32 IST 2020.
20201216_020832 (flashdancehostname03:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20201216_020832 (flashdancehostname03:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20201216_020834 (flashdancehostname03:check_server_state.sh): GPFS State: 'down'.
20201216_020834 (flashdancehostname03:check_server_state.sh): Starting date: Wed Dec 16 02:08:32 IST 2020   Ending Date: Wed Dec 16 02:08:34 IST 2020.
20201216_020834 (flashdancehostname03:gpfs_utility.sh): Updating GPFS.
20201216_020834 (flashdancehostname03:gpfs_utility.sh): Running cmd 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' to update gpfs to version '5.0.5.4'.
20201216_021014 (flashdancehostname03:gpfs_utility.sh): The command 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' returned '0'.
20201216_021014 (flashdancehostname03:gpfs_utility.sh): update completed on this host.
20201216_021014 (flashdancehostname03:gpfs_utility.sh): Starting date: Wed Dec 16 02:08:31 IST 2020   Ending Date: Wed Dec 16 02:10:14 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 6 - Management stack upgrade

### 7. Command: Verify GPFS Levels.

```
dsh -f 1 -n ${BCUMGMT},${BCUMGMTSTDBY} 'lspp -l "gpfs*" | dshbak -c
```

#### Example Output:

```
$ dsh -f 1 -n ${BCUMGMT},${BCUMGMTSTDBY} 'lspp -l "gpfs*" | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
Fileset                Level  State      Description
-----
Path: /usr/lib/objrepos
gpfs.base               5.0.5.4  APPLIED    GPFS File Manager
gpfs.compression         5.0.5.1  APPLIED    GPFS Compression Libraries
gpfs.ext                 5.0.5.4  APPLIED    GPFS Extended Features
gpfs.gskit               8.0.55.12 COMMITTED  GPFS GSKit Cryptography
                        Runtime
gpfs.license.std         5.0.5.0  COMMITTED  IBM Spectrum Scale Standard
                        Edition License
gpfs.msg.en_US           5.0.5.4  APPLIED    GPFS Server Messages - U.S.
                        English

Path: /etc/objrepos
gpfs.base               5.0.5.4  APPLIED    GPFS File Manager

Path: /usr/share/lib/objrepos
gpfs.docs.data           5.0.5.3  APPLIED    GPFS Server Manpages and
                        Documentation
```

### 8. Command: Start GPFS on the management hosts. Repeat the command until all management hosts are Active.

```
/usr/lpp/mmfs/bin/mmstartup -a
```

#### Example Output:

```
$ /usr/lpp/mmfs/bin/mmstartup -a
Wed Dec 16 02:14:51 IST 2020: 6027-1642 mmstartup: Starting GPFS ...

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
$ /usr/lpp/mmfs/bin/mmgetstate -a

Node number  Node name      GPFS state
-----
1            flashdancehostname01 arbitrating
2            flashdancehostname03 arbitrating

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
$ /usr/lpp/mmfs/bin/mmgetstate -a

Node number  Node name      GPFS state
-----
1            flashdancehostname01 active
2            flashdancehostname03 active
```

### 9. Command: Verify Minimum Release Level

```
date;time dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/lpp/mmfs/bin/mmlsconfig minReleaseLevel'
```

#### Example Output:

```
$ date;time dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/lpp/mmfs/bin/mmlsconfig minReleaseLevel'
Wed Dec 16 02:16:34 IST 2020
flashdancehostname01: minReleaseLevel 4.2.3.9
flashdancehostname03: minReleaseLevel 4.2.3.9

real    0m1.94s
user    0m0.48s
sys     0m0.16s

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 6 - Management stack upgrade

### 10. Verify Filesystem Mounts

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'mount | grep -i mmfs' | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'mount | grep -i mmfs' | dshbak -c
HOSTS -----
flashdancehostname01
-----
      /dev/opm           /opmfs           mmfs   Dec 16 02:15 rw,mtime,atime,dev=opm
      /dev/db2home       /db2home         mmfs   Dec 16 02:15 rw,dev=FOUNDATION.GPFS:db2home,ldev=db2home
      /dev/dwhome        /dwhome          mmfs   Dec 16 02:15 rw,dev=FOUNDATION.GPFS:dwhome,ldev=dwhome
      /dev/stage         /stage           mmfs   Dec 16 02:15 rw,dev=FOUNDATION.GPFS:stage,ldev=stage
      /dev/appsvr        /usr/IBM/dwe/appserver_001 mmfs   Dec 16 02:15 rw,mtime,atime,dev=appsvr

HOSTS -----
flashdancehostname03
-----
      /dev/appsvr        /usr/IBM/dwe/appserver_001 mmfs   Dec 16 02:15 rw,mtime,atime,dev=appsvr
      /dev/opm           /opmfs           mmfs   Dec 16 02:15 rw,mtime,atime,dev=opm
      /dev/db2home       /db2home         mmfs   Dec 16 02:15 rw,dev=FOUNDATION.GPFS:db2home,ldev=db2home
      /dev/dwhome        /dwhome          mmfs   Dec 16 02:15 rw,dev=FOUNDATION.GPFS:dwhome,ldev=dwhome
      /dev/stage         /stage           mmfs   Dec 16 02:15 rw,dev=FOUNDATION.GPFS:stage,ldev=stage

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## Phase 5: Update TSA on the management hosts.

While DPM (or OPM) will be removed at the end of the fixpack process, we will still update TSA on the management hosts and ensure it is working properly.

This step assumes that host is quiesced in terms of running services and the domains and that GPFS is started and GPFS filesystems are mounted.

1. Command: As root running in a terminal or screen session on the management node, run the TSA validation. This command will unpack the appropriate TSA Fixpack (on first host only), will run prereqSAM to verify the fixpack is ready to be applied.

```
dsh -f 1 -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh validate' 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -f 1 -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh validate' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
20201216_235641 (flashdancehostname01:tsa_utility.sh): Starting date: Wed Dec 16 23:56:41 IST 2020.
20201216_235641 (flashdancehostname01:tsa_utility.sh): Checking current TSA version.
20201216_235641 (flashdancehostname01:tsa_utility.sh): My TSA version is '4.1.0.5'.
20201216_235641 (flashdancehostname01:tsa_utility.sh): Checking for available TSA updates.
20201216_235641 (flashdancehostname01:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20201216_235641 (flashdancehostname01:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20201216_235641 (flashdancehostname01:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20201216_235641 (flashdancehostname01:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20201216_235641 (flashdancehostname01:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20201216_235641 (flashdancehostname01:tsa_utility.sh): Next Version      : 4.1.0.0006.
20201216_235641 (flashdancehostname01:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20201216_235641 (flashdancehostname01:tsa_utility.sh): Unpacking TSA update.
x SAM4106MPAIX
x SAM4106MPAIX/AIX
x SAM4106MPAIX/AIX/rsct
x SAM4106MPAIX/AIX/rsct/inst
...
x SAM4106MPAIX/prereqSAM, 119644 bytes, 234 media blocks.
20201216_235648 (flashdancehostname01:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20201216_235650 (flashdancehostname01:tsa_utility.sh): There is an available update for this host.
20201216_235650 (flashdancehostname01:tsa_utility.sh): Starting date: Wed Dec 16 23:56:41 IST 2020    Ending Date: Wed Dec 16
23:56:50 IST 2020.

HOSTS -----
flashdancehostname03
-----
20201216_235650 (flashdancehostname03:tsa_utility.sh): Starting date: Wed Dec 16 23:56:50 IST 2020.
20201216_235650 (flashdancehostname03:tsa_utility.sh): Checking current TSA version.
20201216_235650 (flashdancehostname03:tsa_utility.sh): My TSA version is '4.1.0.5'.
20201216_235650 (flashdancehostname03:tsa_utility.sh): Checking for available TSA updates.
20201216_235650 (flashdancehostname03:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20201216_235650 (flashdancehostname03:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20201216_235650 (flashdancehostname03:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20201216_235650 (flashdancehostname03:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20201216_235650 (flashdancehostname03:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20201216_235650 (flashdancehostname03:tsa_utility.sh): Next Version      : 4.1.0.0006.
20201216_235650 (flashdancehostname03:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20201216_235650 (flashdancehostname03:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20201216_235652 (flashdancehostname03:tsa_utility.sh): There is an available update for this host.
20201216_235652 (flashdancehostname03:tsa_utility.sh): Starting date: Wed Dec 16 23:56:50 IST 2020    Ending Date: Wed Dec 16
23:56:52 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 6 - Management stack upgrade

### 2. Command: Run the following command to update TSA on the management hosts.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh update' 2>&1 | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh update' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname03
-----
20201217_000259 (flashdancehostname03:tsa_utility.sh): Starting date: Thu Dec 17 00:02:59 IST 2020.
20201217_000259 (flashdancehostname03:tsa_utility.sh): Checking current TSA version.
20201217_000259 (flashdancehostname03:tsa_utility.sh): My TSA version is '4.1.0.5'.
20201217_000259 (flashdancehostname03:tsa_utility.sh): Checking for available TSA updates.
20201217_000259 (flashdancehostname03:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20201217_000259 (flashdancehostname03:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20201217_000259 (flashdancehostname03:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20201217_000259 (flashdancehostname03:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20201217_000259 (flashdancehostname03:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20201217_000259 (flashdancehostname03:tsa_utility.sh): Next Version      : 4.1.0.0006.
20201217_000259 (flashdancehostname03:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20201217_000259 (flashdancehostname03:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20201217_000301 (flashdancehostname03:tsa_utility.sh): There is an available update for this host.
20201217_000301 (flashdancehostname03:tsa_utility.sh): Verifying this host is ready to update. Domain must be offline on this
node.
20201217_000301 (flashdancehostname03:check_server_state.sh): Starting date: Thu Dec 17 00:03:01 IST 2020.
20201217_000301 (flashdancehostname03:check_server_state.sh): Domain state: 'Offline'.
20201217_000301 (flashdancehostname03:check_server_state.sh): Starting date: Thu Dec 17 00:03:01 IST 2020   Ending Date: Thu Dec
17 00:03:01 IST 2020.
20201217_000301 (flashdancehostname03:tsa_utility.sh): Updating TSA.
20201217_000301 (flashdancehostname03:tsa_utility.sh): Running update command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM'.
20201217_001042 (flashdancehostname03:tsa_utility.sh): The command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM' returned '0'.
20201217_001042 (flashdancehostname03:tsa_utility.sh): Update completed. Checking TSA version.
20201217_001042 (flashdancehostname03:tsa_utility.sh): My TSA version is '4.1.0.6'.
20201217_001042 (flashdancehostname03:tsa_utility.sh): Version verified.
20201217_001042 (flashdancehostname03:tsa_utility.sh): Starting date: Thu Dec 17 00:02:59 IST 2020   Ending Date: Thu Dec 17
00:10:42 IST 2020.

HOSTS -----
flashdancehostname01
-----
20201217_000259 (flashdancehostname01:tsa_utility.sh): Starting date: Thu Dec 17 00:02:59 IST 2020.
20201217_000259 (flashdancehostname01:tsa_utility.sh): Checking current TSA version.
20201217_000259 (flashdancehostname01:tsa_utility.sh): My TSA version is '4.1.0.5'.
20201217_000259 (flashdancehostname01:tsa_utility.sh): Checking for available TSA updates.
20201217_000259 (flashdancehostname01:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20201217_000259 (flashdancehostname01:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20201217_000259 (flashdancehostname01:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20201217_000259 (flashdancehostname01:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20201217_000259 (flashdancehostname01:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20201217_000259 (flashdancehostname01:tsa_utility.sh): Next Version      : 4.1.0.0006.
20201217_000259 (flashdancehostname01:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20201217_000259 (flashdancehostname01:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20201217_000301 (flashdancehostname01:tsa_utility.sh): There is an available update for this host.
20201217_000301 (flashdancehostname01:tsa_utility.sh): Verifying this host is ready to update. Domain must be offline on this
node.
20201217_000301 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 17 00:03:01 IST 2020.
20201217_000301 (flashdancehostname01:check_server_state.sh): Domain state: 'Offline'.
20201217_000301 (flashdancehostname01:check_server_state.sh): Starting date: Thu Dec 17 00:03:01 IST 2020   Ending Date: Thu Dec
17 00:03:01 IST 2020.
20201217_000301 (flashdancehostname01:tsa_utility.sh): Updating TSA.
20201217_000301 (flashdancehostname01:tsa_utility.sh): Running update command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM'.
20201217_001055 (flashdancehostname01:tsa_utility.sh): The command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM' returned '0'.
20201217_001055 (flashdancehostname01:tsa_utility.sh): Update completed. Checking TSA version.
20201217_001055 (flashdancehostname01:tsa_utility.sh): My TSA version is '4.1.0.6'.
20201217_001055 (flashdancehostname01:tsa_utility.sh): Version verified.
20201217_001055 (flashdancehostname01:tsa_utility.sh): Starting date: Thu Dec 17 00:02:59 IST 2020   Ending Date: Thu Dec 17
00:10:55 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```



## STAGE 6 - Management stack upgrade

3. Command: Start the TSA domain on the management host. There is no output unless there is an error.

```
hadomain -mgmt start
```

4. Command: Verify the domain is started.

```
hals -mgmt
```

### Example Output:

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | N/A     | N/A     | Offline | Offline   | -           |
| DB2DPM    | flashdancehostname01 | N/A     | N/A     | Offline | Offline   | -           |
=====+=====+=====+=====+=====+=====+=====+=====+
```

5. Command: Verify the domain is in mixed mode and is still running the old RSCT level (3.2.4.3). Mixed Versions indicates that RSCT has not been migrated after being updated.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'lsrpdomain' | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'lsrpdomain' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
Name      OpState RSCTActiveVersion MixedVersions TSPort GSPort
mgmtdomain Online  3.2.4.3          Yes          12347 12348
```

6. Command: Verify that TSA is not yet migrated and shows the AVN is 4.1.0.5 and the IVN is 4.1.0.6.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lssrc -ls IBM.RecoveryRM | egrep 'IVN|AVN'" | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lssrc -ls IBM.RecoveryRM | egrep 'IVN|AVN'" | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
Our IVN      : 4.1.0.6
Our AVN      : 4.1.0.5
```

7. Command: Migrate RSCT and TSA using the following command. This command will only run the migration on the current domain leader. It will first run the RSCT migration and then the TSA migration if that is successful.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh commit' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh commit' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname03
-----
20201217_003534 (flashdancehostname03:tsa_utility.sh): Starting date: Thu Dec 17 00:35:34 IST 2020.
20201217_003534 (flashdancehostname03:tsa_utility.sh): Checking current TSA version.
20201217_003534 (flashdancehostname03:tsa_utility.sh): My TSA version is '4.1.0.6'.
20201217_003535 (flashdancehostname03:tsa_utility.sh): Checking for available TSA updates.
20201217_003535 (flashdancehostname03:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20201217_003535 (flashdancehostname03:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20201217_003535 (flashdancehostname03:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20201217_003535 (flashdancehostname03:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20201217_003535 (flashdancehostname03:tsa_utility.sh): Found TSA version '4.1.0.0006'.
```

## STAGE 6 - Management stack upgrade

```
20201217_003535 (flashdancehostname03:tlsa_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20201217_003535 (flashdancehostname03:tlsa_utility.sh): There is no available update for this host.
20201217_003535 (flashdancehostname03:tlsa_utility.sh): Collecting domain details.
20201217_003535 (flashdancehostname03:tlsa_utility.sh): Domain is online.
20201217_003535 (flashdancehostname03:tlsa_utility.sh): Domain RSCT is in mixed mode.
20201217_003535 (flashdancehostname03:tlsa_utility.sh): All nodes are online.
20201217_003535 (flashdancehostname03:tlsa_utility.sh): Will not run RSCT migration on this host as it is not the leader.
20201217_003535 (flashdancehostname03:tlsa_utility.sh): Starting date: Thu Dec 17 00:35:34 IST 2020    Ending Date: Thu Dec 17
00:35:35 IST 2020.

HOSTS -----
flashdancehostname01
-----
20201217_003534 (flashdancehostname01:tlsa_utility.sh): Starting date: Thu Dec 17 00:35:34 IST 2020.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): Checking current TSA version.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): My TSA version is '4.1.0.6'.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): Checking for available TSA updates.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): Found TSA version '4.1.0.0004'.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): Found TSA version '4.1.0.0005'.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): Found TSA version '4.1.0.0006'.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): There is no available update for this host.
20201217_003534 (flashdancehostname01:tlsa_utility.sh): Collecting domain details.
20201217_003535 (flashdancehostname01:tlsa_utility.sh): Domain is online.
20201217_003535 (flashdancehostname01:tlsa_utility.sh): Domain RSCT is in mixed mode.
20201217_003535 (flashdancehostname01:tlsa_utility.sh): All nodes are online.
20201217_003535 (flashdancehostname01:tlsa_utility.sh): Running rsct migration 'runact -c IBM.PeerDomain CompleteMigration
Options=0' on this host as it is the leader.
Resource Class Action Response for CompleteMigration
20201217_003537 (flashdancehostname01:tlsa_utility.sh): Collecting domain details.
20201217_003537 (flashdancehostname01:tlsa_utility.sh): Domain is online.
20201217_003537 (flashdancehostname01:tlsa_utility.sh): Domain is not in mixed mode.
20201217_003538 (flashdancehostname01:tlsa_utility.sh): TSA migration is required.
20201217_003538 (flashdancehostname01:tlsa_utility.sh): This host is the domain leader.
20201217_003538 (flashdancehostname01:tlsa_utility.sh): Running 'echo Y | samctrl -m' to migrate TSA domain.
The cluster mgmt domain is ready to be migrated from "4.1.0.5" to a new level. Type Y to perform migration [Y|N]:

Active version successfully migrated to new version "4.1.0.6"!
20201217_003543 (flashdancehostname01:tlsa_utility.sh): Collecting domain details.
20201217_003543 (flashdancehostname01:tlsa_utility.sh): Domain is online.
20201217_003543 (flashdancehostname01:tlsa_utility.sh): Domain is not in mixed mode.
20201217_003544 (flashdancehostname01:tlsa_utility.sh): AVN: '4.1.0.6' is equal to IVN: '4.1.0.6'. TSA Migration is not required.
20201217_003544 (flashdancehostname01:tlsa_utility.sh): RSCT and TSA Migration were successful.
20201217_003544 (flashdancehostname01:tlsa_utility.sh): Starting date: Thu Dec 17 00:35:34 IST 2020    Ending Date: Thu Dec 17
00:35:44 IST 2020.
```

### 8. Command: Verify the domain is no longer in mixed mode.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'lsrpdomain' | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'lsrpdomain' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
Name      OpState RSCTActiveVersion MixedVersions TSPort GSPort
mgmt domain Online  3.2.5.2          No          12347  12348
```

### 9. Command: Verify that TSA is migrated and shows the AVN is 4.1.0.6 and the IVN is 4.1.0.6.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lssrc -ls IBM.RecoveryRM | egrep 'IVN|AVN'" | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "lssrc -ls IBM.RecoveryRM | egrep 'IVN|AVN'" | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
Our IVN      : 4.1.0.6
Our AVN      : 4.1.0.6
```

STAGE 6 - Management stack upgrade

10. Command: Check for rsct filesets in the Applied state on the management hosts.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'installp -s rsct*' 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'installp -s rsct*' 2>&1 | dshbak -c
HOSTS -----
kf5hostname01, kf5hostname03
-----
rsct.basic.rte          ROOT    3.2.5.2    APPLIED
rsct.basic.rte          USR     3.2.5.2    APPLIED
rsct.basic.rte          USR     3.2.5.3    APPLIED
rsct.basic.rte          ROOT    3.2.5.3    APPLIED
rsct.core.errm          USR     3.2.5.1    APPLIED
rsct.core.errm          ROOT    3.2.5.1    APPLIED
rsct.core.hostrm        USR     3.2.5.2    APPLIED
rsct.core.hostrm        ROOT    3.2.5.2    APPLIED
rsct.core.hostrm        USR     3.2.5.3    APPLIED
rsct.core.hostrm        ROOT    3.2.5.3    APPLIED
rsct.core.hostrm        USR     3.2.5.2    APPLIED
rsct.core.rmc           ROOT    3.2.5.2    APPLIED
rsct.core.rmc           USR     3.2.5.3    APPLIED
rsct.core.rmc           ROOT    3.2.5.3    APPLIED
rsct.core.rmc           USR     3.2.5.3    APPLIED
rsct.core.utils         USR     3.2.5.2    APPLIED
rsct.core.utils         ROOT    3.2.5.2    APPLIED
rsct.core.utils         ROOT    3.2.5.3    APPLIED
rsct.core.utils         USR     3.2.5.3    APPLIED
Installp Status
-----
Name                    Part      Level      State
-----
```

11. Command: Commit the rsct filesets on the management hosts.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'installp -cgX rsct*' 2>&1 | dshbak -c
```

Example Output: (Output may be in multiple stanzas. The example output only shows output from one host.)

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'installp -cgX rsct*' 2>&1 | dshbak -c
HOSTS -----
kf5hostname01
-----
SUCCESES
-----
Filesets listed in this section passed pre-commit verification
and will be committed.

Selected Filesets
-----
rsct.basic.rte 3.2.5.2          # RSCT Basic Function
rsct.basic.rte 3.2.5.3          # RSCT Basic Function
rsct.core.errm 3.2.5.1          # RSCT Event Response Resource...
rsct.core.hostrm 3.2.5.2        # RSCT Host Resource Manager
rsct.core.hostrm 3.2.5.3        # RSCT Host Resource Manager
rsct.core.rmc 3.2.5.2           # RSCT Resource Monitoring and...
rsct.core.rmc 3.2.5.3           # RSCT Resource Monitoring and...
rsct.core.utils 3.2.5.2         # RSCT Utilities
rsct.core.utils 3.2.5.3         # RSCT Utilities

<< End of Success Section >>

+-----+
+-----+ Pre-commit Verification...
+-----+
Verifying selections...done
Verifying requisites...done
Results...

FILESET STATISTICS
-----
9 Selected to be committed, of which:
9 Passed pre-installation verification
-----
9 Total to be committed

+-----+
+-----+ Committing Software...
+-----+

installp: COMMITTING software for:
```

## STAGE 6 - Management stack upgrade

```
rsct.core.utils 3.2.5.2

Filesets processed: 1 of 9 (Total time: 1 secs).

installp: COMMITTING software for:
rsct.core.utils 3.2.5.3

Filesets processed: 2 of 9 (Total time: 1 secs).

installp: COMMITTING software for:
rsct.core.rmc 3.2.5.2

Filesets processed: 3 of 9 (Total time: 1 secs).

installp: COMMITTING software for:
rsct.basic.rte 3.2.5.2

Filesets processed: 4 of 9 (Total time: 2 secs).

installp: COMMITTING software for:
rsct.core.errm 3.2.5.1

Filesets processed: 5 of 9 (Total time: 2 secs).

installp: COMMITTING software for:
rsct.core.hostrm 3.2.5.2

Filesets processed: 6 of 9 (Total time: 2 secs).

installp: COMMITTING software for:
rsct.core.rmc 3.2.5.3

Filesets processed: 7 of 9 (Total time: 2 secs).

installp: COMMITTING software for:
rsct.basic.rte 3.2.5.3

Filesets processed: 8 of 9 (Total time: 3 secs).

installp: COMMITTING software for:
rsct.core.hostrm 3.2.5.3

Finished processing all filesets. (Total time: 3 secs).
+-----+
+-----Summaries-----+
+-----+

Installation Summary
-----
Name                Level      Part      Event      Result
-----
rsct.core.utils      3.2.5.2    USR        COMMIT      SUCCESS
rsct.core.utils      3.2.5.2    ROOT       COMMIT      SUCCESS
rsct.core.utils      3.2.5.3    USR        COMMIT      SUCCESS
rsct.core.utils      3.2.5.3    ROOT       COMMIT      SUCCESS
rsct.core.rmc        3.2.5.2    USR        COMMIT      SUCCESS
rsct.core.rmc        3.2.5.2    ROOT       COMMIT      SUCCESS
rsct.basic.rte       3.2.5.2    USR        COMMIT      SUCCESS
rsct.basic.rte       3.2.5.2    ROOT       COMMIT      SUCCESS
rsct.core.errm       3.2.5.1    USR        COMMIT      SUCCESS
rsct.core.errm       3.2.5.1    ROOT       COMMIT      SUCCESS
rsct.core.hostrm     3.2.5.2    USR        COMMIT      SUCCESS
rsct.core.hostrm     3.2.5.2    ROOT       COMMIT      SUCCESS
rsct.core.hostrm     3.2.5.3    USR        COMMIT      SUCCESS
rsct.core.rmc        3.2.5.3    USR        COMMIT      SUCCESS
rsct.core.rmc        3.2.5.3    ROOT       COMMIT      SUCCESS
rsct.basic.rte       3.2.5.3    USR        COMMIT      SUCCESS
rsct.basic.rte       3.2.5.3    ROOT       COMMIT      SUCCESS
rsct.core.hostrm     3.2.5.3    USR        COMMIT      SUCCESS
rsct.core.hostrm     3.2.5.3    ROOT       COMMIT      SUCCESS
```

## STAGE 6 - Management stack upgrade

### 12. Command: Verify rsct filesets are no longer in the Applied state.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'installp -s rsct*' 2>&1 | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'installp -s rsct*' 2>&1 | dshbak -c
HOSTS -----
kf5hostname01, kf5hostname03
-----
0503-459 installp: No filesets were found in the Software
Vital Product Database in the APPLIED state.
```

## Phase 6: Prepare and Update Db2 on the management hosts.

This step will unpack and prepare the Db2 packages for the management and core hosts updates. If skipping the management hosts Db2 update the still proceed up to item 7 to ensure the database is unpacked and ready as this will be used for Stage 8.

The Db2 update on the management is done in place. This is a restriction imposed by the DPM architecture which does not support installing in an alternate location. This means at installation time an outage is required for all instances using this Db2 copy. If there are other instances then those instances must be stopped before running the update. Other instances are not supported outside of a CCB approval on the management hosts.

If installing a special build that is not shipped with this fixpack, it should be possible to copy that special build (universal fixpack) tgz image to the /BCU\_share/FP8\_FP4/software/DB2 before running the commands to unpack that image. The prepare command will attempt to unpack the directory and will create appropriate links to identify the db2 level of that special build.

1. Command: In the root session on the management host, change the working directory to /BCU\_share/FP8\_FP4/software/DB2.

```
cd /BCU_share/FP8_FP4/software/DB2
```

2. Command: Verify the Db2 Directory as part of this fixpack. This fixpack includes Db2 10.5 and 11.1 Special Builds. The latest available at the time of testing. These are the exact files available for FixCentral.

```
ls -l
```

Example Output:

```
$ ls -l
total 16749336
drwxr-xr-x  2 root  system    256 Nov 11 06:32 log
drwxr-xr-x  3 root  system    256 Dec 18 02:53 logs
lrwxrwxrwx  1 root  system      32 Dec 17 01:41 rspfiles -> ../../fixpack_tools/DB2/rspfiles
lrwxrwxrwx  1 root  system      31 Dec 17 01:41 scripts -> ../../fixpack_tools/DB2/scripts
-rwxr-x---  1 root  system 1884029478 Dec 17 05:10 special_40478_aix64_universal_fixpack.tar.gz
-rwxr-x---  1 root  system 1370772194 Dec 17 05:48 special_40479_aix64_universal_fixpack.tar.gz
-rwxr-x---  1 root  system  338413324 Sep 24 03:35 v10.5fp11_aix64_nlpack.tar.gz
```

## STAGE 6 - Management stack upgrade

3. Command: Unpack the Db2 images shipped with this fixpack. This utility will unpack the files, create descriptive links for each unpacked directory, and print out the cksums for the files. If new universal fixpacks or special builds are available then the .tar.gz file can be placed in this directory and this tool will process those files as well. If you re-run the prepare command it will not display db2 directories that were previously unpacked.

```
./scripts/prepare_db2.sh
```

### Example Output:

```
$ ./scripts/prepare_db2.sh
```

```
Processing package special_40159_aix64_universal_fixpack.tar.gz.
Processing package special_40160_aix64_universal_fixpack.tar.gz.
Processing package v10.5fp11_aix64_nlpack.tar.gz.
```

Unpack Report:

| Filename                                     | Files | Checksum              |
|----------------------------------------------|-------|-----------------------|
| special_40159_aix64_universal_fixpack.tar.gz | 1061  | 2236828507 1884034916 |
| special_40160_aix64_universal_fixpack.tar.gz | 1148  | 155261541 1371456982  |
| v10.5fp11_aix64_nlpack.tar.gz                | 465   | 2502269405 338413324  |

Link Report:

| Version | V String     | Link Name                  | Filename                                     |
|---------|--------------|----------------------------|----------------------------------------------|
| 11.1    | 11.1.4.5..3  | unpack_11.1.4.5..3         | special_40159_aix64_universal_fixpack.tar.gz |
| 10.5    | 10.5.0.11..1 | unpack_10.5.0.11..1        | special_40160_aix64_universal_fixpack.tar.gz |
| 10.5    | 10.5.0.11..0 | unpack_nlpack_10.5.0.11..0 | v10.5fp11_aix64_nlpack.tar.gz                |

4. Command: Verify the unpacked directory. There will be new \_unpack folders and unpack\_ descriptive links. These links are used by the next command to generate install and other migration scripts.

```
ls -la
```

### Example Output:

```
$ ls -la
total 16749384
drwxr-xr-x 7 root system 4096 Dec 18 03:06 .
drwxr-xr-x 7 root system 4096 Dec 17 01:41 ..
-rw-r--r-- 1 root system 1664 Dec 18 03:06 db2aese_addpart_10.5.0.11..2.rsp
-rw-r--r-- 1 root system 224 Dec 18 03:06 db2aese_addpart_10.5.0.11..2.sh
-rw-r--r-- 1 root system 1663 Dec 18 03:06 db2aese_addpart_11.1.4.5..4.rsp
-rw-r--r-- 1 root system 221 Dec 18 03:06 db2aese_addpart_11.1.4.5..4.sh
drwxr-xr-x 2 root system 256 Nov 11 06:32 log
drwxr-xr-x 3 root system 256 Dec 18 02:53 logs
lrwxrwxrwx 1 root system 32 Dec 17 01:41 rspfiles -> ../../fixpack_tools/DB2/rspfiles
lrwxrwxrwx 1 root system 31 Dec 17 01:41 scripts -> ../../fixpack_tools/DB2/scripts
-rwxr-x-- 1 root system 1884029478 Dec 17 05:10 special_40478_aix64_universal_fixpack.tar.gz
drwxr-xr-x 3 root system 256 Dec 18 03:05 special_40478_aix64_universal_fixpack.tar.gz_unpack
-rwxr-x-- 1 root system 1370772194 Dec 17 05:48 special_40479_aix64_universal_fixpack.tar.gz
drwxr-xr-x 3 root system 256 Dec 18 03:05 special_40479_aix64_universal_fixpack.tar.gz_unpack
lrwxrwxrwx 1 root system 51 Dec 18 03:06 unpack_10.5.0.11..2 -> special_40479_aix64_universal_fixpack.tar.gz_unpack
lrwxrwxrwx 1 root system 51 Dec 18 03:05 unpack_11.1.4.5..4 -> special_40478_aix64_universal_fixpack.tar.gz_unpack
lrwxrwxrwx 1 root system 36 Dec 18 03:06 unpack_nlpack_10.5.0.11..0 -> v10.5fp11_aix64_nlpack.tar.gz_unpack
-rwxr-x-- 1 root system 338413324 Sep 24 03:35 v10.5fp11_aix64_nlpack.tar.gz
drwxr-xr-x 3 root system 256 Dec 18 03:06 v10.5fp11_aix64_nlpack.tar.gz_unpack
```

## STAGE 6 - Management stack upgrade

5. Command: Generate the management and core install scripts and instance migration scripts. This command will run dsh scripts to examine what is installed on the system and which instances are assigned. The Example output below shows that dweadmin and db2psc instances are no longer present. It also shows multiple Db2 installations on the core nodes. This output also shows consistent information for the management and core nodes. The core nodes have Db2 11.1.1.4.5..0 installed and the instance owner (bcuaix) is assigned to that copy. If the Db2 global registries are not consistent or there are more complicated setups then this script may produce incorrect results. If using a more complex environment, contact IBM Support for guidance on how to update Db2.

`scripts/gen_update_script.sh`

### Example Output:

```
$ scripts/gen_update_script.sh
Running db2 collection script on all nodes.
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
/usr/IBM/dwe/mgmt_db2/V10.5|10.5|10.5.0.5|10.5.0.5..1|db2opm|db2opm||

HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
/usr/IBM/dwe/db2/V10.5.0.5..1|10.5|10.5.0.5|10.5.0.5..5||||
/usr/IBM/dwe/db2/V11.1|11.1|11.1.0.0|11.1.0.0..0||||
/usr/IBM/dwe/db2/V11.1.4.4.a.2|11.1|11.1.4.4|11.1.4.4.a.2||||
/usr/IBM/dwe/db2/V11.1.4.5..0|11.1|11.1.4.5|11.1.4.5..0|bcuaix|bcuaix||

Preparing management updates.
20201218_031148 (flashdancehostname01:gen_update_script.sh): Looking for fixpacks for vr 10.5 from path
/usr/IBM/dwe/mgmt_db2/V10.5|10.5|10.5.0.5|10.5.0.5..1|db2opm|db2opm||.
20201218_031148 (flashdancehostname01:gen_update_script.sh): Found the following eligible fixpacks. 'unpack_10.5.0.11..2'.
Comparing unpack_10.5.0.5..1 to unpack_10.5.0.11..2.
VRC=1
Preparing core updates.
Looking for fixpacks for vr 11.1 from path /usr/IBM/dwe/db2/V11.1.4.5..0|11.1|11.1.4.5|11.1.4.5..0|bcuaix|bcuaix||.
ls: 0653-341 The file unpack_nlpack_11.1* does not exist.
Comparing unpack_11.1.4.5..0 to unpack_11.1.4.5..4.
VRC=1
Generated instance update script instance_update_bcuaix.sh.
Generated instance registry update script db2greg_update_bcuaix.sh.
Generated management script mgmtfixpack.sh.
Generated management script corefixpack.sh.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

## STAGE 6 - Management stack upgrade

### 6. Examine the generated files.

- a. Command: Management installation script. This script will be run on both the management and management standby hosts to update the Db2 copy in the /usr/IBM/dwe/mgmt\_db2/V10.5 directory. This is an inplace update. On the management host that is the primary according to db2nodes.cfg for each instance this command will also automatically run db2iupdate to migrate the instance.

```
cat mgmtfixpack.sh
```

Example Output:

```
$ cat mgmtfixpack.sh

/BCU_share/FP8_FP4/software/DB2/unpack_10.5.0.11..2/universal/installFixPack -n -b /usr/IBM/dwe/mgmt_db2/V10.5 -c
/BCU_share/FP8_FP4/software/DB2/unpack_nlpack_10.5.0.11..0/nlpack -f NOTSAMP -f update -t
/tmp/${hostname}_db2_10.5.0.11..2_${date +%Y%m%d_%H%M%S}.trc -n
```

- b. Command: Core nodes installation script. This script is used to install a new Db2 copy based on the current base copy as specified by the -b option. The -p option indicates the new installed copy using the PDOA and Smart Analytics naming convention. This provides a unique location for all fixpacks and special builds. This script will not be used until Stage08 and is run on all nodes in parallel.

```
cat corefixpack.sh
```

Example Output:

```
$ cat corefixpack.sh

/BCU_share/FP8_FP4/software/DB2/unpack_11.1.4.5..4/universal/installFixPack -n -b /usr/IBM/dwe/db2/V11.1.4.5..0 -p
/usr/IBM/dwe/db2/V11.1.4.5..4 -f NOTSAMP -f update -t /tmp/${hostname}_db2_11.1.4.5..4_${date +%Y%m%d_%H%M%S}.trc -n
```

- c. Command: Instance Migration Scripts. There should be only one script generated for most if not all PDOA customers as PDOA does not natively support multiple instances. Note if there are multiple instances and the instances are supported by different DB2 copies the contents of corefixpack.sh will be indeterminable. Below the core instance owner is shown as the default *bcuaiX*. This script is run during Stage08 on the designated admin host (as determined by db2nodes.cfg partition 0) to migrate the instance to the newly installed Db2 copy.

```
ls instance_update*
cat instance_update*
```

Example Output:

```
$ ls instance_update*

instance_update_bcuaiX.sh

$ cat instance_update_bcuaiX.sh

/usr/IBM/dwe/db2/V11.1.4.5..4/instance/db2iupdt bcuaiX
```

- d. Command: Db2 Global Registry correction script. This script is used to update the core standby nodes global registries after the instance is migrated. Db2iupdate is not aware of the standby hosts in PDOA's HA architecture. This script identifies the old entries on the standby nodes, removes the old entry, and adds the correct instance registry entry reflecting the updated Db2 copy.

```
cat db2greg_update_bcuaiX.sh
```

Example Output:

## STAGE 6 - Management stack upgrade

```
$ cat db2greg_update_bcuaix.sh
pdir=$(/usr/IBM/dwe/db2/V11.1.4.5..4/bin/db2greg -dump | grep '^I,DB2' | cut -d, -f 4,9 | grep bcuaix, | cut -d, -f2)
if [ ! "$(pdir)" == "/usr/IBM/dwe/db2/V11.1.4.5..4" ];then echo "Updating registry for instance bcuaix on
$(hostname)";/usr/IBM/dwe/db2/V11.1.4.5..4/bin/db2greg -delinstrec
instancename=bcuaix,installpath=$(pdir);/usr/IBM/dwe/db2/V11.1.4.5..4/instance/db2iset -a bcuaix;else echo "Instance is
correctly assigned.";fi
```

7. If OPM and Db2 are being removed, then then the items left in this Stage can be skipped and users can move to the last item in this stage to determine if mksysb's should be taken. The next set of step requires all associated instances to be stopped. If coming from Phase 5 this should be the case. We can use the following to verify the state. The domain is online and DPM is offline.

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----|
| DPM       | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
| DB2DPM    | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
=====+=====+=====+=====+=====+=====+=====+
```

8. Command: Verify the mgmtfixpack.sh command is available to both management hosts and is executable for root.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "ls -la $(pwd)/mgmtfixpack.sh" | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} "ls -la $(pwd)/mgmtfixpack.sh" | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
-rwxr--r-- 1 root system 268 Dec 18 03:11 /BCU_share/FP8_FP4/software/DB2/mgmtfixpack.sh
```

9. Command: In a screen session or vtmenu console session which will not be impacted by a networking issue between the terminal, run the following command to update the Db2 10.5 copy on the management host. This will copy the script specified in the -e argument on all target hosts to /tmp and execute it. It will also log stdout and stderr to the folder specified in the -F argument for each host. This runs the command in parallel on both hosts.

```
time dsh -n ${BCUMGMT},${BCUMGMTSTDBY} -F /BCU_share/support/FP8_FP4/log/db2install -e
/BCU_share/FP8_FP4/software/DB2/mgmtfixpack.sh
```

Example Output:

```
$ time dsh -n ${BCUMGMT},${BCUMGMTSTDBY} -F /BCU_share/FP8_FP4/software/DB2/log/db2install -e
/BCU_share/FP8_FP4/software/DB2/mgmtfixpack.sh
flashdancehostname01: DBI1017I installFixPack is updating the DB2 product(s) installed in
flashdancehostname01: location /usr/IBM/dwe/mgmt_db2/V10.5.
flashdancehostname01:
flashdancehostname01: A minor error occurred during the execution.
flashdancehostname01:
flashdancehostname01: For more information see the DB2 installation log at
flashdancehostname01: "/tmp/installFixPack.log.5112480".
flashdancehostname01: 0516-010 : Volume group must be varied on; use varyonvg command.
flashdancehostname03: DBI1017I installFixPack is updating the DB2 product(s) installed in
flashdancehostname03: location /usr/IBM/dwe/mgmt_db2/V10.5.
flashdancehostname03:
flashdancehostname03: The execution completed successfully.
flashdancehostname03:
flashdancehostname03: For more information see the DB2 installation log at
flashdancehostname03: "/tmp/installFixPack.log.2949686".
flashdancehostname03: 0516-010 : Volume group must be varied on; use varyonvg command.

real 13m43.06s
```

## STAGE 6 - Management stack upgrade

```
user    0m37.97s
sys     1m1.41s
```

### Output Notes:

- 0516-010 : Volume group must be varied on; use varyonvg command
  - This can be ignored and does not impact the update.
- A minor error occurred during the execution.
  - Occurred on the management host.
  - Examine Log. In this case on the management host it is `"/tmp/installFixPack.log.5112480"`

```
WARNING: The install is unable to update the instance "db2opm" because it is
currently in use.  Ensure the instance is not active and update the instance
post install using the command "db2iupdt".
```

```
WARNING: One or more errors occurred while updating the instances on the
system. This usually occurs because some instances are currently active.
```

```
An error occurred while updating the instances. The following instances were
not updated successfully: db2opm  You must update the instances manually. If
you are performing a root installation, use the db2iupdt command. If you are
performing a non-root installation, use the db2nrupdt command. If the manual
instance update also failed, contact DB2 Customer Service.
```

```
Updating existing DB2 instances :.....Failure
```

- In this case DPM was running.

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
=====
```

- Stop DPM and rerun the install on the management host.

```
$ hstopdpm
Stopping DPM and DB2 instance.....Resources offline
MANAGEMENT DOMAIN
=====
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====
| DPM       | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
| DB2DPM    | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
=====
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

- Rerun the installation again on the management host.

```
time dsh -n ${BCUMGMT} -F /BCU_share/FP8_FP4/software/DB2/log/db2install -e
/BCU_share/FP8_FP4/software/DB2/mgmtfixpack.sh
```

### Example Output:

```
$ time dsh -n ${BCUMGMT} -F /BCU_share/FP8_FP4/software/DB2/log/db2install -e
/BCU_share/FP8_FP4/software/DB2/mgmtfixpack.sh
flashdancehostname01: DBI1017I  installFixPack is updating the DB2 product(s) installed in
flashdancehostname01: location /usr/IBM/dwe/mgmt_db2/V10.5.
flashdancehostname01:
flashdancehostname01: The execution completed successfully.
flashdancehostname01:
flashdancehostname01: For more information see the DB2 installation log at
flashdancehostname01: "/tmp/installFixPack.log.5308764".
flashdancehostname01: 0516-010 : Volume group must be varied on; use varyonvg command.

real    9m23.11s
user    0m38.96s
sys     0m51.05s

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

## STAGE 6 - Management stack upgrade

10. Command: Verify the level of Db2 on the management and management standby hosts. Below shows 10.5.0.11..2 which is the expected level as shipped with this fixpack.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
/usr/IBM/dwe/mgmt_db2/V10.5|10.5|10.5.0.11|10.5.0.11..2|db2opm|db2opm||
```

11. Command: If using DPM then restart DPM. If not using DPM then skip this step. In Stage 09 DPM will be removed for customers who no longer need DPM installed.

```
hastartdpm
```

Example Output:

```
$ hastartdpm
Starting DPM and DB2 instance.....Resources online
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY          | STANDBY          | CURRENT          | OPSTATE          | HA STATUS        | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online           | Normal           | -           |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online           | Normal           | -           |
=====+=====+=====+=====+=====+=====+=====+

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

12. After Stage 6 is complete the management nodes are fully updated. This is a good time to consider running another mksysb for those two hosts. While it is possible to use the mksysb script from Stage 2 Phase 1, this script will backup all of the hosts. This is to hedge against a hard disk error on hdisk0, or the current boot disk. It is not recommended to restore the mirrors before taking a mksysb.



## STAGE 7 - Standby nodes update

### Stage 7 Description

#### Steps

- Stage 7 Phase 1: Identify hosts to be updated this cycle.
- Stage 7 Phase 2: Backup hosts.
- Stage 7 Phase 3: Quiesce hosts.
- Stage 7 Phase 4: Update hosts.
- Stage 7 Phase 5: Returning hosts to service.
- Stage 7 Phase 6: Prepare for next cycle.

#### Outage Requirements

- First update should not require any outage, however standby nodes will be brought out of service during the update. This will mean that it will not be possible to failover in affected ha groups until the update is complete and the host is back in service.
- Subsequent updates will require one or more 'failovers' depending on the number of racks or size of the appliance. A failover will result in a disruption of service. The maximum number of failovers between updates should be 7 or 1 failover per rack. Failovers can only be performed sequentially.

#### Time Per Step

- Stage 7 Phase 1: 5 Minutes.
- Stage 7 Phase 2: 20 to 40 minutes.
- Stage 7 Phase 3: 10 to 15 Minutes
- Stage 7 Phase 4: 90 Minutes per host, run in parallel.
- Stage 7 Phase 5: 10 Minutes.
- Stage 7 Phase 6: 5 Minutes per failover per rack. Up to 35 minutes.

#### Risk Mitigation

- In order to follow these steps where the system is online during updates, it will be necessary to perform failovers. Some customers who have updated DB2 in the past without following PDOA guidelines may experience problems when attempting to failover. The most common issues are forgetting to update DB2 on standby hosts, forgetting to apply licenses to new DB2 copies, or forgetting to update the db2 global registry on standby hosts.
- During the update only standby hosts are removed from service. This can allow service to perform problem determination outside of outage windows.

#### Backout Options

- mksysb
- alt\_disk\_install



## STAGE 7 - Standby nodes update

### Update Strategy

The update strategy here is to take advantage of the HA features of the appliance. During the updates the standby hosts will be quiesced from the environments to allow them to be updated while ensuring the core warehouse is still operational. Once the nodes are updated and validated, they will be unquiesced and allowed back into the appliance at their standby roles.

When a host is quiesced, it is removed from participating in its parent TSA Domain and GPFS cluster. Any duties that host may have had within those parents is transferred to other hosts within that domain or cluster. In GPFS clusters this included configuration management (admin or admin standby, or first two LPARs in racks 3-7 if they exist), NSD management (admin or admin standby for /db2home, /dwhome and /stage), or filesystem management (any host).

Another update strategy, and one that is less complicated, is to quiesce all hosts and take a full outage and combine stage 7 and stage 8. The preparation steps in stage 8 can be followed to quiesce all hosts. Once all hosts are quiesced then proceed through the stage 7 steps which can allow many steps to be done in parallel.

HA feature of the appliance gives the flexibility to update standby nodes without any downtime.

Identify the standby nodes and stop the applications on the standby node.

A good method to explain this strategy is to look at a larger example than our instructions will show. The following command shows a 12.5 DN PDOA V1.1 environment.

```
$ hals
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
|=====+=====+=====+=====+=====+=====+=====+
| DPM        | host01  | host03  | host01  | Online  | Normal    | -            |
| DB2DPM     | host01  | host03  | host01  | Online  | Normal    | -            |
|=====+=====+=====+=====+=====+=====+=====+

CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT | STANDBY | DOMAIN   | OPSTATE | HA STATUS | RG REQUESTS |
|=====+=====+=====+=====+=====+=====+=====+
| 0-5        | host04  | host02  | bcudomain01 | Online  | Normal    | -            |
| 6-15       | host06  | host08  | bcudomain02 | Online  | Normal    | -            |
| 16-25      | host07  | host08  | bcudomain02 | Online  | Normal    | -            |
| 26-35      | host05  | host08  | bcudomain02 | Online  | Normal    | -            |
| 36-45      | host09  | host08  | bcudomain02 | Online  | Normal    | -            |
| 46-55      | host13  | host14  | bcudomain03 | Online  | Normal    | -            |
| 56-65      | host12  | host14  | bcudomain03 | Online  | Normal    | -            |
| 66-75      | host10  | host14  | bcudomain03 | Online  | Normal    | -            |
| 76-85      | host11  | host14  | bcudomain03 | Online  | Normal    | -            |
| 86-95      | host18  | host15  | bcudomain04 | Online  | Normal    | -            |
| 96-105     | host17  | host15  | bcudomain04 | Online  | Normal    | -            |
| 106-115    | host16  | host15  | bcudomain04 | Online  | Normal    | -            |
| 116-125    | host19  | host15  | bcudomain04 | Online  | Normal    | -            |
|=====+=====+=====+=====+=====+=====+=====+
```

This environment has 1 management domain and 4 core domains. The update strategy for the above list would be as follows.

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- a. Normalize the management domain and bcudomain01 so that both standby hosts are assigned to the same CEC. In this case failover DPM resources to host03 as host01 and host02 are the same server and host03 and host04 are the same server. Take the interruption on the management hosts. Note that by this time the management hosts in stage 6 have gone through some updates for OS, adapter firmware and software stack. However, they must be quiesced as the power firmware update will reboot the LPARs and the restart the CEC.
- b. Update #1: update the current set of standby hosts (host01, host02, host08, host14, host15).
- c. Failover #1: At a time when interruptions could be handled, initiate failovers. After the failovers are completed it is possible to return to production
  - a. Failover host03 to host01 in mgmt. domain.
  - b. Failover host04 to host02 in bcudomain01.
  - c. Failover host05 to host08 in bcudomain02. [U: host 08 TBD: host 05,06,07,09]
  - d. Failover host10 to host14 in bcudomain03. [U: host 14 TBD: host 10,11,12,13]
  - e. Failover host16 to host15 in bcudomain04. [U: host 15 TBD: host 16,17,18,19]
- d. Update #2: update the current set of standby hosts. (host03, host04, host05, host10, host14).
- e. Failover #2: At a time when interruptions could be handled, initiate failovers. After the failovers are completed it is possible to return to production after failover are completed.
  - a. Management Domain is fully updated, no further updates required in this stage.
  - b. bcudomain01 is fully updated, no further updates required in this stage.
  - c. Failover host06 to host05 in bcudomain02. [U: host 05,08 TBD: host 06, 07,09]
  - d. Failover host11 to host10 in bcudomain03. [U: host 10,14 TBD: host 11,12,13]
  - e. Failover host17 to host16 in bcudomain04. [U: host 15,16 TBD: host 17,18,19]
- f. Update #3: update the current set of standby hosts. (host06, host11, host17)
- g. Failover #3: At a time when interruptions could be handled, initiate failovers. After the failovers are completed it is possible to return to production after failover are completed.
  - a. Management Domain is fully updated, no further updates required in this stage.
  - b. bcudomain01 is fully updated, no further updates required in this stage.
  - c. Failover host07 to host06 in bcudomain02. [U: host 05,06,08 TBD: host 07,09]
  - d. Failover host12 to host11 in bcudomain03. [U: host 10,11,14 TBD: host 12,13]
  - e. Failover host18 to host17 in bcudomain04. [U: host 15,16,17 TBD: host 18,19]
- h. Update #4: update the current set of standby hosts. (host07, host12, host18)
- i. Failover #4: At a time when interruptions could be handled, initiate failovers. After the failovers are completed it is possible to return to production after failover are completed.
  - a. Management Domain is fully updated, no further updates required in this stage.
  - b. bcudomain01 is fully updated, no further updates required in this stage.
  - c. Failover host09 to host07 in bcudomain02. [U: host 05,06,07,08 TBD: host 09]
  - d. Failover host13 to host12 in bcudomain03. [U: host 10,11,12,14 TBD: host 13]
  - e. Failover host19 to host18 in bcudomain04. [U: host 15,16,17,18 TBD: host 19]
- j. Update #5: update the current set of standby hosts. (host09, host13, host18)

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This method allows for the updates to be spread out over time with small interruptions to handle the failovers. The failover time in between updates will vary based on the # of domains in the appliance. The number of updates depends on the size or number of hosts in the largest data rack in the appliance which can vary from 1 to 4 hosts in V1.0 and 1 to 5 hosts in V1.1.

## Phase 1: Identify Hosts and Servers requiring updates.

### Step 1: Identify the hosts to be updated.

1. Command: Use 'hals' to identify the current active and standby hosts in the environment. When looking at the MANAGEMENT DOMAIN output, pay attention to the fourth column (CURRENT) which shows the current active host. When looking at the CORE DOMAIN, the CURRENT column is the second column.

**hals**

#### Example Output:

```
$ hals
MANAGEMENT DOMAIN
+-----+-----+-----+-----+-----+-----+-----+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
+-----+-----+-----+-----+-----+-----+-----+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
+-----+-----+-----+-----+-----+-----+-----+

CORE DOMAIN
+-----+-----+-----+-----+-----+-----+-----+
| PARTITIONS | CURRENT | STANDBY | DOMAIN | OPSTATE | HA STATUS | RG REQUESTS |
+-----+-----+-----+-----+-----+-----+-----+
| 0-5       | flashdancehostname02 | flashdancehostname04 | bcudomain01 | Online | Normal | - |
| 6-15     | flashdancehostname07 | flashdancehostname05 | bcudomain02 | Online | Normal | - |
| 16-25    | flashdancehostname06 | flashdancehostname05 | bcudomain02 | Online | Normal | - |
+-----+-----+-----+-----+-----+-----+-----+
```

2. Command: Verify the hostname to server or CEC assignments. This is important during foundation host updates.

```
dsh -n ${ALL} 'lsconf | grep "Machine Serial Number"' | dshbak -c
```

#### Example Output:

```
$ dsh -n ${ALL} 'lsconf | grep "Machine Serial Number"' | dshbak -c
HOSTS -----
flashdancehostname03, flashdancehostname04
-----
Machine Serial Number: 2168C1V

HOSTS -----
flashdancehostname01, flashdancehostname02
-----
Machine Serial Number: 2168BFV

HOSTS -----
flashdancehostname06
-----
Machine Serial Number: 216B47V

HOSTS -----
flashdancehostname07
-----
Machine Serial Number: 216B44V

HOSTS -----
flashdancehostname05
-----
Machine Serial Number: 216B42V
```

In the above case flashdancehostname01 and flashdancehostname 02 are LPARs on the same CEC and flashdancehostname03 and flashdancehostname04 are LPARs on the same CEC. The PDOA naming convention will always associate hosts 01 and 02 together and hosts 03 and 04 together.

## STAGE 7 - Standby nodes update

3. Command: Verify the hosts and servers that require updates. The stageSeven\_status.sh command checks the OS level, Power Firmware Level, Network Adapter, Fiber Channel Adapter and Internal Adapter levels. The sample below shows that '01' and '03' are waiting for a Power Firmware update. '02' and '04' are waiting for a Power Firmware update, AIX and SISASS. '05'-'07' are waiting for a power firmware, OS, FCS and SISASS update. If there is no output then Stage 07 is completed.

```
dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/status/stageSeven_status.sh' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/status/stageSeven_status.sh' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
Firmware Version: IBM,FW860.70 (SV860_205)

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
sisas:53495351.19512300

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
fcs:7710322514101e04.0320080270
sisas:53495351.19512300
```

4. Potential Service Interruption. Determine if the current standby hosts for each domain (management, bcudomain01, bcudomain02,...) should be updated during this pass. Look at bcudomain01 in the core nodes list. This is important as the Power Firmware update will power off the entire CEC as part of the update.
  - a. If the current admin host is '02', then '04' can be quiesced and updated. To update '04' it is necessary to ensure that '03' can also be quiesced.
  - b. If the current admin host is '04', then '02' can be quiesced. To update '02' it is necessary to ensure that '01' can also be quiesced.
  - c. **Service Interruption.** If the current admin host is '02' and standby host is '04' and '02' requires an update, then this cycle will require failing over '02' to '04'. This is normally the case for the second pass for stage07 updates.

```
$ hafailover flashdancehostname02
Moving resources from flashdancehostname02 to flashdancehostname04
.....Done
CORE DOMAIN
+-----+-----+-----+-----+-----+-----+-----+
| PARTITIONS | CURRENT | STANDBY | DOMAIN | OPSTATE | HA STATUS | RG REQUESTS |
+-----+-----+-----+-----+-----+-----+-----+
| 0-5 | flashdancehostname04 | flashdancehostname02 | bcudomain01 | Online | Normal | - |
| 6-15 | flashdancehostname07 | flashdancehostname05 | bcudomain02 | Online | Normal | - |
| 16-25 | flashdancehostname06 | flashdancehostname05 | bcudomain02 | Online | Normal | - |
+-----+-----+-----+-----+-----+-----+-----+
```

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- d. **Service Interruption.** If this is the second or higher pass then failover a data node in each of the domains. In the first pass of this example '05' from bcudomain02 was updated. The bcudomain02 domain has '06' and '07' so failover '06' to '05'. For larger systems do this check for each domain and perform the necessary failovers. Failovers can only be done one at a time.

```
$ hafaillver flashdancehostname06
Moving resources from flashdancehostname06 to flashdancehostname05
.....Done
CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT          | STANDBY          | DOMAIN          | OPSTATE          | HA STATUS        | RG REQUESTS      |
|-----+-----+-----+-----+-----+-----+-----+-----+
| 0-5        | flashdancehostname04 | flashdancehostname02 | bcudomain01     | Online           | Normal           | -                |
| 6-15       | flashdancehostname07 | flashdancehostname06 | bcudomain02     | Online           | Normal           | -                |
| 16-25      | flashdancehostname05 | flashdancehostname06 | bcudomain02     | Online           | Normal           | -                |
=====+=====+=====+=====+=====+=====+=====+=====+
```

- e. **Command:** If DPM is not needed, then stop DPM and then stop the management domain. This will avoid having to failover DPM.

```
hastopdpm
```

```
hadomain -mgmt stop
```

Example Output:

```
$ hastopdpm
Stopping DPM and DB2 instance.....Resources offline
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY          | STANDBY          | CURRENT          | OPSTATE          | HA STATUS        | RG REQUESTS      |
|-----+-----+-----+-----+-----+-----+-----+-----+
| DPM       | flashdancehostname01 | N/A              | N/A              | Offline          | Offline          | -                |
| DB2DPM    | flashdancehostname01 | N/A              | N/A              | Offline          | Offline          | -                |
=====+=====+=====+=====+=====+=====+=====+=====+
$ hadomain -mgmt stop

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

- f. If DPM is needed, ensure that it is not running on the same CEC as the current active admin node. If so, then failover DPM. The example below shows DPM is running on '03'.

- i. **Command:** Determine the state

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY          | STANDBY          | CURRENT          | OPSTATE          | HA STATUS        | RG REQUESTS      |
|-----+-----+-----+-----+-----+-----+-----+-----+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online           | Normal           | -                |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online           | Normal           | -                |
=====+=====+=====+=====+=====+=====+=====+=====+
```

- ii. **Command:** As '03' is the same CEC as '04', use hafaillver to move DPM from '03' to '01'. This will ensure that '03' and '04' are both ready to be quiesced and rebooted during the power firmware update. If needed, replace the *flashdancehostname03* with the appropriate hostname.

```
hafaillver flashdancehostname03 DPM
```

Example Output:

```
$ hafaillver flashdancehostname03 DPM
Moving resources from flashdancehostname03 to flashdancehostname01
.....Done
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY          | STANDBY          | CURRENT          | OPSTATE          | HA STATUS        | RG REQUESTS      |
|-----+-----+-----+-----+-----+-----+-----+-----+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online           | Normal           | -                |
=====+=====+=====+=====+=====+=====+=====+=====+
```

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```
| DB2DPM | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
+-----+-----+-----+-----+-----+-----+-----+
(0) root @ flashdancehostname01: 7.1.0.0: /
```

5. Command: Verify hosts are eligible to be quiesced. This command checks the hosts individually to verify that no resources are online on the host. Here we see that '03', '04' and '05' are eligible to quiesce and have pending updates. Eligible to quiesce is determined when there are no services (DPM, Db2) running on that host. If this were the second pass, our example should show that '01', '02' and '06' are eligible to quiesce. If the environment has had a planar replaced in a CEC, it is possible that the FW level will be older than 860.70 as shown below. If this is the case, it is possible that the power firmware update will be longer and will also reboot that server.

```
dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh services > /dev/null 2>&1 && echo "Eligible to quiesce.";status/stageSeven_status.sh' 2>&1 | dshbak -c
```

### Example Output: (First Pass)

```
$ dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh services > /dev/null 2>&1 && echo "Eligible to quiesce.";status/stageSeven_status.sh' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname03
-----
Eligible to quiesce.
Firmware Version: IBM,FW860.70 (SV860_205)

HOSTS -----
flashdancehostname01
-----
Firmware Version: IBM,FW860.70 (SV860_205)

HOSTS -----
flashdancehostname04
-----
Eligible to quiesce.
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
sissas:53495351.19512300

HOSTS -----
flashdancehostname02
-----
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
sissas:53495351.19512300

HOSTS -----
flashdancehostname06, flashdancehostname07
-----
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
fcs:7710322514101e04.0320080270
sissas:53495351.19512300

HOSTS -----
flashdancehostname05
-----
Eligible to quiesce.
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
fcs:7710322514101e04.0320080270
sissas:53495351.19512300

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

Example Output: (Second Pass) Notice '03', '04', and '05' which no longer need updates do not appear in the output and '01', '02', and '06' require updates and are eligible to quiesce.

```
$ dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh services > /dev/null 2>&1 && echo "Eligible to quiesce.";status/stageSeven_status.sh' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
```

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```
Eligible to quiesce.
Firmware Version: IBM,FW860.70 (SV860_205)

HOSTS -----
flashdancehostname02
-----
Eligible to quiesce.
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
sissas:53495351.19512300

HOSTS -----
flashdancehostname06
-----
Eligible to quiesce.
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
fcs:7710322514101e04.0320080270
sissas:53495351.19512300

HOSTS -----
flashdancehostname07
-----
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
fcs:7710322514101e04.0320080270
sissas:53495351.19512300

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## Phase 2: Quiesce the hosts.

In V1.1 FP2 and V1.1 FP3 we took a backup of the hosts prior to quiescing the hosts. However, there are advantages to quiescing the host first. Primarily the domains will be stopped which limit the amount of changes to rootvg during the backup or cloning process. It also means on restore, if needed, that the domains will not automatically restart on those hosts. This can improve the recoverability of the node when restored. The following command will quiesce all hosts that are eligible to be quiesced. The quiesce procedure will only quiesce nodes without services running as determined by the check\_server\_state.sh script. If taking a full outage then it is faster to quiesce the hosts using a different set of commands. This instruction provides both options.

1. Standby Only Quiesce. This removes the node from its domain, unmounts all GPFS filesystems on that host, and removes the host from the GPFS cluster. Note that in the example output '01', '02', '07', and '06' are not able to quiesce the host due to services online. Note that the quiesce\_node.sh script can be run specifically on hosts to further reduce any risks of shutting down an active host. Do not run this command if performing a full outage update. Note that if this the third or fourth pass, this command will quiesce the management standby and admin standby nodes even though they are already updated and do not need to be quiesced.

### a. Command: Quiesce Command:

```
dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/quiesce_node.sh' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/quiesce_node.sh' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
20201218_122829 (flashdancehostname01:quiesce_node.sh): Starting date: Fri Dec 18 12:28:29 IST 2020.
20201218_122829 (flashdancehostname01:quiesce_node.sh): Attempting to quiesce host flashdancehostname01.
20201218_122829 (flashdancehostname01:check_server_state.sh): Starting date: Fri Dec 18 12:28:29 IST 2020.
20201218_122830 (flashdancehostname01:check_server_state.sh): Service States:
Online

20201218_122830 (flashdancehostname01:check_server_state.sh): Starting date: Fri Dec 18 12:28:29 IST 2020   Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122830 (flashdancehostname01:quiesce_node.sh): Error: Cannot quiesce this host due to existing services. Please failover any services
running on this host.
20201218_122830 (flashdancehostname01:quiesce_node.sh): Starting date: Fri Dec 18 12:28:29 IST 2020   Ending Date: Fri Dec 18 12:28:30 IST 2020.

HOSTS -----
flashdancehostname02
-----
20201218_122830 (flashdancehostname02:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname02:quiesce_node.sh): Attempting to quiesce host flashdancehostname02.
20201218_122830 (flashdancehostname02:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname02:check_server_state.sh): Service States:
Online

20201218_122830 (flashdancehostname02:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020   Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122830 (flashdancehostname02:quiesce_node.sh): Error: Cannot quiesce this host due to existing services. Please failover any services
running on this host.
20201218_122830 (flashdancehostname02:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020   Ending Date: Fri Dec 18 12:28:30 IST 2020.

HOSTS -----
flashdancehostname07
-----
20201218_122830 (flashdancehostname07:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname07:quiesce_node.sh): Attempting to quiesce host flashdancehostname07.
20201218_122830 (flashdancehostname07:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname07:check_server_state.sh): Service States:
Online

20201218_122830 (flashdancehostname07:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020   Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122830 (flashdancehostname07:quiesce_node.sh): Error: Cannot quiesce this host due to existing services. Please failover any services
running on this host.
20201218_122830 (flashdancehostname07:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020   Ending Date: Fri Dec 18 12:28:30 IST 2020.

HOSTS -----
flashdancehostname06
-----
```

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```
20201218_122830 (flashdancehostname06:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname06:quiesce_node.sh): Attempting to quiesce host flashdancehostname06.
20201218_122830 (flashdancehostname06:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname06:check_server_state.sh): Service States:
Online

20201218_122830 (flashdancehostname06:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122830 (flashdancehostname06:quiesce_node.sh): Error: Cannot quiesce this host due to existing services. Please failover any services
running on this host.
20201218_122830 (flashdancehostname06:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18 12:28:30 IST 2020.HOSTS
-----
flashdancehostname03
-----
20201218_122830 (flashdancehostname03:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:quiesce_node.sh): Attempting to quiesce host flashdancehostname03.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:check_server_state.sh): Service States:

20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:check_server_state.sh): Domain state: 'Online'.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122830 (flashdancehostname03:quiesce_node.sh): Force stopping the domain on this host.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122841 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:41 IST 2020.
20201218_122841 (flashdancehostname03:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122841 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:41 IST 2020    Ending Date: Fri Dec 18 12:28:41 IST
2020.
20201218_122851 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122851 (flashdancehostname03:check_server_state.sh): Domain state: 'Offline'.
20201218_122851 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020    Ending Date: Fri Dec 18 12:28:51 IST
2020.
20201218_122851 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122853 (flashdancehostname03:check_server_state.sh): GPFS State: 'active'.
20201218_122853 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020    Ending Date: Fri Dec 18 12:28:53 IST
2020.
20201218_122855 (flashdancehostname03:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
Fri Dec 18 12:28:55 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
20201218_122901 (flashdancehostname03:quiesce_node.sh): Stopping GPFS on this host.
Fri Dec 18 12:29:01 IST 2020: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Fri Dec 18 12:29:06 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 2228772
Fri Dec 18 12:29:11 IST 2020: 6027-1345 mmshutdown: Finished
20201218_122912 (flashdancehostname03:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18 12:29:12 IST 2020.
HOSTS -----
flashdancehostname04
-----
20201218_122829 (flashdancehostname04:quiesce_node.sh): Starting date: Fri Dec 18 12:28:29 IST 2020.
20201218_122829 (flashdancehostname04:quiesce_node.sh): Attempting to quiesce host flashdancehostname04.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:29 IST 2020.
20201218_122830 (flashdancehostname04:check_server_state.sh): Service States:

20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:29 IST 2020    Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname04:check_server_state.sh): Domain state: 'Online'.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122830 (flashdancehostname04:quiesce_node.sh): Force stopping the domain on this host.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname04:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122840 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:40 IST 2020.
20201218_122840 (flashdancehostname04:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122840 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:40 IST 2020    Ending Date: Fri Dec 18 12:28:40 IST
2020.
20201218_122851 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122851 (flashdancehostname04:check_server_state.sh): Domain state: 'Offline'.
20201218_122851 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020    Ending Date: Fri Dec 18 12:28:51 IST
2020.
20201218_122851 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122853 (flashdancehostname04:check_server_state.sh): GPFS State: 'active'.
20201218_122853 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020    Ending Date: Fri Dec 18 12:28:53 IST
2020.
20201218_122854 (flashdancehostname04:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
Fri Dec 18 12:28:54 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
20201218_122919 (flashdancehostname04:quiesce_node.sh): Stopping GPFS on this host.
Fri Dec 18 12:29:19 IST 2020: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Fri Dec 18 12:29:24 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 10093062
Fri Dec 18 12:29:36 IST 2020: 6027-1345 mmshutdown: Finished
20201218_122936 (flashdancehostname04:quiesce_node.sh): Starting date: Fri Dec 18 12:28:29 IST 2020    Ending Date: Fri Dec 18 12:29:36 IST 2020.
HOSTS -----
flashdancehostname05
-----
20201218_122830 (flashdancehostname05:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname05:quiesce_node.sh): Attempting to quiesce host flashdancehostname05.
20201218_122830 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname05:check_server_state.sh): Service States:

20201218_122830 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18 12:28:30 IST
2020.
20201218_122830 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname05:check_server_state.sh): Domain state: 'Online'.
```

## STAGE 7 - Standby nodes update

```

20201218_122830 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020      Ending Date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname05:quiesce_node.sh): Force stopping the domain on this host.
20201218_122831 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:31 IST 2020.
20201218_122831 (flashdancehostname05:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122831 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:31 IST 2020      Ending Date: Fri Dec 18 12:28:31 IST 2020.
20201218_122841 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:41 IST 2020.
20201218_122841 (flashdancehostname05:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122841 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:41 IST 2020      Ending Date: Fri Dec 18 12:28:41 IST 2020.
20201218_122851 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122852 (flashdancehostname05:check_server_state.sh): Domain state: 'Offline'.
20201218_122852 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020      Ending Date: Fri Dec 18 12:28:52 IST 2020.
20201218_122852 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:52 IST 2020.
20201218_122855 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:52 IST 2020.
20201218_122855 (flashdancehostname05:check_server_state.sh): GPFS State: 'active'.
20201218_122855 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:52 IST 2020      Ending Date: Fri Dec 18 12:28:55 IST 2020.
20201218_122856 (flashdancehostname05:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
Fri Dec 18 12:28:57 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
20201218_122933 (flashdancehostname05:quiesce_node.sh): Stopping GPFS on this host.
Fri Dec 18 12:29:33 IST 2020: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Fri Dec 18 12:29:38 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 4915612
Fri Dec 18 12:30:41 IST 2020: 6027-1345 mmshutdown: Finished
20201218_123041 (flashdancehostname05:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020      Ending Date: Fri Dec 18 12:30:41 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application

```

- b. Command: Verify the state of the system. All standby hosts should be offline and services should remain online.

hals

Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
$ hals
MANAGEMENT DOMAIN
+-----+-----+-----+-----+-----+-----+-----+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
+-----+-----+-----+-----+-----+-----+-----+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Standby Offline | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Standby Offline | - |
+-----+-----+-----+-----+-----+-----+-----+

CORE DOMAIN
+-----+-----+-----+-----+-----+-----+-----+
| PARTITIONS | CURRENT | STANDBY | DOMAIN | OPSTATE | HA STATUS | RG REQUESTS |
+-----+-----+-----+-----+-----+-----+-----+
| 0-5       | flashdancehostname02 | flashdancehostname04 | bcudomain01 | Online | Standby Offline | - |
| 6-15     | flashdancehostname07 | flashdancehostname05 | bcudomain02 | Online | Standby Offline | - |
| 16-25    | flashdancehostname06 | flashdancehostname05 | bcudomain02 | Online | Standby Offline | - |
+-----+-----+-----+-----+-----+-----+-----+
```

## Phase 3: Clone rootvg on hosts to be updated. [ ~90 minutes]

This step will break the rootvg mirror and clone hdisk0 to hdisk1. The timing depends on how much of rootvg is allocated.

1. Command: Verify the hosts to be cloned. This step works in both the full outage model as well as the standby update model. The `check_server_state.sh` checks for service, domain, gpfs filesystem and gpfs and returns 0 for none, and one for each detected level on that host. We can see '03', '04' and '05' are all ready to be cloned. In a full outage model all hosts would be ready to be cloned. We also see that '03' is already cloned. Attempting to clone it again will take no action.

```
dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && echo "Eligible to clone."' 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && echo "Eligible to clone."' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname03, flashdancehostname04, flashdancehostname05
-----
Eligible to clone.
```

2. Command: The following command show hosts which are not yet cloned (False). The example output shows the management host is cloned, while the management standby and the standby from the first rack are not yet cloned.

```
dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && application/mirror_utility.sh -action query -statustype rootvg_cloned | grep Value' 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && application/mirror_utility.sh -action query -statustype rootvg_cloned | grep Value' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname04
-----
20201218124638: (mirror_utility.pl) Value: False.

HOSTS -----
flashdancehostname03
-----
20201218124638: (mirror_utility.pl) Value: True.

HOSTS -----
flashdancehostname05
-----
20201218124640: (mirror_utility.pl) Value: False.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 7 - Standby nodes update

3. Command: Start cloning the quiesced nodes. This command should be run via a screen session or vtmenu console window. Output will not appear until all operations are complete. All commands are logged to /BCU\_share/support/FP8\_FP4/log and can be tracked in separate sessions. For hosts that are quiesced but already cloned, this command will not reclone those hosts. This takes about 30 minutes if there are no errors. Time will increase on systems with added or extended logical volumes.

```
dsh -n $(ALL) 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && application/mirror_utility.sh -action clone' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n $(ALL) 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && application/mirror_utility.sh -action clone' 2>&1 | dshbak -c
jHOSTS -----
flashdancehostname03
-----
20201218_124955 (flashdancehostname03:mirror_utility.sh): Starting date: Fri Dec 18 12:49:55 IST 2020.
20201218124955: (mirror_utility.pl) Retrieving the current boot disk.
20201218124955: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
20201218124955: (mirror_utility.pl) Found boot disk is hdisk0.
20201218124955: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218124955: (mirror_utility.pl) Retrieving Internal Disks.
20201218124955: (mirror_utility.pl) Retrieving Free Disks.
20201218124956: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218124956: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218124956: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201218124956: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218124956: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218124956: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218124956: (mirror_utility.pl) Determining rootvg status.
20201218124956: (mirror_utility.pl) Attempting to clone rootvg.
20201218_124956 (flashdancehostname03:mirror_utility.sh): Starting date: Fri Dec 18 12:49:55 IST 2020 Ending Date: Fri Dec 18 12:49:56 IST 2020.
20201218_124956 (flashdancehostname03:mirror_utility.sh): mirror_utility.sh completed with rc=0.

HOSTS -----
flashdancehostname05
-----
20201218_124955 (flashdancehostname05:mirror_utility.sh): Starting date: Fri Dec 18 12:49:55 IST 2020.
20201218124955: (mirror_utility.pl) Retrieving the current boot disk.
20201218124955: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
20201218124955: (mirror_utility.pl) Found boot disk is hdisk0.
20201218124955: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218124956: (mirror_utility.pl) Retrieving Internal Disks.
20201218124956: (mirror_utility.pl) Retrieving Free Disks.
20201218124957: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218124957: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218124957: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201218124957: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218124957: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218124957: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218124957: (mirror_utility.pl) Determining rootvg status.
20201218124957: (mirror_utility.pl) Attempting to clone rootvg.
20201218124957: (mirror_utility.pl) Attempting to unmirror rootvg.
20201218124957: (mirror_utility.pl) Status of rootvg_mirrored, rootvg_bootbalid and rootvg_target_reducedisk are valid.
20201218124957: (mirror_utility.pl) Performing unmirror activity.
20201218124957: (mirror_utility.pl) Running command 'unmirrorvg rootvg hdisk1'.
20201218125023: (mirror_utility.pl) Returned rc = 0.
20201218125023: (mirror_utility.pl) Running command 'chpv -c hdisk1'.
20201218125023: (mirror_utility.pl) Returned rc = 0.
20201218125023: (mirror_utility.pl) Running command 'bootlist -m normal hdisk0'.
20201218125023: (mirror_utility.pl) Retrieving the current boot disk.
20201218125023: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
20201218125023: (mirror_utility.pl) Found boot disk is hdisk0.
20201218125023: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218125024: (mirror_utility.pl) Retrieving Internal Disks.
20201218125024: (mirror_utility.pl) Retrieving Free Disks.
20201218125025: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218125025: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218125025: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201218125025: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218125025: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218125025: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218125025: (mirror_utility.pl) Determining rootvg status.
20201218125025: (mirror_utility.pl) Attempting to reduce rootvg.
20201218125025: (mirror_utility.pl) Verifying target disk hdisk1 contains no logical volumes.
20201218125025: (mirror_utility.pl) hdisk1 has logical volumes to migrate to hdisk0.
20201218125025: (mirror_utility.pl) Running cmd 'migratepv hdisk1 hdisk0'.
20201218135313: (mirror_utility.pl) Returned rc = 0.
20201218135313: (mirror_utility.pl) Retrieving the current boot disk.
20201218135313: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
20201218135313: (mirror_utility.pl) Found boot disk is hdisk0.
20201218135313: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218135314: (mirror_utility.pl) Retrieving Internal Disks.
20201218135314: (mirror_utility.pl) Retrieving Free Disks.
20201218135314: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218135314: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218135315: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201218135315: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218135315: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218135315: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218135315: (mirror_utility.pl) Determining rootvg status.
20201218135315: (mirror_utility.pl) rootvg is not reduced and is reducible.
20201218135315: (mirror_utility.pl) Running cmd 'reducevg rootvg hdisk1'.
20201218135317: (mirror_utility.pl) Returned rc = 0.
```

## STAGE 7 - Standby nodes update

```
20201218135317: (mirror_utility.pl) Retrieving the current boot disk.
20201218135317: (mirror_utility.pl) Running command 'getconf -a | grep ""BOOT_DEVICE" | cut -d: -f2'.
20201218135317: (mirror_utility.pl) Found boot disk is hdisk0.
20201218135317: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218135317: (mirror_utility.pl) Retrieving Internal Disks.
20201218135318: (mirror_utility.pl) Retrieving Free Disks.
20201218135318: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218135318: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218135318: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201218135318: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218135318: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218135318: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218135319: (mirror_utility.pl) Determining rootvg status.
20201218135319: (mirror_utility.pl) Rootvg is clonable.
20201218135319: (mirror_utility.pl) Running cmd 'alt_disk_install -C -D hdisk1'.
20201218141106: (mirror_utility.pl) Returned rc = 0.
20201218141106: (mirror_utility.pl) Updating bootlist.
20201218141106: (mirror_utility.pl) Returned rc = 0.
20201218141106: (mirror_utility.pl) Retrieving the current boot disk.
20201218141106: (mirror_utility.pl) Running command 'getconf -a | grep ""BOOT_DEVICE" | cut -d: -f2'.
20201218141106: (mirror_utility.pl) Found boot disk is hdisk0.
20201218141107: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218141107: (mirror_utility.pl) Retrieving Internal Disks.
20201218141107: (mirror_utility.pl) Retrieving Free Disks.
20201218141108: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218141108: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218141108: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201218141108: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218141108: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218141108: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218141108: (mirror_utility.pl) Determining rootvg status.
20201218_141109 (flashdancehostname05:mirror_utility.sh): Starting date: Fri Dec 18 12:49:55 IST 2020 Ending Date: Fri Dec 18 14:11:09 IST 2020.
20201218_141109 (flashdancehostname05:mirror_utility.sh): mirror_utility.sh completed with rc=0.
HOSTS
-----
flashdancehostname04
-----
20201218_124954 (flashdancehostname04:mirror_utility.sh): Starting date: Fri Dec 18 12:49:54 IST 2020.
20201218124954: (mirror_utility.pl) Retrieving the current boot disk.
20201218124954: (mirror_utility.pl) Running command 'getconf -a | grep ""BOOT_DEVICE" | cut -d: -f2'.
20201218124955: (mirror_utility.pl) Found boot disk is hdisk0.
20201218124955: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218124955: (mirror_utility.pl) Retrieving Internal Disks.
20201218124955: (mirror_utility.pl) Retrieving Free Disks.
20201218124955: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218124955: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218124955: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201218124955: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218124955: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218124955: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218124955: (mirror_utility.pl) Determining rootvg status.
20201218124956: (mirror_utility.pl) Attempting to clone rootvg.
20201218124956: (mirror_utility.pl) Attempting to unmirror rootvg.
20201218124956: (mirror_utility.pl) Status of rootvg_mirrored, rootvg_bootbalid and rootvg_target_reducedisk are valid.
20201218124956: (mirror_utility.pl) Performing unmirror activity.
20201218124956: (mirror_utility.pl) Running command 'unmirrorvg rootvg hdisk1'.
20201218125013: (mirror_utility.pl) Returned rc = 0.
20201218125013: (mirror_utility.pl) Running command 'chpv -c hdisk1'.
20201218125013: (mirror_utility.pl) Returned rc = 0.
20201218125013: (mirror_utility.pl) Running command 'bootlist -m normal hdisk0'.
20201218125014: (mirror_utility.pl) Retrieving the current boot disk.
20201218125014: (mirror_utility.pl) Running command 'getconf -a | grep ""BOOT_DEVICE" | cut -d: -f2'.
20201218125014: (mirror_utility.pl) Found boot disk is hdisk0.
20201218125014: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218125014: (mirror_utility.pl) Retrieving Internal Disks.
20201218125014: (mirror_utility.pl) Retrieving Free Disks.
20201218125014: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218125014: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218125014: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201218125014: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218125014: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218125014: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218125015: (mirror_utility.pl) Determining rootvg status.
20201218125015: (mirror_utility.pl) Attempting to reduce rootvg.
20201218125015: (mirror_utility.pl) Verifying target disk hdisk1 contains no logical volumes.
20201218125015: (mirror_utility.pl) hdisk1 has logical volumes to migrate to hdisk0.
20201218125015: (mirror_utility.pl) Running cmd 'migratepv hdisk1 hdisk0'.
20201218135309: (mirror_utility.pl) Returned rc = 0.
20201218135309: (mirror_utility.pl) Retrieving the current boot disk.
20201218135309: (mirror_utility.pl) Running command 'getconf -a | grep ""BOOT_DEVICE" | cut -d: -f2'.
20201218135309: (mirror_utility.pl) Found boot disk is hdisk0.
20201218135309: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218135310: (mirror_utility.pl) Retrieving Internal Disks.
20201218135310: (mirror_utility.pl) Retrieving Free Disks.
20201218135310: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218135310: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218135310: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk1 -g menu.
20201218135310: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218135310: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218135310: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218135310: (mirror_utility.pl) Determining rootvg status.
20201218135310: (mirror_utility.pl) rootvg is not reduced and is reducible.
20201218135310: (mirror_utility.pl) Running cmd 'reducevg rootvg hdisk1'.
20201218135312: (mirror_utility.pl) Returned rc = 0.
20201218135312: (mirror_utility.pl) Retrieving the current boot disk.
20201218135312: (mirror_utility.pl) Running command 'getconf -a | grep ""BOOT_DEVICE" | cut -d: -f2'.
20201218135312: (mirror_utility.pl) Found boot disk is hdisk0.
20201218135312: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218135312: (mirror_utility.pl) Retrieving Internal Disks.
20201218135312: (mirror_utility.pl) Retrieving Free Disks.
20201218135312: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hsdisk0 -g menu.
20201218141600: (mirror_utility.pl) Running cmd lspv -l hdisk1.
20201218141600: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218141600: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218141600: (mirror_utility.pl) Determining rootvg status.
20201218_141601 (flashdancehostname04:mirror_utility.sh): Starting date: Fri Dec 18 12:49:54 IST 2020 Ending Date: Fri Dec 18 14:16:01 IST 2020.
20201218_141601 (flashdancehostname04:mirror_utility.sh): mirror_utility.sh completed with rc=0.
```

## STAGE 7 - Standby nodes update

4. Command: All commands are logged to /BCU\_share/support/FP8\_FP4/log.

```
ls -lrt /BCU_share/support/FP8_FP4/log | tail -10
```

Example Output:

```
$ ls -lrt /BCU_share/support/FP8_FP4/log | tail -10
-rw-r--r-- 1 root system 515 Dec 18 12:49 check_server_state.sh_flashdancehostname01_20201218_124952.log
-rw-r--r-- 1 root system 515 Dec 18 12:49 check_server_state.sh_flashdancehostname07_20201218_124952.log
-rw-r--r-- 1 root system 508 Dec 18 12:49 check_server_state.sh_flashdancehostname05_20201218_124952.log
-rw-r--r-- 1 root system 1291 Dec 18 12:49 mirror_utility.sh_flashdancehostname03_20201218_124955.log
-rw-r--r-- 1 root system 3617 Dec 18 12:49 mirror_utility.sh_flashdancehostname03_20201218_124955.log.stderr
-rw-r--r-- 1 root system 515 Dec 18 12:49 check_server_state.sh_flashdancehostname06_20201218_124952.log
-rw-r--r-- 1 root system 8471 Dec 18 12:50 mirror_utility.sh_flashdancehostname04_20201218_124954.log.stderr
-rw-r--r-- 1 root system 3030 Dec 18 12:50 mirror_utility.sh_flashdancehostname04_20201218_124954.log
-rw-r--r-- 1 root system 1477 Dec 18 12:50 mirror_utility.sh_flashdancehostname05_20201218_124955.log
-rw-r--r-- 1 root system 5166 Dec 18 12:50 mirror_utility.sh_flashdancehostname05_20201218_124955.log.stderr
```

5. Command: Verify that the quiesced hosts are now all cloned.

```
dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 &&
application/mirror_utility.sh -action query -statustype rootvg_cloned | grep Value' 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 &&
application/mirror_utility.sh -action query -statustype rootvg_cloned | grep Value' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname03, flashdancehostname04
-----
20201218194050: (mirror_utility.pl) Value: True.

HOSTS -----
flashdancehostname05
-----
20201218194052: (mirror_utility.pl) Value: True.
You have mail in /usr/spool/mail/root

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

- a. Further verification can be checked in the log file. An example is shown below with the logic that determines if rootvg is cloned.

```
cat /BCU_share/support/FP8_FP4/log/mirror_utility.sh_flashdancehostname05_20201218_194049.log.stderr
...
20201218194049: (mirror_utility.pl) Retrieving the current boot disk.
20201218194049: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
20201218194049: (mirror_utility.pl) Found boot disk is hdisk0.
20201218194050: (mirror_utility.pl) Retrieving disk statistics for volume groups.
20201218194050: (mirror_utility.pl) bootlist array: hdisk0 blv=hd5 pathid=0
, hdisk1 blv=hd5 pathid=0

20201218194050: (mirror_utility.pl) alldisks array: hdisk0, hdisk1
20201218194050: (mirror_utility.pl) Retrieving Internal Disks.
20201218194050: (mirror_utility.pl) Retrieving Free Disks.
20201218194051: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blkvset -d /dev/hdisk0 -g menu.
20201218194051: (mirror_utility.pl) Running cmd lspv -l hdisk0.
20201218194051: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blkvset -d /dev/hdisk1 -g menu.
20201218194051: (mirror_utility.pl) Running cmd lspv -l hdisk1.
0516-010 : Volume group must be varied on; use varyonvg command.
20201218194051: (mirror_utility.pl) Retrieving lv stats for rootvg.
20201218194051: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
20201218194051: (mirror_utility.pl) Determining rootvg status.
20201218194051: (mirror_utility.pl) Determining rootvg_mirrored.
20201218194051: (mirror_utility.pl) Rules:
20201218194051: (mirror_utility.pl) rootvg_hdisk > 1. (1)
20201218194051: (mirror_utility.pl) multiplecopylvs > 1. (0)
20201218194051: (mirror_utility.pl) bootable_disks > 1. (2)
20201218194051: (mirror_utility.pl) stalelvs = 0. (0)
20201218194051: (mirror_utility.pl) Determining rootvg_bootvalid.
20201218194051: (mirror_utility.pl) Rules:
20201218194051: (mirror_utility.pl) bootlist_bad_entries = 0. (0)
20201218194051: (mirror_utility.pl) bootlist_missing_entries = 0. (0)
20201218194051: (mirror_utility.pl) Determining rootvg_reduced.
20201218194051: (mirror_utility.pl) Rules:
20201218194051: (mirror_utility.pl) rootvg_hdisks = 1. (1)
20201218194051: (mirror_utility.pl) Determining rootvg_reducible.
20201218194051: (mirror_utility.pl) Rules:
20201218194051: (mirror_utility.pl) stalelvs = 0. (0)
```

## STAGE 7 - Standby nodes update

```
20201218194051: (mirror_utility.pl)      multiplecopylvs = 0. (0)
20201218194051: (mirror_utility.pl)      rootvg_hdisk    > 1. (1)
20201218194051: (mirror_utility.pl) Determining rootvg_cloned.
20201218194051: (mirror_utility.pl) Rules:
20201218194051: (mirror_utility.pl)      altinst_rootvg_hdisks > 0. (1)
20201218194051: (mirror_utility.pl) Determining rootvg_remirror_capable.
20201218194051: (mirror_utility.pl) Rules:
20201218194052: (mirror_utility.pl)      rootvg_cloned = True      (True)
20201218194052: (mirror_utility.pl)      bootable_disks    > 1. (2)
20201218194052: (mirror_utility.pl) Determining rootvg_clonable.
20201218194052: (mirror_utility.pl) Rules:
20201218194052: (mirror_utility.pl)      rootvg_reduced = True      (True)
20201218194052: (mirror_utility.pl)      bootable_disks    > 1. (2)
20201218194052: (mirror_utility.pl)      free_disks       > 0. (0)
20201218194052: (mirror_utility.pl) Determining rootvg_backedup.
20201218194052: (mirror_utility.pl) Rules:
20201218194052: (mirror_utility.pl)      old_rootvg_hdisks > 1. (0)
20201218194052: (mirror_utility.pl) Determining rootvg_restore_capable.
20201218194052: (mirror_utility.pl) Rules:
20201218194052: (mirror_utility.pl)      rootvg_backedup = True      (False)
20201218194052: (mirror_utility.pl)      bootable_disks    > 1. (2)
20201218194052: (mirror_utility.pl) Option: rootvg_cloned.
20201218194052: (mirror_utility.pl) Value: True.
...
```

## STAGE 7 - Standby nodes update

- b. Command: Outside of the script, check that altinst\_rootvg exists. Below shows altinst\_rootvg on '01', '03', '04' and '05'. For each pass more hosts will be cloned until all hosts should be cloned.

```
dsh -n ${ALL} 'lsvg' | dshbak -c
```

Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/support/FP8_FP4/log
$ dsh -n ${ALL} 'lsvg' | dshbak -c
HOSTS -----
flashdancehostname01
-----
rootvg
vgbcushare
vgpscfs
altinst_rootvg

HOSTS -----
flashdancehostname03, flashdancehostname04, flashdancehostname05
-----
rootvg
altinst_rootvg

HOSTS -----
flashdancehostname02, flashdancehostname06, flashdancehostname07
-----
rootvg
```

- c. Command: Verify the bootlist. All hosts should show two hdisks. The order of the list may vary.

```
dsh -n ${ALL} 'bootlist -m normal -o' | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'bootlist -m normal -o' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
hdisk0 blv=hd5 pathid=0
hdisk1 blv=hd5 pathid=0
```

## Phase 4: Update the standby hosts.

### Phase 4 Description

For the set of hosts and servers that are quiesced, the following steps will be taken.

- Update AIX
  - Reboot the LPAR
  - Remount /BCU\_share
- Update RAID Adapter Firmware
  - This step is done one sissas adapter at a time and does not work in parallel.
- Update Power Firmware
  - Foundation Servers are to be done first if a Foundation server is listed.
  - Data Servers can be done in parallel.
    - 2020-05-12 Update: Due to a firmware change in the HMC 9.x level it is not possible to update multiple power server firmware at the same time using the hmc command line (which is what is used by the pplayer automation). If not taking an outage this extra time was minimal as the servers impacted were already quiesced, however if taking a full outage this can add a significant amount of time to perform the update. It may be possible to manually apply the firmware update to all hosts via the HMC GUI. This method has not been tested in the lab nor is it documented.
  - This step will reboot the server and all LPARs on that server as part of the update.
- Update FC Adapters
  - This step can be done in parallel across all quiesced hosts. On each quiesced host however the FC adapters are done serially.
- Update NIC Adapters
  - This step can be done in parallel across all quiesced hosts. On each quiesced host the NIC adapters are updated serially to preserve the etherchannel connection during the update.

## STAGE 7 - Standby nodes update

Step 1: Mount /BCU\_share. This command safe to run multiple times and can be rerun to verify all hosts have /BCU\_share mounted.

1. Command: This command safe to run multiple times and can be rerun to verify all hosts have /BCU\_share mounted.

```
./enable_bcushare.sh
```

Example Output:

```
$ ./enable_bcushare.sh
20201218_195610 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20201218_195611 (flashdancehostname01:enable_bcushare.sh): Success: /BCU_share is mounted on all hosts.
20201218_195611 (flashdancehostname01:enable_bcushare.sh): enable_bcushare.sh completed with rc=0.
```

Step 2: Update AIX On the quiesced hosts.

2. Command: The following command will check to see if the host is quiesced, and if so, will run the AIX check against that host. In the example output '04' and '05' are ready to be updated, while '03' has already been updated and shows that no updates are available for that host. Only quiesced hosts will have output.

```
dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 &&
application/update_aix.sh check' 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 &&
application/update_aix.sh check' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname04
-----
20201218_200021 (flashdancehostname04:update_aix.sh): Starting date: Fri Dec 18 20:00:21 IST 2020.
20201218_200021 (flashdancehostname04:update_aix.sh): Collecting the available aix details.
20201218_200021 (flashdancehostname04:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201218_200021 (flashdancehostname04:update_aix.sh): Version is '7100.5.1'.
20201218_200021 (flashdancehostname04:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.1' and received '2'.
20201218_200021 (flashdancehostname04:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201218_200021 (flashdancehostname04:update_aix.sh): Version is '7100.5.4'.
20201218_200021 (flashdancehostname04:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.4' and received '1'.
20201218_200021 (flashdancehostname04:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200021 (flashdancehostname04:update_aix.sh): Version is '7100.5.7'.
20201218_200021 (flashdancehostname04:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.7' and received '0'.
20201218_200021 (flashdancehostname04:update_aix.sh): There is an available update.
20201218_200021 (flashdancehostname04:update_aix.sh): This is the first version checked.
20201218_200021 (flashdancehostname04:update_aix.sh): The next update is version '7100.5.7' in directory
'/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200021 (flashdancehostname04:update_aix.sh): Checking to see if 'flashdancehostname04' is eligible to update.
20201218_200023 (flashdancehostname04:update_aix.sh): Success: This host 'flashdancehostname04' is quiesced.
20201218_200023 (flashdancehostname04:update_aix.sh): Success: This host 'flashdancehostname04' has rootvg cloned .
20201218_200023 (flashdancehostname04:update_aix.sh): Success: This host 'flashdancehostname04' has available updates .
20201218_200023 (flashdancehostname04:update_aix.sh): Verifying rpm repository health.
20201218_200023 (flashdancehostname04:update_aix.sh): Success: This host 'flashdancehostname04' has a consistent rpm repository.
20201218_200023 (flashdancehostname04:update_aix.sh): Starting date: Fri Dec 18 20:00:21 IST 2020   Ending Date: Fri Dec 18
20:00:23 IST 2020.

HOSTS -----
flashdancehostname03
-----
20201218_200021 (flashdancehostname03:update_aix.sh): Starting date: Fri Dec 18 20:00:21 IST 2020.
20201218_200021 (flashdancehostname03:update_aix.sh): Collecting the available aix details.
20201218_200021 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201218_200021 (flashdancehostname03:update_aix.sh): Version is '7100.5.1'.
20201218_200022 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.07.2038' to '7100.5.1' and received '2'.
20201218_200022 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201218_200022 (flashdancehostname03:update_aix.sh): Version is '7100.5.4'.
20201218_200022 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.07.2038' to '7100.5.4' and received '2'.
20201218_200022 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200022 (flashdancehostname03:update_aix.sh): Version is '7100.5.7'.
20201218_200022 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.07.2038' to '7100.5.7' and received '1'.
20201218_200022 (flashdancehostname03:update_aix.sh): The next update is version '' in directory ''.
```

## STAGE 7 - Standby nodes update

```
20201218_200022 (flashdancehostname03:update_aix.sh): Checking to see if 'flashdancehostname03' is eligible to update.
20201218_200023 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' is quiesced.
20201218_200023 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has rootvg cloned .
20201218_200023 (flashdancehostname03:update_aix.sh): Error: this host 'flashdancehostname03' has no available AIX updates.
20201218_200023 (flashdancehostname03:update_aix.sh): No updates are available for this host.
20201218_200023 (flashdancehostname03:update_aix.sh): This host is not available for updates as it is not cloned and/or is not
quiesced.
20201218_200023 (flashdancehostname03:update_aix.sh): Verifying rpm repository health.
20201218_200024 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has a consistent rpm repository.
20201218_200024 (flashdancehostname03:update_aix.sh): Starting date: Fri Dec 18 20:00:21 IST 2020    Ending Date: Fri Dec 18
20:00:24 IST 2020.
HOSTS -----
flashdancehostname05
-----
20201218_200023 (flashdancehostname05:update_aix.sh): Starting date: Fri Dec 18 20:00:23 IST 2020.
20201218_200023 (flashdancehostname05:update_aix.sh): Collecting the available aix details.
20201218_200023 (flashdancehostname05:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201218_200023 (flashdancehostname05:update_aix.sh): Version is '7100.5.1'.
20201218_200023 (flashdancehostname05:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.1' and received '2'.
20201218_200023 (flashdancehostname05:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201218_200023 (flashdancehostname05:update_aix.sh): Version is '7100.5.4'.
20201218_200023 (flashdancehostname05:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.4' and received '1'.
20201218_200023 (flashdancehostname05:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200023 (flashdancehostname05:update_aix.sh): Version is '7100.5.7'.
20201218_200023 (flashdancehostname05:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.7' and received '0'.
20201218_200023 (flashdancehostname05:update_aix.sh): There is an available update.
20201218_200023 (flashdancehostname05:update_aix.sh): This is the first version checked.
20201218_200023 (flashdancehostname05:update_aix.sh): The next update is version '7100.5.7' in directory
'/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200023 (flashdancehostname05:update_aix.sh): Checking to see if 'flashdancehostname05' is eligible to update.
20201218_200026 (flashdancehostname05:update_aix.sh): Success: This host 'flashdancehostname05' is quiesced.
20201218_200026 (flashdancehostname05:update_aix.sh): Success: This host 'flashdancehostname05' has rootvg cloned .
20201218_200026 (flashdancehostname05:update_aix.sh): Success: This host 'flashdancehostname05' has available updates .
20201218_200026 (flashdancehostname05:update_aix.sh): Verifying rpm repository health.
20201218_200027 (flashdancehostname05:update_aix.sh): Success: This host 'flashdancehostname05' has a consistent rpm repository.
20201218_200027 (flashdancehostname05:update_aix.sh): Starting date: Fri Dec 18 20:00:23 IST 2020    Ending Date: Fri Dec 18
20:00:27 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

3. **Command:** Run the following command to update AIX on the quiesced hosts with eligible updates. This command will apply the AIX update and reboot the servers if the update completes successfully. This command should be run in a screen session or vtmenu console session. Output can be tracked in /BCU\_share/support/FP8\_FP4/log for each server. The update takes about 15 minutes and then another 5 to 10 minutes to reboot the servers.

```
dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 &&
application/update_aix.sh update' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 &&
application/update_aix.sh update' 2>&1 | dshbak -c
.
HOSTS -----
flashdancehostname03
-----
20201218_200834 (flashdancehostname03:update_aix.sh): Starting date: Fri Dec 18 20:08:34 IST 2020.
20201218_200834 (flashdancehostname03:update_aix.sh): Collecting the available aix details.
20201218_200834 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201218_200834 (flashdancehostname03:update_aix.sh): Version is '7100.5.1'.
20201218_200834 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.07.2038' to '7100.5.1' and received '2'.
20201218_200834 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201218_200834 (flashdancehostname03:update_aix.sh): Version is '7100.5.4'.
20201218_200835 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.07.2038' to '7100.5.4' and received '2'.
20201218_200835 (flashdancehostname03:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200835 (flashdancehostname03:update_aix.sh): Version is '7100.5.7'.
20201218_200835 (flashdancehostname03:update_aix.sh): Compared my version '7100.05.07.2038' to '7100.5.7' and received '1'.
20201218_200835 (flashdancehostname03:update_aix.sh): The next update is version '' in directory ''.
20201218_200835 (flashdancehostname03:update_aix.sh): Checking to see if 'flashdancehostname03' is eligible to update.
20201218_200836 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' is quiesced.
20201218_200836 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has rootvg cloned .
20201218_200836 (flashdancehostname03:update_aix.sh): Error: this host 'flashdancehostname03' has no available AIX updates.
20201218_200836 (flashdancehostname03:update_aix.sh): No updates are available for this host.
20201218_200836 (flashdancehostname03:update_aix.sh): This host is not available for updates as it is not cloned and/or is not
quiesced.
20201218_200836 (flashdancehostname03:update_aix.sh): Verifying rpm repository health.
20201218_200837 (flashdancehostname03:update_aix.sh): Success: This host 'flashdancehostname03' has a consistent rpm repository.
```

## STAGE 7 - Standby nodes update

```
20201218_200837 (flashdancehostname03:update_aix.sh): Starting date: Fri Dec 18 20:08:34 IST 2020   Ending Date: Fri Dec 18
20:08:37 IST 2020.
HOSTS -----
flashdancehostname04
-----
20201218_200834 (flashdancehostname04:update_aix.sh): Starting date: Fri Dec 18 20:08:34 IST 2020.
20201218_200834 (flashdancehostname04:update_aix.sh): Collecting the available aix details.
20201218_200834 (flashdancehostname04:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201218_200834 (flashdancehostname04:update_aix.sh): Version is '7100.5.1'.
20201218_200834 (flashdancehostname04:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.1' and received '2'.
20201218_200834 (flashdancehostname04:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201218_200834 (flashdancehostname04:update_aix.sh): Version is '7100.5.4'.
20201218_200834 (flashdancehostname04:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.4' and received '1'.
20201218_200834 (flashdancehostname04:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200834 (flashdancehostname04:update_aix.sh): Version is '7100.5.7'.
20201218_200834 (flashdancehostname04:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.7' and received '0'.
20201218_200834 (flashdancehostname04:update_aix.sh): There is an available update.
20201218_200834 (flashdancehostname04:update_aix.sh): This is the first version checked.
20201218_200834 (flashdancehostname04:update_aix.sh): The next update is version '7100.5.7' in directory
'/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200834 (flashdancehostname04:update_aix.sh): Checking to see if 'flashdancehostname04' is eligible to update.
20201218_200836 (flashdancehostname04:update_aix.sh): Success: This host 'flashdancehostname04' is quiesced.
20201218_200836 (flashdancehostname04:update_aix.sh): Success: This host 'flashdancehostname04' has rootvg cloned .
20201218_200836 (flashdancehostname04:update_aix.sh): Success: This host 'flashdancehostname04' has available updates .
20201218_200836 (flashdancehostname04:update_aix.sh): Verifying rpm repository health.
20201218_200836 (flashdancehostname04:update_aix.sh): Success: This host 'flashdancehostname04' has a consistent rpm repository.
20201218_200836 (flashdancehostname04:update_aix.sh): Running 'update_all -pd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' to
preview the aix update.
20201218_200847 (flashdancehostname04:update_aix.sh): Success: Preview completed successfully.
20201218_200847 (flashdancehostname04:update_aix.sh): Running 'update_all -cYd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' to
execute the aix update.
20201218_200847 (flashdancehostname04:update_aix.sh): PID for 'update_all -cYd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' is
'11403606'.
20201218_200847 (flashdancehostname04:update_aix.sh): Waiting on '11403606' to complete. For current status check
'/var/adm/ras/install_all_updates.log' on host 'flashdancehostname04'.
(0:300): Update not found. Sleeping for 5 seconds before next check.
(5:300): Update not found. Sleeping for 5 seconds before next check.
(10:300): Update not found. Sleeping for 5 seconds before next check.
(15:300): Update not found. Sleeping for 5 seconds before next check.
Found pid '11403606'.
    PID    TTY    TIME CMD
11403606  -    0:00 ksh
Fri Dec 18 20:09:07 IST 2020: flashdancehostname04 update status duration (0 seconds).
installp: APPLYING software for:
Filesets processed: 1 of 2 (Total time: 12 secs).
installp: APPLYING software for:
Finished processing all filesets. (Total time: 29 secs).
install_all_updates: Result = SUCCESS
install_all_updates: Result = SUCCESS
installp: APPLYING software for:
Finished processing all filesets. (Total time: 15 secs).
installp: COMMITTING software for:
Finished processing all filesets. (Total time: 16 secs).
    PID    TTY    TIME CMD
11403606  -    0:00 ksh
...
11403606  -    0:00 ksh
Fri Dec 18 20:41:14 IST 2020: flashdancehostname04 update status duration (1927 seconds).
Filesets processed: 198 of 201 (Total time: 31 mins 30 secs).
installp: COMMITTING software for:
Filesets processed: 199 of 201 (Total time: 31 mins 30 secs).
installp: COMMITTING software for:
Filesets processed: 200 of 201 (Total time: 31 mins 31 secs).
installp: COMMITTING software for:
Finished processing all filesets. (Total time: 31 mins 31 secs).
installp: bosboot verification completed.
installp: bosboot process completed.
installp: * * * A T T E N T I O N ! ! !
20201218_204127 (flashdancehostname04:update_aix.sh): PID '11403606' completed with rc='0'. For more information consult the
update log '/var/adm/ras/install_all_updates.log'.
20201218_204127 (flashdancehostname04:update_aix.sh): AIX update completed. Issuing shutdown instructions after 1 minute.
    PID    TTY    TIME CMD
Update process completed.
Fri Dec 18 20:42:14 IST 2020: flashdancehostname04 update status duration (1987 seconds).
installp: COMMITTING software for:
Filesets processed: 199 of 201 (Total time: 31 mins 30 secs).
installp: COMMITTING software for:
Filesets processed: 200 of 201 (Total time: 31 mins 31 secs).
installp: COMMITTING software for:
Finished processing all filesets. (Total time: 31 mins 31 secs).
installp: bosboot verification completed.
installp: bosboot process completed.
installp: * * * A T T E N T I O N ! ! !
install_all_updates: Result = SUCCESS
application/update_aix.sh[267]: 9896214 Terminated
cat: 0652-050 Cannot open /BCU_share/support/FP8_FP4/log/update_aix.sh_flashdancehostname04_20201218_200832.log.rc.
rm: /BCU_share/support/FP8_FP4/log/update_aix.sh_flashdancehostname04_20201218_200832.log.rc: A file or directory in the path
name does not exist.
```

## STAGE 7 - Standby nodes update

```
HOSTS -----
flashdancehostname05
-----
20201218_200836 (flashdancehostname05:update_aix.sh): Starting date: Fri Dec 18 20:08:36 IST 2020.
20201218_200836 (flashdancehostname05:update_aix.sh): Collecting the available aix details.
20201218_200836 (flashdancehostname05:update_aix.sh): Discovered aix update '/BCU_share/FP6_FP2/software/AIX/71_TL5_SP1'.
20201218_200836 (flashdancehostname05:update_aix.sh): Version is '7100.5.1'.
20201218_200836 (flashdancehostname05:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.1' and received '2'.
20201218_200836 (flashdancehostname05:update_aix.sh): Discovered aix update '/BCU_share/FP7_FP3/software/AIX/71_TL5_SP4'.
20201218_200836 (flashdancehostname05:update_aix.sh): Version is '7100.5.4'.
20201218_200836 (flashdancehostname05:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.4' and received '1'.
20201218_200837 (flashdancehostname05:update_aix.sh): Discovered aix update '/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200837 (flashdancehostname05:update_aix.sh): Version is '7100.5.7'.
20201218_200837 (flashdancehostname05:update_aix.sh): Compared my version '7100.05.04.1914' to '7100.5.7' and received '0'.
20201218_200837 (flashdancehostname05:update_aix.sh): There is an available update.
20201218_200837 (flashdancehostname05:update_aix.sh): This is the first version checked.
20201218_200837 (flashdancehostname05:update_aix.sh): The next update is version '7100.5.7' in directory
'/BCU_share/FP8_FP4/software/AIX/71_TL5_SP7'.
20201218_200837 (flashdancehostname05:update_aix.sh): Checking to see if 'flashdancehostname05' is eligible to update.
20201218_200840 (flashdancehostname05:update_aix.sh): Success: This host 'flashdancehostname05' is quiesced.
20201218_200840 (flashdancehostname05:update_aix.sh): Success: This host 'flashdancehostname05' has rootvg cloned .
20201218_200840 (flashdancehostname05:update_aix.sh): Success: This host 'flashdancehostname05' has available updates .
20201218_200840 (flashdancehostname05:update_aix.sh): Verifying rpm repository health.
20201218_200840 (flashdancehostname05:update_aix.sh): Success: This host 'flashdancehostname05' has a consistent rpm repository.
20201218_200840 (flashdancehostname05:update_aix.sh): Running 'update_all -pd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' to
preview the aix update.
20201218_200900 (flashdancehostname05:update_aix.sh): Success: Preview completed successfully.
20201218_200900 (flashdancehostname05:update_aix.sh): Running 'update_all -cYd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' to
execute the aix update.
20201218_200900 (flashdancehostname05:update_aix.sh): PID for 'update_all -cYd /BCU_share/FP8_FP4/software/AIX/71_TL5_SP7' is
'4784390'.
20201218_200900 (flashdancehostname05:update_aix.sh): Waiting on '4784390' to complete. For current status check
'/var/adm/ras/install_all_updates.log' on host 'flashdancehostname05'.
(0:300): Update not found. Sleeping for 5 seconds before next check.
(5:300): Update not found. Sleeping for 5 seconds before next check.
(10:300): Update not found. Sleeping for 5 seconds before next check.
(15:300): Update not found. Sleeping for 5 seconds before next check.
(20:300): Update not found. Sleeping for 5 seconds before next check.
(25:300): Update not found. Sleeping for 5 seconds before next check.
Found pid '4784390'.
    PID      TTY      TIME CMD
4784390      -      0:00 ksh
Fri Dec 18 20:09:30 IST 2020: flashdancehostname05 update status duration (0 seconds).
installp: APPLYING software for:
Filesets processed: 1 of 2 (Total time: 12 secs).
installp: APPLYING software for:
Finished processing all filesets. (Total time: 29 secs).
install_all_updates: Result = SUCCESS
install_all_updates: Result = SUCCESS
installp: APPLYING software for:
Finished processing all filesets. (Total time: 22 secs).
installp: COMMITTING software for:
Finished processing all filesets. (Total time: 23 secs).
    PID      TTY      TIME CMD
4784390      -      0:00 ksh
...
Fri Dec 18 20:48:45 IST 2020: flashdancehostname05 update status duration (2355 seconds).
Filesets processed: 199 of 202 (Total time: 38 mins 17 secs).
installp: COMMITTING software for:
Filesets processed: 200 of 202 (Total time: 38 mins 17 secs).
installp: COMMITTING software for:
Filesets processed: 201 of 202 (Total time: 38 mins 17 secs).
installp: COMMITTING software for:
Finished processing all filesets. (Total time: 38 mins 18 secs).
installp: bosboot verification completed.
installp: bosboot process completed.
installp: * * * A T T E N T I O N ! ! !
20201218_204905 (flashdancehostname05:update_aix.sh): PID '4784390' completed with rc='0'. For more information consult the
update log '/var/adm/ras/install_all_updates.log'.
20201218_204905 (flashdancehostname05:update_aix.sh): AIX update completed. Issuing shutdown instructions after 1 minute.
    PID      TTY      TIME CMD
Update process completed.
Fri Dec 18 20:49:46 IST 2020: flashdancehostname05 update status duration (2416 seconds).
installp: COMMITTING software for:
Filesets processed: 200 of 202 (Total time: 38 mins 17 secs).
installp: COMMITTING software for:
Filesets processed: 201 of 202 (Total time: 38 mins 17 secs).
installp: COMMITTING software for:
Finished processing all filesets. (Total time: 38 mins 18 secs).
installp: bosboot verification completed.
installp: bosboot process completed.
installp: * * * A T T E N T I O N ! ! !
install_all_updates: Result = SUCCESS
application/update_aix.sh[267]: 4916216 Terminated
cat: 0652-050 Cannot open /BCU_share/support/FP8_FP4/log/update_aix.sh_flashdancehostname05_20201218_200833.log.rc.
rm: /BCU_share/support/FP8_FP4/log/update_aix.sh_flashdancehostname05_20201218_200833.log.rc: A file or directory in the path
name does not exist.
```

## STAGE 7 - Standby nodes update

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### a. Notes on output.

- i. This message 'cat: 0652-050 Cannot open /BCU\_share/support/FP8\_FP4/log/update\_aix.sh\_flashdancehostname05\_20201218\_200833.log.rc' can be ignored. This is a timing issue between the reboot operation and the script finishing.
- ii. Since '03' was already updated, the update command completed quickly. The goal of this script is to be safe. It checks to see if the host is cloned and is quiesced and has an available update.

4. Command: Verify the hosts are up and oslevel shows as updated. In this example, '01', '03' were already updated and '04' and '05' were updated as part of the previous step. Only the active servers '02', '06' and '07' are not updated in the example. If a host returns remote shell had exit code 255 then retry.

```
dsh -n ${ALL} 'oslevel -s' | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} 'oslevel -s' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03, flashdancehostname04, flashdancehostname05
-----
7100-05-07-2038

HOSTS -----
flashdancehostname02, flashdancehostname06, flashdancehostname07
-----
7100-05-04-1914
```

5. Command: Validate the AIX efix on the quiesced hosts. This will only attempt to apply the efix if it is not already applied.

```
dsh -n ${BCUDB2ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && (emgr -l | grep IJ29552s7b || emgr -d -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z)'
```

### Example Output:

```
$ dsh -n ${BCUDB2ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && (emgr -l | grep IJ29552s7b || emgr -d -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z)'
```

```
kf5hostname04: +-----+
kf5hostname04: Efix Manager Initialization
kf5hostname04: +-----+
kf5hostname04: Initializing log /var/adm/ras/emgr.log ...
kf5hostname04: Efix package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
kf5hostname04: MD5 generating command is /usr/bin/csum
kf5hostname04: MD5 checksum is d1037fddf4781f799a64df2e665b1eb3
kf5hostname04: Accessing efix metadata ...
kf5hostname04: Verifying efix control file ...
kf5hostname04: +-----+
kf5hostname04: Efix Attributes
kf5hostname04: +-----+
kf5hostname04: LABEL:                IJ29552s7b
kf5hostname04: EFIX FILES:           1
kf5hostname04:
kf5hostname04: FILE NUMBER:          1
kf5hostname04: LOCATION:             /usr/ccs/lib/libc.a
kf5hostname04: +-----+
kf5hostname04: Operation Summary
kf5hostname04: +-----+
kf5hostname04: Log file is /var/adm/ras/emgr.log
kf5hostname04:
kf5hostname04:
kf5hostname04: EPKG NUMBER    LABEL                OPERATION            RESULT
kf5hostname04: =====
```

## STAGE 7 - Standby nodes update

```
kf5hostname04: 1 IJ29552s7b DISPLAY SUCCESS
kf5hostname04:
kf5hostname04: Return Status = SUCCESS
kf5hostname06: +-----+
kf5hostname06: Efif Manager Initialization
kf5hostname06: +-----+
kf5hostname06: Initializing log /var/adm/ras/emgr.log ...
kf5hostname06: Efif package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
kf5hostname06: MD5 generating command is /usr/bin/csum
kf5hostname06: MD5 checksum is d1037fddf4781f799a64df2e665b1eb3
kf5hostname06: Accessing efif metadata ...
kf5hostname06: Verifying efif control file ...
kf5hostname06:
kf5hostname06: +-----+
kf5hostname06: Efif Attributes
kf5hostname06: +-----+
kf5hostname06: LABEL: IJ29552s7b
kf5hostname06: EFI FILES: 1
kf5hostname06:
kf5hostname06: FILE NUMBER: 1
kf5hostname06: LOCATION: /usr/ccs/lib/libc.a
kf5hostname06:
kf5hostname06: +-----+
kf5hostname06: Operation Summary
kf5hostname06: +-----+
kf5hostname06: Log file is /var/adm/ras/emgr.log
kf5hostname06:
kf5hostname06: EPKG NUMBER LABEL OPERATION RESULT
kf5hostname06: =====
kf5hostname06: 1 IJ29552s7b DISPLAY SUCCESS
kf5hostname06:
kf5hostname06: Return Status = SUCCESS
```

### 6. Command: Preview the AIX efif on the quiesced hosts.

```
dsh -n ${BCUDB2ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && (emgr -l | grep IJ29552s7b || emgr -p -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z) '
```

### Example Output: (Truncated to only include one hosts output.)

```
$ dsh -n ${BCUDB2ALL} 'cd /BCU share/FP8_FP4/fixpack tools;application/check_server_state.sh > /dev/null 2>&1 && (emgr -l | grep IJ29552s7b || emgr -p -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z) '
kf5hostname04: *****
kf5hostname04: EFIX MANAGER PREVIEW START
kf5hostname04: *****
kf5hostname04:
kf5hostname04: +-----+
kf5hostname04: Efif Manager Initialization
kf5hostname04: +-----+
kf5hostname04: Initializing log /var/adm/ras/emgr.log ...
kf5hostname04: Efif package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
kf5hostname04: MD5 generating command is /usr/bin/csum
kf5hostname04: MD5 checksum is d1037fddf4781f799a64df2e665b1eb3
kf5hostname04: Accessing efif metadata ...
kf5hostname04: Processing efif label "IJ29552s7b" ...
kf5hostname04: Verifying efif control file ...
kf5hostname04:
kf5hostname04: +-----+
kf5hostname04: Installp Prerequisite Verification
kf5hostname04: +-----+
kf5hostname04: Verifying prerequisite file ...
kf5hostname04: Checking prerequisites ...
kf5hostname04:
kf5hostname04: Prerequisite Number: 1
kf5hostname04: Files: bos.rte.libc
kf5hostname04: Minimal Level: 7.1.5.35
kf5hostname04: Maximum Level: 7.1.5.35
kf5hostname04: Actual Level: 7.1.5.35
kf5hostname04: Type: PREREQ
kf5hostname04: Requisite Met: yes
kf5hostname04:
kf5hostname04: All prerequisites have been met.
kf5hostname04:
kf5hostname04: +-----+
kf5hostname04: Processing APAR reference file
kf5hostname04: +-----+
kf5hostname04: ATTENTION: Interim fix is enabled for automatic removal by installp.
kf5hostname04:
kf5hostname04: +-----+
kf5hostname04: Efif Attributes
kf5hostname04: +-----+
kf5hostname04: LABEL: IJ29552s7b
kf5hostname04: PACKAGING DATE: Wed Dec 9 15:40:31 CST 2020
kf5hostname04: ABSTRACT: IJ29552 LOAD MODULE AUTH ISSUES
kf5hostname04: PACKAGER VERSION: 7
kf5hostname04: VUID: 00F7CD554C00120915123120
kf5hostname04: REBOOT REQUIRED: yes
kf5hostname04: BUILD BOOT IMAGE: yes
kf5hostname04: PRE-REQUISITES: yes
kf5hostname04: SUPERSEDE: no
kf5hostname04: PACKAGE LOCKS: no
```

## STAGE 7 - Standby nodes update

```
kf5hostname04: E2E PREREQS:      no
kf5hostname04: FIX TESTED:      no
kf5hostname04: ALTERNATE PATH:  None
kf5hostname04: EFI_X FILES:      1
kf5hostname04:
kf5hostname04: Install Scripts:
kf5hostname04:   PRE_INSTALL:  no
kf5hostname04:   POST_INSTALL: no
kf5hostname04:   PRE_REMOVE:   no
kf5hostname04:   POST_REMOVE:  no
kf5hostname04:
kf5hostname04: File Number:      1
kf5hostname04: LOCATION:         /usr/ccs/lib/libc.a
kf5hostname04: FILE TYPE:        Standard (file or executable)
kf5hostname04: INSTALLER:        installp
kf5hostname04: SIZE:             25264
kf5hostname04: ACL:              DEFAULT
kf5hostname04: CKSUM:            39000
kf5hostname04: PACKAGE:          bos.rte.libc
kf5hostname04: MOUNT INST:      no
kf5hostname04:
kf5hostname04: +-----+
kf5hostname04: Efix Description
kf5hostname04: +-----+
kf5hostname04: IJ29552 - some lam module logins break at latest service packs
kf5hostname04:
kf5hostname04: +-----+
kf5hostname04: Efix Lock Management
kf5hostname04: +-----+
kf5hostname04: Checking locks for file /usr/ccs/lib/libc.a ...
kf5hostname04:
kf5hostname04: All files have passed lock checks.
kf5hostname04:
kf5hostname04: +-----+
kf5hostname04: Space Requirements
kf5hostname04: +-----+
kf5hostname04: Checking space requirements ...
kf5hostname04:
kf5hostname04: Space statistics (in 512 byte-blocks):
kf5hostname04: File system: /usr, Free: 10995088, Required: 59938, Deficit: 0.
kf5hostname04: File system: /tmp, Free: 7312976, Required: 98847, Deficit: 0.
kf5hostname04:
kf5hostname04: +-----+
kf5hostname04: Reboot Processing
kf5hostname04: +-----+
kf5hostname04:
kf5hostname04: *** NOTICE ***
kf5hostname04: This efix package requires the target system to be rebooted after the current
kf5hostname04: operation is complete. It is recommended that you reboot the target system as
kf5hostname04: soon as possible after installation to avoid disruption of current functionality.
kf5hostname04:
kf5hostname04: *****
kf5hostname04: EPIX MANAGER PREVIEW END
kf5hostname04: *****
kf5hostname04:
kf5hostname04: +-----+
kf5hostname04: Operation Summary
kf5hostname04: +-----+
kf5hostname04: Log file is /var/adm/ras/emgr.log
kf5hostname04:
kf5hostname04:
kf5hostname04: EPKG NUMBER      LABEL              OPERATION          RESULT
kf5hostname04: =====
kf5hostname04: 1                IJ29552s7b          INSTALL PREVIEW    SUCCESS
kf5hostname04:
kf5hostname04:
kf5hostname04: Return Status = SUCCESS
kf5hostname04: ATTENTION: system reboot will be required by the actual (not preview) operation.
kf5hostname04: Please see the "Reboot Processing" sections in the output above or in the
kf5hostname04: /var/adm/ras/emgr.log file.
...
```

### 7. Command: Apply the efix to the quiesced hosts.

```
dsh -n ${BCUDB2ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && (emgr -l | grep IJ29552s7b || emgr -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z) '
```

#### Example Output: (Truncated to just show one hosts output.)

```
$ dsh -n ${BCUDB2ALL} 'cd /BCU_share/FP8_FP4/fixpack_tools;application/check_server_state.sh > /dev/null 2>&1 && (emgr -l | grep IJ29552s7b || emgr -e /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z) '
kf5hostname06: +-----+
kf5hostname06: Efix Manager Initialization
kf5hostname06: +-----+
kf5hostname06: Initializing log /var/adm/ras/emgr.log ...
kf5hostname06: Efix package file is: /BCU_share/FP8_FP4/software/AIX/ifixes/IJ29552s7b.201209.AIX71TL05SP07.epkg.Z
kf5hostname06: MD5 generating command is /usr/bin/csum
kf5hostname06: MD5 checksum is d1037fdd4781f799a64df2e665b1eb3
kf5hostname06: Accessing efix metadata ...
kf5hostname06: Processing efix label "IJ29552s7b" ...
kf5hostname06: Verifying efix control file ...
kf5hostname06:
kf5hostname06: +-----+
kf5hostname06: Installp Prerequisite Verification
kf5hostname06: +-----+
kf5hostname06: Verifying prerequisite file ...
kf5hostname06: Checking prerequisites ...
kf5hostname06:
```

## STAGE 7 - Standby nodes update

```
kf5hostname06: Prerequisite Number: 1
kf5hostname06:   Fileset: bos.rte.libc
kf5hostname06:   Minimal Level: 7.1.5.35
kf5hostname06:   Maximum Level: 7.1.5.35
kf5hostname06:   Actual Level: 7.1.5.35
kf5hostname06:   Type: PREREQ
kf5hostname06:   Requisite Met: yes
kf5hostname06: All prerequisites have been met.
kf5hostname06: +-----+
kf5hostname06: Processing APAR reference file
kf5hostname06: +-----+
kf5hostname06: ATTENTION: Interim fix is enabled for automatic removal by installp.
kf5hostname06: +-----+
kf5hostname06: Efix Attributes
kf5hostname06: +-----+
kf5hostname06: LABEL:                IJ29552s7b
kf5hostname06: PACKAGING DATE:       Wed Dec  9 15:40:31 CST 2020
kf5hostname06: ABSTRACT:             IJ29552 LOAD MODULE AUTH ISSUES
kf5hostname06: PACKAGER VERSION:     7
kf5hostname06: VUID:                 00F7CD554C00120915123120
kf5hostname06: REBOOT REQUIRED:       yes
kf5hostname06: BUILD BOOT IMAGE:     yes
kf5hostname06: PRE-REQUISITES:       yes
kf5hostname06: SUPERSEDE:            no
kf5hostname06: PACKAGE LOCKS:        no
kf5hostname06: E2E PREREQS:          no
kf5hostname06: FIX TESTED:           no
kf5hostname06: ALTERNATE PATH:       None
kf5hostname06: EFIX FILES:           1
kf5hostname06: Install Scripts:
kf5hostname06:   PRE_INSTALL:        no
kf5hostname06:   POST_INSTALL:       no
kf5hostname06:   PRE_REMOVE:         no
kf5hostname06:   POST_REMOVE:        no
kf5hostname06: File Number:          1
kf5hostname06:   LOCATION:           /usr/ccs/lib/libc.a
kf5hostname06:   FILE TYPE:          Standard (file or executable)
kf5hostname06:   INSTALLER:          installp
kf5hostname06:   SIZE:               25264
kf5hostname06:   ACL:                 DEFAULT
kf5hostname06:   CKSUM:               39000
kf5hostname06:   PACKAGE:            bos.rte.libc
kf5hostname06:   MOUNT INST:         no
kf5hostname06: +-----+
kf5hostname06: Efix Description
kf5hostname06: +-----+
kf5hostname06: IJ29552 - some lam module logins break at latest service packs
kf5hostname06: +-----+
kf5hostname06: Efix Lock Management
kf5hostname06: +-----+
kf5hostname06: Checking locks for file /usr/ccs/lib/libc.a ...
kf5hostname06: All files have passed lock checks.
kf5hostname06: +-----+
kf5hostname06: Space Requirements
kf5hostname06: +-----+
kf5hostname06: Checking space requirements ...
kf5hostname06: Space statistics (in 512 byte-blocks):
kf5hostname06: File system: /usr, Free: 11020416, Required: 59938, Deficit: 0.
kf5hostname06: File system: /tmp, Free: 9508536, Required: 98847, Deficit: 0.
kf5hostname06: +-----+
kf5hostname06: Efix Installation Setup
kf5hostname06: +-----+
kf5hostname06: Unpacking efix package file ...
kf5hostname06: Initializing efix installation ...
kf5hostname06: +-----+
kf5hostname06: Efix State
kf5hostname06: +-----+
kf5hostname06: Setting efix state to: INSTALLING
kf5hostname06: +-----+
kf5hostname06: File Archiving
kf5hostname06: +-----+
kf5hostname06: Saving all files that will be replaced ...
kf5hostname06: Save directory is: /usr/emgrdata/efixdata/IJ29552s7b/save
kf5hostname06: File 1: Saving /usr/ccs/lib/libc.a as EFSAVE1 ...
kf5hostname06:
```

## STAGE 7 - Standby nodes update

```
kf5hostname06: +-----+
kf5hostname06: Efix File Installation
kf5hostname06: +-----+
kf5hostname06: Installing all efix files:
kf5hostname06: Installing efix file #1 (File: /usr/ccs/lib/libc.a) ...
kf5hostname06:
kf5hostname06: Total number of efix files installed is 1.
kf5hostname06: All efix files installed successfully.
kf5hostname06: +-----+
kf5hostname06: Package Locking
kf5hostname06: +-----+
kf5hostname06: Processing package locking for all files.
kf5hostname06: File 1: locking installp fileset bos.rte.libc.
kf5hostname06:
kf5hostname06: All package locks processed successfully.
kf5hostname06: +-----+
kf5hostname06: Reboot Processing
kf5hostname06: +-----+
kf5hostname06:
kf5hostname06: *** NOTICE ***
kf5hostname06: This efix package requires the target system to be rebooted after the current
kf5hostname06: operation is complete. It is recommended that you reboot the target system as
kf5hostname06: soon as possible after installation to avoid disruption of current functionality.
kf5hostname06: +-----+
kf5hostname06: Efix State
kf5hostname06: +-----+
kf5hostname06: Setting efix state to: REBOOT REQUIRED
kf5hostname06: +-----+
kf5hostname06: Boot Image Processing
kf5hostname06: +-----+
kf5hostname06: Rebuilding boot image ...
kf5hostname06: bosboot: Boot image is 53276 512 byte blocks.
kf5hostname06: Successfully rebuilt boot image.
kf5hostname06: +-----+
kf5hostname06: Operation Summary
kf5hostname06: +-----+
kf5hostname06: Log file is /var/adm/ras/emgr.log
kf5hostname06:
kf5hostname06:


| EPKG NUMBER | LABEL      | OPERATION | RESULT  |
|-------------|------------|-----------|---------|
| 1           | IJ29552s7b | INSTALL   | SUCCESS |


kf5hostname06:
kf5hostname06: Return Status = SUCCESS
kf5hostname06: ATTENTION: system reboot is required. Please see the "Reboot Processing"
kf5hostname06: sections in the output above or in the /var/adm/ras/emgr.log file.
...
```

8. Apply any additional fixes.
9. Command: Reboot the quiesced hosts. This will only reboot hosts that are listed as quiesced.

```
dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/check_server_state.sh && (nohup shutdown +0 -r </dev/null
>/dev/null 2>&1 &) ' | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/check_server_state.sh && (nohup shutdown +0 -r </dev/null
>/dev/null 2>&1 &) ' | dshbak -c
HOSTS -----
kf5hostname04
-----
20210302_224425 (kf5hostname04:check_server_state.sh): Starting date: Tue Mar  2 22:44:25 -03 2021.
20210302_224427 (kf5hostname04:check_server_state.sh): GPFS State: 'down'.
20210302_224427 (kf5hostname04:check_server_state.sh): Domain state: 'Offline'.
20210302_224427 (kf5hostname04:check_server_state.sh): Service States:

20210302_224427 (kf5hostname04:check_server_state.sh): Starting date: Tue Mar  2 22:44:25 -03 2021   Ending Date: Tue Mar  2
22:44:27 -03 2021.

HOSTS -----
kf5hostname02
-----
20210302_224424 (kf5hostname02:check_server_state.sh): Starting date: Tue Mar  2 22:44:24 -03 2021.
20210302_224427 (kf5hostname02:check_server_state.sh): GPFS State: 'active'.
20210302_224427 (kf5hostname02:check_server_state.sh): Domain state: 'Online'.
20210302_224427 (kf5hostname02:check_server_state.sh): Service States:
Online
```

## STAGE 7 - Standby nodes update

```
20210302_224427 (kf5hostname02:check_server_state.sh): Starting date: Tue Mar 2 22:44:24 -03 2021 Ending Date: Tue Mar 2 22:44:27 -03 2021.

HOSTS -----
kf5hostname05
-----
20210302_224425 (kf5hostname05:check_server_state.sh): Starting date: Tue Mar 2 22:44:25 -03 2021.
20210302_224427 (kf5hostname05:check_server_state.sh): GPFS State: 'active'.
20210302_224427 (kf5hostname05:check_server_state.sh): Domain state: 'Online'.
20210302_224428 (kf5hostname05:check_server_state.sh): Service States:
Online

20210302_224428 (kf5hostname05:check_server_state.sh): Starting date: Tue Mar 2 22:44:25 -03 2021 Ending Date: Tue Mar 2 22:44:28 -03 2021.

HOSTS -----
kf5hostname07
-----
20210302_224424 (kf5hostname07:check_server_state.sh): Starting date: Tue Mar 2 22:44:24 -03 2021.
20210302_224427 (kf5hostname07:check_server_state.sh): GPFS State: 'active'.
20210302_224427 (kf5hostname07:check_server_state.sh): Domain state: 'Online'.
20210302_224428 (kf5hostname07:check_server_state.sh): Service States:
Online

20210302_224428 (kf5hostname07:check_server_state.sh): Starting date: Tue Mar 2 22:44:24 -03 2021 Ending Date: Tue Mar 2 22:44:28 -03 2021.

HOSTS -----
kf5hostname06
-----
20210302_224425 (kf5hostname06:check_server_state.sh): Starting date: Tue Mar 2 22:44:25 -03 2021.
20210302_224428 (kf5hostname06:check_server_state.sh): GPFS State: 'down'.
20210302_224428 (kf5hostname06:check_server_state.sh): Domain state: 'Offline'.
20210302_224428 (kf5hostname06:check_server_state.sh): Service States:

20210302_224428 (kf5hostname06:check_server_state.sh): Starting date: Tue Mar 2 22:44:25 -03 2021 Ending Date: Tue Mar 2 22:44:28 -03 2021.
```

## 10. Command: Wait for hosts to boot. CTRL-C to cancel.

```
while sleep 30;do date;dping ${ALL} | sort;done
```

### Example Output:

```
Wed Mar 3 00:11:54 -03 2021
kf5hostname01: ping (alive)
kf5hostname02: noping (unreachable)
kf5hostname03: ping (alive)
kf5hostname04: ping (alive)
kf5hostname05: ping (alive)
kf5hostname06: ping (alive)
kf5hostname07: noping (unreachable)
Wed Mar 3 00:12:35 -03 2021
kf5hostname01: ping (alive)
kf5hostname02: ping (alive)
kf5hostname03: ping (alive)
kf5hostname04: ping (alive)
kf5hostname05: ping (alive)
kf5hostname06: ping (alive)
kf5hostname07: noping (unreachable)
Wed Mar 3 00:13:16 -03 2021
kf5hostname01: ping (alive)
kf5hostname02: ping (alive)
kf5hostname03: ping (alive)
kf5hostname04: ping (alive)
kf5hostname05: ping (alive)
kf5hostname06: ping (alive)
kf5hostname07: noping (unreachable)
Wed Mar 3 00:13:57 -03 2021
kf5hostname01: ping (alive)
kf5hostname02: ping (alive)
kf5hostname03: ping (alive)
kf5hostname04: ping (alive)
kf5hostname05: ping (alive)
kf5hostname06: ping (alive)
kf5hostname07: noping (unreachable)
Wed Mar 3 00:14:38 -03 2021
kf5hostname01: ping (alive)
kf5hostname02: ping (alive)
kf5hostname03: ping (alive)
kf5hostname04: ping (alive)
kf5hostname05: ping (alive)
```

## STAGE 7 - Standby nodes update

```
kf5hostname06: ping (alive)
kf5hostname07: ping (alive)
```

11. Command: Verify the efix was installed on the quiesced hosts. The State should be 'S'.

```
dsh -n ${BCUDB2ALL} 'emgr -l | grep IJ29552s7b' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUDB2ALL} 'emgr -l | grep IJ29552s7b' 2>&1 | dshbak -c
HOSTS -----
kf5hostname02, kf5hostname05, kf5hostname07
-----
There is no efix data on this system.

HOSTS -----
kf5hostname04, kf5hostname06
-----
1      S      IJ29552s7b 03/02/21 22:39:41      IJ29552 LOAD MODULE AUTH ISSUES
```

## STAGE 7 - Standby nodes update

### Step 3: Update the Internal RAID adapters on the quiesced hosts.

1. Command: Remount BCU\_share on the updated hosts. The output in the example shows '04' and '05' were missing the mount. This is consistent as '04' and '05' were updated and rebooted.

```
./enable_bcushare.sh
```

#### Example Output:

```
$ ./enable_bcushare.sh
20201218_212123 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20201218_212125 (flashdancehostname01:enable_bcushare.sh): Warning: The following hosts are missing /BCU_share mounts.
flashdancehostname04: Warning: Missing /BCU_share mount.
flashdancehostname05: Warning: Missing /BCU_share mount.
20201218_212125 (flashdancehostname01:enable_bcushare.sh): Attempting to mount /BCU_share on all hosts.
20201218_212126 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20201218_212127 (flashdancehostname01:enable_bcushare.sh): Success: /BCU_share is mounted on all hosts.
20201218_212127 (flashdancehostname01:enable_bcushare.sh): enable_bcushare.sh completed with rc=0.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

2. Command: Run the validation to check for eligible RAID adapters. The output should only show '04' and '05' in this example as '01' and '03' were updated in Stage 6, '02', '06' and '07' are active hosts and not eligible. The output also shows the pplayer validation was successful on those adapters.

```
./update_sissas.sh validate
```

#### Example Output:

```
$ ./update_sissas.sh validate
20201218_212409 (flashdancehostname01:update_sissas.sh): Starting date: Fri Dec 18 21:24:09 IST 2020.
20201218_212409 (flashdancehostname01:update_sissas.sh): Checking for available updates.
20201218_212409 (flashdancehostname01:update_sissas.sh): Checking for Quiesced hosts.
20201218_212418 (flashdancehostname01:update_sissas.sh): Checking for adapters that are eligible for updates.
20201218_212422 (flashdancehostname01:update_sissas.sh): The following is a list of all adapters requiring updates. Only adapters on quiesced hosts will be updated.
20201218_212422 (flashdancehostname01:update_sissas.sh):

flashdancehostname06:172.23.1.6:sissas0:19512300
flashdancehostname06:172.23.1.6:sissas1:19512300
flashdancehostname05:172.23.1.5:sissas0:19512300
flashdancehostname05:172.23.1.5:sissas1:19512300
flashdancehostname02:172.23.1.2:sissas0:19512300
flashdancehostname04:172.23.1.4:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas1:19512300

20201218_212422 (flashdancehostname01:update_sissas.sh): The following adapters are eligible for updates. '
flashdancehostname05:172.23.1.5:sissas0:19512300
flashdancehostname05:172.23.1.5:sissas1:19512300
flashdancehostname04:172.23.1.4:sissas0:19512300'.
20201218_212422 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pplayer/bin/icmds/adapterfw - validate -i 172.23.1.5 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm' to validate devices.
The adapter validation is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas0(172.23.1.5).
20201218_212425 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pplayer/bin/icmds/adapterfw - validate -i 172.23.1.5 -d sissas1 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm' to validate devices.
The adapter validation is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas1(172.23.1.5).
20201218_212427 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pplayer/bin/icmds/adapterfw - validate -i 172.23.1.4 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm' to validate devices.
The adapter validation is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas0(172.23.1.4).
20201218_212429 (flashdancehostname01:update_sissas.sh): Starting date: Fri Dec 18 21:24:09 IST 2020 Ending Date: Fri Dec 18 21:24:29 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## STAGE 7 - Standby nodes update

3. Command: Run the update command to update the adapters. The command should be run in a screen session or vtmenu console session. The example output shows successful results for the eligible adapters. This takes about 2 minutes per adapter per server and is done serially.

```
./update_sissas.sh update
```

### Example Output:

```
$ ./update_sissas.sh update
20201218_212822 (flashdancehostname01:update_sissas.sh): Starting date: Fri Dec 18 21:28:22 IST 2020.
20201218_212822 (flashdancehostname01:update_sissas.sh): Checking for available updates.
20201218_212823 (flashdancehostname01:update_sissas.sh): Checking for Quiesced hosts.
20201218_212830 (flashdancehostname01:update_sissas.sh): Checking for adapters that are eligible for updates.
20201218_212835 (flashdancehostname01:update_sissas.sh): The following is a list of all adapters requiring updates. Only adapters
on quiesced hosts will be updated.
20201218_212835 (flashdancehostname01:update_sissas.sh):

flashdancehostname06:172.23.1.6:sissas0:19512300
flashdancehostname06:172.23.1.6:sissas1:19512300
flashdancehostname05:172.23.1.5:sissas0:19512300
flashdancehostname05:172.23.1.5:sissas1:19512300
flashdancehostname02:172.23.1.2:sissas0:19512300
flashdancehostname04:172.23.1.4:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas1:19512300

20201218_212835 (flashdancehostname01:update_sissas.sh): The following adapters are eligible for updates. '
flashdancehostname05:172.23.1.5:sissas0:19512300
flashdancehostname05:172.23.1.5:sissas1:19512300
flashdancehostname04:172.23.1.4:sissas0:19512300'.
20201218_212835 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pfplayer/bin/icmds/adapterfw -
validate -i 172.23.1.5 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
The adapter validation is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-
57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas0(172.23.1.5) .
20201218_212837 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pfplayer/bin/icmds/adapterfw -
validate -i 172.23.1.5 -d sissas1 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
The adapter validation is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-
57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas1(172.23.1.5) .
20201218_212840 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pfplayer/bin/icmds/adapterfw -
validate -i 172.23.1.4 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
The adapter validation is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-
57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas0(172.23.1.4) .
20201218_212842 (flashdancehostname01:update_sissas.sh): The following adapters are eligible for updates. '
flashdancehostname05:172.23.1.5:sissas0:19512300
flashdancehostname05:172.23.1.5:sissas1:19512300
flashdancehostname04:172.23.1.4:sissas0:19512300'.
20201218_212842 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pfplayer/bin/icmds/adapterfw -
update -i 172.23.1.5 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
The adapter update is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-
57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas0(172.23.1.5) .
20201218_213029 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pfplayer/bin/icmds/adapterfw -
update -i 172.23.1.5 -d sissas1 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
The adapter update is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-
57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas1(172.23.1.5) .
20201218_213215 (flashdancehostname01:update_sissas.sh): Running the command '/opt/ibm/aixappl/pfplayer/bin/icmds/adapterfw -
update -i 172.23.1.4 -d sissas0 -f /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-57D7/pci.1014034a.51-19512b00-
1.aix6.1.noarch.rpm' to validate devices.
The adapter update is successful for the adapter firmware image /BCU_share/FP8_FP4/firmware/CCIN_adapter/CCIN-
57D7/pci.1014034a.51-19512b00-1.aix6.1.noarch.rpm on sissas0(172.23.1.4) .
20201218_213311 (flashdancehostname01:update_sissas.sh): Starting date: Fri Dec 18 21:28:22 IST 2020 Ending Date: Fri Dec 18
21:33:11 IST 2020.
```

## STAGE 7 - Standby nodes update

4. Command: Rerunning the validate command shows only the active hosts adapters need to be updated.

```
./update_sissas.sh validate
```

### Example Output:

```
$ ./update_sissas.sh validate
20201218_213540 (flashdancehostname01:update_sissas.sh): Starting date: Fri Dec 18 21:35:40 IST 2020.
20201218_213540 (flashdancehostname01:update_sissas.sh): Checking for available updates.
20201218_213540 (flashdancehostname01:update_sissas.sh): Checking for Quiesced hosts.
20201218_213547 (flashdancehostname01:update_sissas.sh): Checking for adapters that are eligible for updates.
20201218_213552 (flashdancehostname01:update_sissas.sh): The following is a list of all adapters requiring updates. Only adapters
on quiesced hosts will be updated.
20201218_213552 (flashdancehostname01:update_sissas.sh):

flashdancehostname06:172.23.1.6:sissas0:19512300
flashdancehostname06:172.23.1.6:sissas1:19512300
flashdancehostname02:172.23.1.2:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas0:19512300
flashdancehostname07:172.23.1.7:sissas1:19512300

20201218_213552 (flashdancehostname01:update_sissas.sh): Starting date: Fri Dec 18 21:35:40 IST 2020   Ending Date: Fri Dec 18
21:35:52 IST 2020.
```

## STAGE 7 - Standby nodes update

### Step 4: Update the FC and Network Adapters.

In PDOA V1.1 FP3->FP4 scenarios there are no available updates for the network adapters and only the FC adapters on the data nodes are updated.

During testing it is possible to see failed FC paths after updating the FC firmware.

During testing it is possible to see performance degradation on updated data hosts after the FC update and before the power firmware (PFW) update on the same server. It is therefore recommended to update both the FC and PFW and rebooting the host before returning the updated node to service.

1. Command: Run the validation to check for eligible adapters and to run the platform layer validate command against those eligible adapters. The example output shows that all of the data nodes have adapters that need to be updated, but only '05' is quiesced and eligible. Note '01'-'04' hosts, the foundation hosts, use different FC cards which do not have available updates in V1.1 FP4.

```
./update_adapters.sh validate
```

#### Example Output:

```
$ ./update_adapters.sh validate
20201218_214000 (flashdancehostname01:update_adapters.sh): Starting date: Fri Dec 18 21:40:00 IST 2020.
20201218_214000 (flashdancehostname01:update_adapters.sh): Checking for available updates.
20201218_214000 (flashdancehostname01:update_adapters.sh): Checking for Quiesced hosts.
20201218_214007 (flashdancehostname01:update_adapters.sh): Checking for adapters that are eligible for updates.
20201218_214035 (flashdancehostname01:update_adapters.sh): The following is a list of all adapters requiring updates. Only
adapters on quiesced hosts will be updated.
20201218_214035 (flashdancehostname01:update_adapters.sh):

server2 flashdancehostname05 172.23.1.5 fc_adapter6 server2 7710322514101e04 0320080270
server2 flashdancehostname05 172.23.1.5 fc_adapter7 server2 7710322514101e04 0320080270
server2 flashdancehostname05 172.23.1.5 fc_adapter8 server2 7710322514101e04 0320080270
server2 flashdancehostname05 172.23.1.5 fc_adapter9 server2 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter0 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter1 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter2 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter3 server0 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter18 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter19 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter20 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter21 server5 7710322514101e04 0320080270

20201218_214035 (flashdancehostname01:update_adapters.sh): The following adapters are eligible for updates. '
7710322514101e04:fc_adapter6,fc_adapter7,fc_adapter8,fc_adapter9'.
20201218_214035 (flashdancehostname01:update_adapters.sh): Running the command
'/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_fc_adapter update -validate -l fc_adapter6,fc_adapter7,fc_adapter8,fc_adapter9 -f
/BCU_share/FP8_FP4/firmware/fc_adapter/7710322514101e04/image' to validate devices.
Validation passed for fc_adapter6
Validation passed for fc_adapter7
Validation passed for fc_adapter8
Validation passed for fc_adapter9
20201218_214107 (flashdancehostname01:update_adapters.sh): Starting date: Fri Dec 18 21:40:00 IST 2020 Ending Date: Fri Dec 18
21:41:07 IST 2020.
```

## STAGE 7 - Standby nodes update

2. Command: Run the update to update the FC on the standby hosts. This command should be run in a screen session or vtmenu console session. The example output shows success for the 4 adapters in this update. This command takes ~15 minutes per server. Updates are done in parallel on all quiesced servers.

```
./update_adapters.sh update
```

### Example Output:

```
$ ./update_adapters.sh update
20201218_214529 (flashdancehostname01:update_adapters.sh): Starting date: Fri Dec 18 21:45:29 IST 2020.
20201218_214529 (flashdancehostname01:update_adapters.sh): Checking for available updates.
20201218_214529 (flashdancehostname01:update_adapters.sh): Checking for Quiesced hosts.
20201218_214536 (flashdancehostname01:update_adapters.sh): Checking for adapters that are eligible for updates.
20201218_214604 (flashdancehostname01:update_adapters.sh): The following is a list of all adapters requiring updates. Only
adapters on quiesced hosts will be updated.
20201218_214604 (flashdancehostname01:update_adapters.sh):

server2 flashdancehostname05 172.23.1.5 fc_adapter6 server2 7710322514101e04 0320080270
server2 flashdancehostname05 172.23.1.5 fc_adapter7 server2 7710322514101e04 0320080270
server2 flashdancehostname05 172.23.1.5 fc_adapter8 server2 7710322514101e04 0320080270
server2 flashdancehostname05 172.23.1.5 fc_adapter9 server2 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter0 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter1 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter2 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter3 server0 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter18 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter19 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter20 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter21 server5 7710322514101e04 0320080270

20201218_214604 (flashdancehostname01:update_adapters.sh): The following adapters are eligible for updates. '
7710322514101e04:fc_adapter6,fc_adapter7,fc_adapter8,fc_adapter9'.
20201218_214604 (flashdancehostname01:update_adapters.sh): Running the command
'/opt/ibm/aixappl/pfplayer/bin/icmids/appl_ctrl_fc_adapter update -validate -l fc_adapter6,fc_adapter7,fc_adapter8,fc_adapter9 -f
/BCU_share/FP8_FP4/firmware/fc_adapter/7710322514101e04/image' to validate devices.
Validation passed for fc_adapter6
Validation passed for fc_adapter7
Validation passed for fc_adapter8
Validation passed for fc_adapter9
20201218_214635 (flashdancehostname01:update_adapters.sh): The following adapters are eligible for updates. '
7710322514101e04:fc_adapter6,fc_adapter7,fc_adapter8,fc_adapter9'.
20201218_214636 (flashdancehostname01:update_adapters.sh): Running the command
'/opt/ibm/aixappl/pfplayer/bin/icmids/appl_ctrl_fc_adapter update -install -l fc_adapter6,fc_adapter7,fc_adapter8,fc_adapter9 -f
/BCU_share/FP8_FP4/firmware/fc_adapter/7710322514101e04/image' to update devices.
Successfully Completed adapter update for fc_adapter6
Successfully Completed adapter update for fc_adapter7
Successfully Completed adapter update for fc_adapter8
Successfully Completed adapter update for fc_adapter9
20201218_215126 (flashdancehostname01:update_adapters.sh): Starting date: Fri Dec 18 21:45:29 IST 2020 Ending Date: Fri Dec 18
21:51:26 IST 2020.
```

3. Command: Rerun the validate step to verify the adapters no longer appear as needing to be updated. From the example output the adapters on '05' no longer show as needing an update.

```
./update_adapters.sh validate
```

### Example Output:

```
$ ./update_adapters.sh validate
20201218_220758 (flashdancehostname01:update_adapters.sh): Starting date: Fri Dec 18 22:07:58 IST 2020.
20201218_220758 (flashdancehostname01:update_adapters.sh): Checking for available updates.
20201218_220758 (flashdancehostname01:update_adapters.sh): Checking for Quiesced hosts.
20201218_220805 (flashdancehostname01:update_adapters.sh): Checking for adapters that are eligible for updates.
20201218_220833 (flashdancehostname01:update_adapters.sh): The following is a list of all adapters requiring updates. Only
adapters on quiesced hosts will be updated.
20201218_220833 (flashdancehostname01:update_adapters.sh):

server0 flashdancehostname06 172.23.1.6 fc_adapter0 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter1 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter2 server0 7710322514101e04 0320080270
server0 flashdancehostname06 172.23.1.6 fc_adapter3 server0 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter18 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter19 server5 7710322514101e04 0320080270
```

## STAGE 7 - Standby nodes update

```
server5 flashdancehostname07 172.23.1.7 fc_adapter20 server5 7710322514101e04 0320080270
server5 flashdancehostname07 172.23.1.7 fc_adapter21 server5 7710322514101e04 0320080270

20201218_220833 (flashdancehostname01:update_adapters.sh): Starting date: Fri Dec 18 22:07:58 IST 2020 Ending Date: Fri Dec 18
22:08:33 IST 2020.

(1) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

4. Command: Verify the Fiber Channel Path Status. All paths should be enabled. In testing some hosts had failed paths, as shown by the second example output.

`./check_fcpaths.sh`

### Example Output:

```
$ ./check_fcpaths.sh
20201218_221321 (flashdancehostname01:check_fcpaths.sh): Starting date: Fri Dec 18 22:13:21 IST 2020.
20201218_221321 (flashdancehostname01:check_fcpaths.sh): Collecting current histogram.
HOSTS -----
flashdancehostname01
-----
14 fscsi0:Enabled
14 fscsi2:Enabled
14 fscsi4:Enabled
14 fscsi6:Enabled

HOSTS -----
flashdancehostname03
-----
10 fscsi0:Enabled
10 fscsi2:Enabled
10 fscsi4:Enabled
10 fscsi6:Enabled

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
42 fscsi10:Enabled
42 fscsi11:Enabled
42 fscsi12:Enabled
42 fscsi13:Enabled
42 fscsi14:Enabled
42 fscsi15:Enabled
42 fscsi8:Enabled
42 fscsi9:Enabled

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
160 fscsi0:Enabled
160 fscsi12:Enabled
160 fscsi13:Enabled
160 fscsi14:Enabled
160 fscsi15:Enabled
160 fscsi1:Enabled
160 fscsi2:Enabled
160 fscsi3:Enabled
160 fscsi4:Enabled
160 fscsi8:Enabled
20201218_221323 (flashdancehostname01:check_fcpaths.sh): Checking for missing paths.
flashdancehostname01: 0
flashdancehostname03: 0
flashdancehostname04: 0
flashdancehostname02: 0
flashdancehostname07: 0
flashdancehostname06: 0
flashdancehostname05: 0
20201218_221324 (flashdancehostname01:check_fcpaths.sh): Starting date: Fri Dec 18 22:13:21 IST 2020 Ending Date: Fri Dec 18
22:13:24 IST 2020.
```

### Example Output W/ errors:

```
$ ./check_fcpaths.sh
20201231_085404 (flashdancehostname01:check_fcpaths.sh): Starting date: Thu Dec 31 08:54:04 IST 2020.
20201231_085404 (flashdancehostname01:check_fcpaths.sh): Collecting current histogram.
HOSTS -----
flashdancehostname01
-----
14 fscsi0:Enabled
14 fscsi2:Enabled
14 fscsi4:Enabled
14 fscsi6:Enabled
```

## STAGE 7 - Standby nodes update

```
HOSTS -----
flashdancehostname02, flashdancehostname04
-----
42 fscsi10:Enabled
42 fscsi11:Enabled
42 fscsi12:Enabled
42 fscsi13:Enabled
42 fscsi14:Enabled
42 fscsi15:Enabled
42 fscsi8:Enabled
42 fscsi9:Enabled

HOSTS -----
flashdancehostname03
-----
10 fscsi0:Enabled
10 fscsi2:Enabled
10 fscsi4:Enabled
10 fscsi6:Enabled

HOSTS -----
flashdancehostname05, flashdancehostname07
-----
160 fscsi0:Enabled
160 fscsi12:Enabled
160 fscsi13:Enabled
160 fscsi14:Enabled
160 fscsi15:Enabled
160 fscsi1:Enabled
160 fscsi2:Enabled
160 fscsi3:Enabled
160 fscsi4:Enabled
160 fscsi8:Enabled

HOSTS -----
flashdancehostname06
-----
160 fscsi0:Enabled
160 fscsi12:Enabled
80 fscsi13:Enabled
80 fscsi13:Failed
160 fscsi14:Enabled
80 fscsi15:Enabled
80 fscsi15:Failed
80 fscsi1:Enabled
80 fscsi1:Failed
160 fscsi2:Enabled
80 fscsi3:Enabled
80 fscsi3:Failed
160 fscsi4:Enabled
160 fscsi8:Enabled
20201231_085405 (flashdancehostname01:check_fcpaths.sh): Checking for missing paths.
flashdancehostname01: 0
flashdancehostname03: 0
flashdancehostname02: 0
flashdancehostname04: 0
flashdancehostname05: 0
flashdancehostname07: 0
20201231_085406 (flashdancehostname01:check_fcpaths.sh): Warning: Found fiber channel paths missing on one of the hosts.
20201231_085406 (flashdancehostname01:check_fcpaths.sh): Starting date: Thu Dec 31 08:54:04 IST 2020   Ending Date: Thu Dec 31
08:54:06 IST 2020.
```

## STAGE 7 - Standby nodes update

### Step 5: Updating Power firmware on the standby CECs

1. If using the pflayer to update the PFW, then the updates are done serially due to limitations within the HMCs. The commands below will only update quiesced servers so provide a safer mechanism, however it takes longer to run the updates. If using this method proceed to step 2. If using the HMC GUI method proceed to step (todo) which allows to run the update in parallel. If the management LPAR is running on the CEC then it will be necessary to re-create all screen sessions if using screens and to restart the update to complete any other servers that need to be updated.
2. Command: Rerun the quiesce command to stop GPFS after the AIX update completed.

```
dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/quiesce_node.sh' 2>&1 | dshbak -c
```

#### Example Output:

```
$ dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/quiesce_node.sh' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
20201218_122829 (flashdancehostname01:quiesce_node.sh): Starting date: Fri Dec 18 12:28:29 IST 2020.
20201218_122829 (flashdancehostname01:quiesce_node.sh): Attempting to quiesce host flashdancehostname01.
20201218_122829 (flashdancehostname01:check_server_state.sh): Starting date: Fri Dec 18 12:28:29 IST 2020.
20201218_122830 (flashdancehostname01:check_server_state.sh): Service States:
Online

20201218_122830 (flashdancehostname01:check_server_state.sh): Starting date: Fri Dec 18 12:28:29 IST 2020   Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname01:quiesce_node.sh): Error: Cannot quiesce this host due to existing services. Please failover
any services running on this host.
20201218_122830 (flashdancehostname01:quiesce_node.sh): Starting date: Fri Dec 18 12:28:29 IST 2020   Ending Date: Fri Dec 18
12:28:30 IST 2020.

HOSTS -----
flashdancehostname02
-----
20201218_122830 (flashdancehostname02:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname02:quiesce_node.sh): Attempting to quiesce host flashdancehostname02.
20201218_122830 (flashdancehostname02:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname02:check_server_state.sh): Service States:
Online

20201218_122830 (flashdancehostname02:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020   Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname02:quiesce_node.sh): Error: Cannot quiesce this host due to existing services. Please failover
any services running on this host.
20201218_122830 (flashdancehostname02:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020   Ending Date: Fri Dec 18
12:28:30 IST 2020.

HOSTS -----
flashdancehostname07
-----
20201218_122830 (flashdancehostname07:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname07:quiesce_node.sh): Attempting to quiesce host flashdancehostname07.
20201218_122830 (flashdancehostname07:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname07:check_server_state.sh): Service States:
Online

20201218_122830 (flashdancehostname07:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020   Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname07:quiesce_node.sh): Error: Cannot quiesce this host due to existing services. Please failover
any services running on this host.
20201218_122830 (flashdancehostname07:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020   Ending Date: Fri Dec 18
12:28:30 IST 2020.

HOSTS -----
flashdancehostname06
-----
20201218_122830 (flashdancehostname06:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname06:quiesce_node.sh): Attempting to quiesce host flashdancehostname06.
20201218_122830 (flashdancehostname06:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname06:check_server_state.sh): Service States:
Online

20201218_122830 (flashdancehostname06:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020   Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname06:quiesce_node.sh): Error: Cannot quiesce this host due to existing services. Please failover
any services running on this host.
```

## STAGE 7 - Standby nodes update

```
20201218_122830 (flashdancehostname06:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18
12:28:30 IST 2020.

HOSTS -----
flashdancehostname03
-----
20201218_122830 (flashdancehostname03:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:quiesce_node.sh): Attempting to quiesce host flashdancehostname03.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:check_server_state.sh): Service States:

20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:check_server_state.sh): Domain state: 'Online'.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:quiesce_node.sh): Force stopping the domain on this host.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname03:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122830 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122841 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:41 IST 2020.
20201218_122841 (flashdancehostname03:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122841 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:41 IST 2020    Ending Date: Fri Dec
18 12:28:41 IST 2020.
20201218_122851 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122851 (flashdancehostname03:check_server_state.sh): Domain state: 'Offline'.
20201218_122851 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020    Ending Date: Fri Dec
18 12:28:51 IST 2020.
20201218_122851 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122853 (flashdancehostname03:check_server_state.sh): GPFS State: 'active'.
20201218_122853 (flashdancehostname03:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020    Ending Date: Fri Dec
18 12:28:53 IST 2020.
20201218_122855 (flashdancehostname03:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
Fri Dec 18 12:28:55 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
20201218_122901 (flashdancehostname03:quiesce_node.sh): Stopping GPFS on this host.
Fri Dec 18 12:29:01 IST 2020: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Fri Dec 18 12:29:06 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 2228772
Fri Dec 18 12:29:11 IST 2020: 6027-1345 mmshutdown: Finished
20201218_122912 (flashdancehostname03:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec 18
12:29:12 IST 2020.

HOSTS -----
flashdancehostname04
-----
20201218_122829 (flashdancehostname04:quiesce_node.sh): Starting date: Fri Dec 18 12:28:29 IST 2020.
20201218_122829 (flashdancehostname04:quiesce_node.sh): Attempting to quiesce host flashdancehostname04.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:29 IST 2020.
20201218_122830 (flashdancehostname04:check_server_state.sh): Service States:

20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:29 IST 2020    Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname04:check_server_state.sh): Domain state: 'Online'.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname04:quiesce_node.sh): Force stopping the domain on this host.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname04:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122830 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020    Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122840 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:40 IST 2020.
20201218_122840 (flashdancehostname04:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122840 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:40 IST 2020    Ending Date: Fri Dec
18 12:28:40 IST 2020.
20201218_122851 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122851 (flashdancehostname04:check_server_state.sh): Domain state: 'Offline'.
20201218_122851 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020    Ending Date: Fri Dec
18 12:28:51 IST 2020.
20201218_122851 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122853 (flashdancehostname04:check_server_state.sh): GPFS State: 'active'.
20201218_122853 (flashdancehostname04:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020    Ending Date: Fri Dec
18 12:28:53 IST 2020.
20201218_122854 (flashdancehostname04:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
Fri Dec 18 12:28:54 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
20201218_122919 (flashdancehostname04:quiesce_node.sh): Stopping GPFS on this host.
Fri Dec 18 12:29:19 IST 2020: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Fri Dec 18 12:29:24 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 10093062
Fri Dec 18 12:29:36 IST 2020: 6027-1345 mmshutdown: Finished
20201218_122936 (flashdancehostname04:quiesce_node.sh): Starting date: Fri Dec 18 12:28:29 IST 2020    Ending Date: Fri Dec 18
12:29:36 IST 2020.

HOSTS -----
```

## STAGE 7 - Standby nodes update

```
flashdancehostname05
-----
20201218_122830 (flashdancehostname05:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname05:quiesce_node.sh): Attempting to quiesce host flashdancehostname05.
20201218_122830 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname05:check_server_state.sh): Service States:

20201218_122830 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020 Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname05:check_server_state.sh): Domain state: 'Online'.
20201218_122830 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:30 IST 2020 Ending Date: Fri Dec
18 12:28:30 IST 2020.
20201218_122830 (flashdancehostname05:quiesce_node.sh): Force stopping the domain on this host.
20201218_122831 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:31 IST 2020.
20201218_122831 (flashdancehostname05:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122831 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:31 IST 2020 Ending Date: Fri Dec
18 12:28:31 IST 2020.
20201218_122841 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:41 IST 2020.
20201218_122841 (flashdancehostname05:check_server_state.sh): Domain state: 'Pending offline'.
20201218_122841 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:41 IST 2020 Ending Date: Fri Dec
18 12:28:41 IST 2020.
20201218_122851 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020.
20201218_122852 (flashdancehostname05:check_server_state.sh): Domain state: 'Offline'.
20201218_122852 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:51 IST 2020 Ending Date: Fri Dec
18 12:28:52 IST 2020.
20201218_122852 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:52 IST 2020.
20201218_122855 (flashdancehostname05:check_server_state.sh): GPFS State: 'active'.
20201218_122855 (flashdancehostname05:check_server_state.sh): Starting date: Fri Dec 18 12:28:52 IST 2020 Ending Date: Fri Dec
18 12:28:55 IST 2020.
20201218_122856 (flashdancehostname05:quiesce_node.sh): Unmounting all GPFS Filesystems on this host.
Fri Dec 18 12:28:57 IST 2020: 6027-1674 mmumount: Unmounting file systems ...
20201218_122933 (flashdancehostname05:quiesce_node.sh): Stopping GPFS on this host.
Fri Dec 18 12:29:33 IST 2020: 6027-1341 mmshutdown: Starting force umount of GPFS file systems
Fri Dec 18 12:29:38 IST 2020: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 4915612
Fri Dec 18 12:30:41 IST 2020: 6027-1345 mmshutdown: Finished
20201218_123041 (flashdancehostname05:quiesce_node.sh): Starting date: Fri Dec 18 12:28:30 IST 2020 Ending Date: Fri Dec 18
12:30:41 IST 2020.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

3. Command: Run the following command to verify the platform layer registered hostnames are properly setup in known\_hosts. Reply 'yes' for each host. Repeat the command to verify the prompting no longer appears.

```
appl_ls_hw -r server_os -A Parent,M_Hostname < /dev/null | sed 's|'|g' | cut -d, -f2 | while read h;do ssh -n $h hostname;done
```

### Example Output: (First pass)

```
$ appl_ls_hw -r server_os -A Parent,M_Hostname < /dev/null | sed 's|'|g' | cut -d, -f2 | while read h;do ssh -n $h hostname;done
kf5hostname05
The authenticity of host 'kf5hostname03mgt (172.23.1.3)' can't be established.
RSA key fingerprint is SHA256:5WXl4skviwv85Skdevag2R9L8RGszwq0LwJ4Qly3cU.
Are you sure you want to continue connecting (yes/no/[fingerprint])?
(130) root @ kf5hostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
$ appl_ls_hw -r server_os -A Parent,M_Hostname < /dev/null | sed 's|'|g' | cut -d, -f2 | while read h;do ssh -n $h hostname;done
kf5hostname05
The authenticity of host 'kf5hostname03mgt (172.23.1.3)' can't be established.
RSA key fingerprint is SHA256:5WXl4skviwv85Skdevag2R9L8RGszwq0LwJ4Qly3cU.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'kf5hostname03mgt' (RSA) to the list of known hosts.
kf5hostname03
The authenticity of host 'kf5hostname07mgt (172.23.1.7)' can't be established.
RSA key fingerprint is SHA256:ddIuez9oBpuNzgaDPOs/CXan+zlZrPO8B4fq5LNIImII.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'kf5hostname07mgt' (RSA) to the list of known hosts.
kf5hostname07
The authenticity of host 'kf5hostname02mgt (172.23.1.2)' can't be established.
RSA key fingerprint is SHA256:si+Xle0+Y4bAsH/S6d/UnNZuTUFNpsvMes5ltPggLc.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'kf5hostname02mgt' (RSA) to the list of known hosts.
kf5hostname02
The authenticity of host 'kf5hostname04mgt (172.23.1.4)' can't be established.
RSA key fingerprint is SHA256:7BlhS2H+g91kA8Uf2pEFcwJxWfW9vzbEalE+JmWU6FM.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'kf5hostname04mgt' (RSA) to the list of known hosts.
kf5hostname04
```

## STAGE 7 - Standby nodes update

```
The authenticity of host 'kf5hostname06mgt (172.23.1.6)' can't be established.  
RSA key fingerprint is SHA256:NBNGjRt/ny5Xb9Sx4kUg2jrFTSIzJTitHCB5E9ZqI8.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added 'kf5hostname06mgt' (RSA) to the list of known hosts.  
kf5hostname06  
The authenticity of host 'kf5hostname01mgt (172.23.1.1)' can't be established.  
RSA key fingerprint is SHA256:7zgxp7oByhTRaBVtrtMKqZ64EjiA55FOM+PsnF6+JAg.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added 'kf5hostname01mgt' (RSA) to the list of known hosts.  
kf5hostname01
```

Example Output: The command should return without prompting as shown below in this second pass.

```
$ appl_ls_hw -r server_os -A Parent,M_Hostname < /dev/null | sed 's|'|lg' | cut -d, -f2 | while read h;do ssh -n $h hostname;done  
kf5hostname05  
kf5hostname03  
kf5hostname07  
kf5hostname02  
kf5hostname04  
kf5hostname06  
kf5hostname01
```

4. Command: Run the following command to check for servers that need to be updated and for servers that are eligible to be updated. This shows that 'server\_fsp2' and 'server\_fsp1' need updates and are eligible to be updated. In order to update all lpars on the server must be quiesced and it must require an update.

```
./update_pfw.sh validate
```

Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application  
$ ./update_pfw.sh validate  
20201229_055930 (flashdancehostname01:update_pfw.sh): Starting date: Tue Dec 29 05:59:30 IST 2020.  
20201229_055930 (flashdancehostname01:update_pfw.sh): Running validation.  
20201229_055930 (flashdancehostname01:update_pfw.sh): Collecting servers types.  
20201229_055932 (flashdancehostname01:update_pfw.sh): Loading available updates.  
20201229_055932 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp2' which requires an update.  
20201229_055933 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname05mgt' to verify that they  
are quiesced and eligible for updates.  
20201229_055937 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname05mgt' is quiesced.  
20201229_055937 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp3' which requires an update.  
20201229_055938 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname06mgt' to verify that they  
are quiesced and eligible for updates.  
20201229_055941 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname06mgt' is not quiesced with rc='3'.  
20201229_055941 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp4' which requires an update.  
20201229_055942 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname07mgt' to verify that they  
are quiesced and eligible for updates.  
20201229_055945 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname07mgt' is not quiesced with rc='3'.  
20201229_055945 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp0' which requires an update.  
20201229_055947 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname02mgt  
flashdancehostname01mgt' to verify that they are quiesced and eligible for updates.  
20201229_055950 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname02mgt' is not quiesced with rc='3'.  
20201229_055953 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname01mgt' is not quiesced with rc='3'.  
20201229_055953 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp1' which requires an update.  
20201229_055955 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname03mgt  
flashdancehostname04mgt' to verify that they are quiesced and eligible for updates.  
20201229_055958 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname03mgt' is quiesced.  
20201229_060000 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname04mgt' is quiesced.  
20201229_060000 (flashdancehostname01:update_pfw.sh): Found the following model:target versions.  
22A:860.226:/BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports:server_fsp2  
42A:860.226:/BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports:server_fsp1.  
20201229_060000 (flashdancehostname01:update_pfw.sh): Running '/opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_fsp update -validate  
-l server_fsp2 -f /BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports'.  
Validating the PFW update.  
PFW:server_fsp2:0:Validate succeeded  
Validation Completed Successfully  
20201229_060015 (flashdancehostname01:update_pfw.sh): Running '/opt/ibm/aixappl/pfplayer/bin/icmds/appl_ctrl_fsp update -validate  
-l server_fsp1 -f /BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports'.  
Validating the PFW update.  
PFW:server_fsp1:0:Validate succeeded  
Validation Completed Successfully  
20201229_060030 (flashdancehostname01:update_pfw.sh): Starting date: Tue Dec 29 05:59:30 IST 2020 Ending Date: Tue Dec 29  
06:00:30 IST 2020.
```

## STAGE 7 - Standby nodes update

5. Command: Run the following command to update the quiesced and eligible CECs. If one of the CECs contains the management and management standby you will need to rerun the command after that CEC is updated. This command should be run via a screen session or vtmenu console session to the management host. This will take approximately 20 minutes per server and the updates are done serially due to limitations in the HMC CLI used by the PDOA platform layer automation.

```
./update_pfw.sh update
```

### Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
$ ./update_pfw.sh update
20201229_060540 (flashdancehostname01:update_pfw.sh): Starting date: Tue Dec 29 06:05:40 IST 2020.
20201229_060540 (flashdancehostname01:update_pfw.sh): Running update.
20201229_060540 (flashdancehostname01:update_pfw.sh): Running validation.
20201229_060540 (flashdancehostname01:update_pfw.sh): Collecting servers types.
20201229_060541 (flashdancehostname01:update_pfw.sh): Loading available updates.
20201229_060542 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp2' which requires an update.
20201229_060543 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname05mgt' to verify that they
are quiesced and eligible for updates.
20201229_060546 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname05mgt' is quiesced.
20201229_060547 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp3' which requires an update.
20201229_060548 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname06mgt' to verify that they
are quiesced and eligible for updates.
20201229_060551 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname06mgt' is not quiesced with rc='3'.
20201229_060551 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp4' which requires an update.
20201229_060552 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname07mgt' to verify that they
are quiesced and eligible for updates.
20201229_060555 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname07mgt' is not quiesced with rc='3'.
20201229_060556 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp0' which requires an update.
20201229_060557 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname02mgt
flashdancehostname01mgt' to verify that they are quiesced and eligible for updates.
20201229_060600 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname02mgt' is not quiesced with rc='3'.
20201229_060603 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname01mgt' is not quiesced with rc='3'.
20201229_060603 (flashdancehostname01:update_pfw.sh): Found server 'server_fsp1' which requires an update.
20201229_060605 (flashdancehostname01:update_pfw.sh): Checking server LPARs/Hosts 'flashdancehostname03mgt
flashdancehostname04mgt' to verify that they are quiesced and eligible for updates.
20201229_060608 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname03mgt' is quiesced.
20201229_060610 (flashdancehostname01:update_pfw.sh): Host 'flashdancehostname04mgt' is quiesced.
20201229_060610 (flashdancehostname01:update_pfw.sh): Found the following model:target versions.
22A:860.226:/BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports:server_fsp2
42A:860.226:/BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports:server_fsp1.
20201229_060610 (flashdancehostname01:update_pfw.sh): Running '/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_fsp update -validate
-l server_fsp2 -f /BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports'.
Validating the PFW update.
PFW:server_fsp2:0:Validate succeeded
Validation Completed Successfully
20201229_060625 (flashdancehostname01:update_pfw.sh): Running '/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_fsp update -validate
-l server_fsp1 -f /BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports'.
Validating the PFW update.
PFW:server_fsp1:0:Validate succeeded
Validation Completed Successfully
20201229_060640 (flashdancehostname01:update_pfw.sh): Running '/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_fsp update -install -
l server_fsp2 -f /BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports'.
PFW:server_fsp2:0:Successfully updated
CEC updates were successful
20201229_062400 (flashdancehostname01:update_pfw.sh): Running '/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_fsp update -install -
l server_fsp1 -f /BCU_share/FP8_FP4/firmware/server_fsp/22A_42A/image/imports'.
PFW:server_fsp1:0:Successfully updated
CEC updates were successful
20201229_064119 (flashdancehostname01:update_pfw.sh): Starting date: Tue Dec 29 06:05:40 IST 2020 Ending Date: Tue Dec 29
06:41:19 IST 2020.
```

6. Command: Reboot all updated core lpar in this pass. In this V1.1 FP3->V1.1 FP4 update the Power Firmware (PFW) update does not power down the CEC as part of the update. During testing for V1.1 FP1 V1.1 FP3, the fiber channel updates sometimes lead to failed paths for which a reboot is the easiest solution. As the servers are quiesced and updated, this is a good time to perform those reboots. To reboot all standby core hosts run the following.

```
dsh -n $(BCUDB2ALL) '/BCU_share/FP8_FP4/fixpack_tools/application/check_server_state.sh && (nohup shutdown +0 -r </dev/null
>/dev/null 2>&1 &) ' | dshbak -c
```

## STAGE 7 - Standby nodes update

### Example Output:

```
$ dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/check_server_state.sh && (nohup shutdown +0 -r </dev/null
>/dev/null 2>&1 &)' | dshbak -c
HOSTS -----
flashdancehostname02
-----
20210101_113547 (flashdancehostname02:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021.
20210101_113549 (flashdancehostname02:check_server_state.sh): GPFS State: 'down'.
20210101_113549 (flashdancehostname02:check_server_state.sh): Domain state: 'Offline'.
20210101_113549 (flashdancehostname02:check_server_state.sh): Service States:

20210101_113549 (flashdancehostname02:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021   Ending Date: Fri Jan
1 11:35:49 IST 2021.

HOSTS -----
flashdancehostname04
-----
20210101_113547 (flashdancehostname04:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021.
20210101_113549 (flashdancehostname04:check_server_state.sh): GPFS State: 'active'.
20210101_113549 (flashdancehostname04:check_server_state.sh): Domain state: 'Online'.
20210101_113549 (flashdancehostname04:check_server_state.sh): Service States:
Online

20210101_113549 (flashdancehostname04:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021   Ending Date: Fri Jan
1 11:35:49 IST 2021.

HOSTS -----
flashdancehostname07
-----
20210101_113547 (flashdancehostname07:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021.
20210101_113549 (flashdancehostname07:check_server_state.sh): GPFS State: 'active'.
20210101_113549 (flashdancehostname07:check_server_state.sh): Domain state: 'Online'.
20210101_113549 (flashdancehostname07:check_server_state.sh): Service States:
Online

20210101_113549 (flashdancehostname07:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021   Ending Date: Fri Jan
1 11:35:49 IST 2021.

HOSTS -----
flashdancehostname05
-----
20210101_113547 (flashdancehostname05:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021.
20210101_113549 (flashdancehostname05:check_server_state.sh): GPFS State: 'active'.
20210101_113550 (flashdancehostname05:check_server_state.sh): Domain state: 'Online'.
20210101_113550 (flashdancehostname05:check_server_state.sh): Service States:
Online

20210101_113550 (flashdancehostname05:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021   Ending Date: Fri Jan
1 11:35:50 IST 2021.

HOSTS -----
flashdancehostname06
-----
20210101_113547 (flashdancehostname06:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021.
20210101_113549 (flashdancehostname06:check_server_state.sh): GPFS State: 'down'.
20210101_113550 (flashdancehostname06:check_server_state.sh): Domain state: 'Offline'.
20210101_113550 (flashdancehostname06:check_server_state.sh): Service States:

20210101_113550 (flashdancehostname06:check_server_state.sh): Starting date: Fri Jan  1 11:35:47 IST 2021   Ending Date: Fri Jan
1 11:35:50 IST 2021.
```

### 7. Command: Use the following to track when the hosts are offline and then online.

```
while sleep 30;do date;dping ${ALL};done
```

### Example Output:

```
$ while sleep 30;do date;dping ${ALL};done
Fri Jan  1 11:42:28 IST 2021
flashdancehostname02: ping (alive)
flashdancehostname07: ping (alive)
flashdancehostname03: ping (alive)
flashdancehostname04: ping (alive)
flashdancehostname01: ping (alive)
flashdancehostname05: ping (alive)
flashdancehostname06: noping (unreachable)
```

## STAGE 7 - Standby nodes update

```
Fri Jan 1 11:42:58 IST 2021
flashdancehostname07: ping (alive)
flashdancehostname01: ping (alive)
flashdancehostname02: ping (alive)
flashdancehostname04: ping (alive)
flashdancehostname05: ping (alive)
flashdancehostname06: ping (alive)
flashdancehostname03: ping (alive)
```

8. Command: Verify the hosts are online and check the uptime. The example output shows '02' and '06' were recently rebooted.

```
dsh -n ${ALL} uptime | sort
```

Example Output:

```
$ dsh -n ${ALL} uptime | sort
flashdancehostname01: 11:43AM up 29 days, 4:51, 1 user, load average: 0.08, 0.16, 0.12
flashdancehostname02: 11:43AM up 4 mins, 0 users, load average: 0.10, 0.17, 0.09
flashdancehostname03: 11:43AM up 16 days, 11:59, 0 users, load average: 0.41, 0.25, 0.23
flashdancehostname04: 11:43AM up 7 days, 11:24, 1 user, load average: 0.12, 0.13, 0.19
flashdancehostname05: 11:43AM up 8 days, 1:32, 0 users, load average: 0.25, 0.39, 0.44
flashdancehostname06: 11:43AM up 2 mins, 0 users, load average: 0.50, 0.26, 0.12
flashdancehostname07: 11:43AM up 45 days, 13:06, 0 users, load average: 0.61, 0.63, 0.59
```

9. Command: After reboot, enable BCU\_share.

```
./enable_bcushare.sh
```

Example Output:

```
$ ./enable_bcushare.sh
20210103_211957 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20210103_211958 (flashdancehostname01:enable_bcushare.sh): Warning: The following hosts are missing /BCU_share mounts.
flashdancehostname07: Warning: Missing /BCU_share mount.
20210103_211958 (flashdancehostname01:enable_bcushare.sh): Attempting to mount /BCU_share on all hosts.
20210103_211959 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20210103_212000 (flashdancehostname01:enable_bcushare.sh): Success: /BCU_share is mounted on all hosts.
20210103_212000 (flashdancehostname01:enable_bcushare.sh): enable_bcushare.sh completed with rc=0.
```

10. Continue to Phase 5 to return the updated hosts to service.

## Phase 5: Returning Quiesced Nodes To Service

1. Command: Run the following to enable /BCU\_share on updated hosts. From V1.1 FP3 to V1.1 FP4 the PFW update is concurrent and does lead to a reboot of the LPARs.

```
./enable_bcushare.sh
```

Example Output:

```
$ ./enable_bcushare.sh
20201229_064443 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20201229_064444 (flashdancehostname01:enable_bcushare.sh): Success: /BCU_share is mounted on all hosts.
20201229_064444 (flashdancehostname01:enable_bcushare.sh): enable_bcushare.sh completed with rc=0.
```

2. Command: Run the following command to check the uptime.

```
dsh -n ${ALL} 'uptime'
```

Example Output:

```
$ dsh -n ${ALL} 'uptime'
flashdancehostname01: 06:45AM up 25 days, 23:53, 2 users, load average: 0.29, 0.20, 0.22
flashdancehostname04: 06:45AM up 4 days, 6:26, 0 users, load average: 0.13, 0.15, 0.09
flashdancehostname02: 06:45AM up 119 days, 1:11, 2 users, load average: 1.38, 1.56, 1.67
flashdancehostname06: 06:45AM up 79 days, 22:53, 0 users, load average: 1.93, 1.48, 1.85
flashdancehostname07: 06:45AM up 42 days, 8:07, 0 users, load average: 1.84, 1.92, 2.21
flashdancehostname03: 06:45AM up 13 days, 7 hrs, 0 users, load average: 0.04, 0.06, 0.06
flashdancehostname05: 06:45AM up 4 days, 20:34, 0 users, load average: 1.05, 1.05, 0.88
```

3. Command: Run the following to verify that the standby nodes updates are completed. The standby hosts will not appear in the output.

```
dsh -n ${ALL} -e /BCU_share/FP8_FP4/fixpack_tools/status/stageSeven_status.sh | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} -e /BCU_share/FP8_FP4/fixpack_tools/status/stageSeven_status.sh | dshbak -c
HOSTS -----
flashdancehostname01
-----
Firmware Version: IBM,FW860.70 (SV860_205)

HOSTS -----
flashdancehostname02
-----
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
sissas:53495351.19512300

HOSTS -----
flashdancehostname06, flashdancehostname07
-----
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
fcs:7710322514101e04.0320080270
sissas:53495351.19512300
```

## STAGE 7 - Standby nodes update

4. Command: Restore the standby hosts to operational status. This command will attempt to start GPFS, mount GPFS filesystems and add quiesced hosts in their respective domains. The example output shows the result of the first completed pass.

```
dsh -n ${ALL} "/BCU_share/FP8_FP4/fixpack_tools/application/unquiesce_node.sh" | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} "/BCU_share/FP8_FP4/fixpack_tools/application/unquiesce_node.sh" | dshbak -c
HOSTS -----
flashdancehostname01
-----
20201229_071142 (flashdancehostname01:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:41 IST 2020.
20201229_071142 (flashdancehostname01:unquiesce_node.sh): Attempting to unquiesce host flashdancehostname01.
20201229_071203 (flashdancehostname01:unquiesce_node.sh): Successfully unquiesced host.
20201229_071203 (flashdancehostname01:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:41 IST 2020    Ending Date: Tue Dec 29 07:12:03 IST 2020.

HOSTS -----
flashdancehostname02
-----
20201229_071142 (flashdancehostname02:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020.
20201229_071142 (flashdancehostname02:unquiesce_node.sh): Attempting to unquiesce host flashdancehostname02.
20201229_071304 (flashdancehostname02:unquiesce_node.sh): Successfully unquiesced host.
20201229_071304 (flashdancehostname02:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020    Ending Date: Tue Dec 29 07:13:04 IST 2020.

HOSTS -----
flashdancehostname03
-----
20201229_071142 (flashdancehostname03:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020.
20201229_071142 (flashdancehostname03:unquiesce_node.sh): Attempting to unquiesce host flashdancehostname03.
Tue Dec 29 07:11:49 IST 2020: 6027-1642 mmstartup: Starting GPFS ...
Tue Dec 29 07:12:06 IST 2020: 6027-1623 mmmount: Mounting file systems ...
Tue Dec 29 07:12:13 IST 2020: 6027-1623 mmmount: Mounting file systems ...
20201229_071346 (flashdancehostname03:unquiesce_node.sh): Successfully unquiesced host.
20201229_071346 (flashdancehostname03:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020    Ending Date: Tue Dec 29 07:13:46 IST 2020.

HOSTS -----
flashdancehostname04
-----
20201229_071142 (flashdancehostname04:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020.
20201229_071142 (flashdancehostname04:unquiesce_node.sh): Attempting to unquiesce host flashdancehostname04.
Tue Dec 29 07:11:50 IST 2020: 6027-1642 mmstartup: Starting GPFS ...
20201229_071413 (flashdancehostname04:unquiesce_node.sh): Successfully unquiesced host.
20201229_071413 (flashdancehostname04:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020    Ending Date: Tue Dec 29 07:14:13 IST 2020.

HOSTS -----
flashdancehostname06
-----
20201229_071142 (flashdancehostname06:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020.
20201229_071142 (flashdancehostname06:unquiesce_node.sh): Attempting to unquiesce host flashdancehostname06.
20201229_071455 (flashdancehostname06:unquiesce_node.sh): Successfully unquiesced host.
20201229_071455 (flashdancehostname06:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020    Ending Date: Tue Dec 29 07:14:55 IST 2020.

HOSTS -----
flashdancehostname07
-----
20201229_071142 (flashdancehostname07:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020.
20201229_071142 (flashdancehostname07:unquiesce_node.sh): Attempting to unquiesce host flashdancehostname07.
20201229_071457 (flashdancehostname07:unquiesce_node.sh): Successfully unquiesced host.
20201229_071457 (flashdancehostname07:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020    Ending Date: Tue Dec 29 07:14:57 IST 2020.

HOSTS -----
flashdancehostname05
-----
20201229_071142 (flashdancehostname05:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020.
20201229_071142 (flashdancehostname05:unquiesce_node.sh): Attempting to unquiesce host flashdancehostname05.
Tue Dec 29 07:11:50 IST 2020: 6027-1642 mmstartup: Starting GPFS ...
Tue Dec 29 07:12:31 IST 2020: 6027-1623 mmmount: Mounting file systems ...
20201229_071932 (flashdancehostname05:unquiesce_node.sh): Successfully unquiesced host.
20201229_071932 (flashdancehostname05:unquiesce_node.sh): Starting date: Tue Dec 29 07:11:42 IST 2020    Ending Date: Tue Dec 29 07:19:32 IST 2020.
```

5. Command: Verify the Fiber Channel Paths are all Enabled.

```
dsh -n ${ALL} 'lspath | grep fscsi | while read state disk if rest;do echo "$if:$state" ;done | sort | uniq -c' | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} 'lspath | grep fscsi | while read state disk if rest;do echo "$if:$state" ;done | sort | uniq -c' | dshbak -c
HOSTS -----
flashdancehostname01
-----
  14 fscsi0:Enabled
  14 fscsi2:Enabled
  14 fscsi4:Enabled
  14 fscsi6:Enabled

HOSTS -----
flashdancehostname03
-----
  10 fscsi0:Enabled
```

STAGE 7 - Standby nodes update

```
10 fscsi2:Enabled
10 fscsi4:Enabled
10 fscsi6:Enabled

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
42 fscsi10:Enabled
42 fscsi11:Enabled
42 fscsi12:Enabled
42 fscsi13:Enabled
42 fscsi14:Enabled
42 fscsi15:Enabled
42 fscsi8:Enabled
42 fscsi9:Enabled

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
160 fscsi0:Enabled
160 fscsi12:Enabled
160 fscsi13:Enabled
160 fscsi14:Enabled
160 fscsi15:Enabled
160 fscsi1:Enabled
160 fscsi2:Enabled
160 fscsi3:Enabled
160 fscsi4:Enabled
160 fscsi8:Enabled
```

6. Command: Verify the filesystems are mounted on the the updated hosts.

```
dsh -n ${ALL} 'mount | grep -c mmfs' | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'mount | grep -c mmfs' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
5

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
21

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
63
```

7. Command: Verify the standby nodes are online again in the domain. The HA STATUS should show Normal.

```
hals
```

Example Output:

```
$ hals
MANAGEMENT DOMAIN
```

| COMPONENT | PRIMARY              | STANDBY              | CURRENT              | OPSTATE | HA STATUS | RG REQUESTS |
|-----------|----------------------|----------------------|----------------------|---------|-----------|-------------|
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online  | Normal    | -           |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online  | Normal    | -           |

```
CORE DOMAIN
```

| PARTITIONS | CURRENT              | STANDBY              | DOMAIN      | OPSTATE | HA STATUS | RG REQUESTS |
|------------|----------------------|----------------------|-------------|---------|-----------|-------------|
| 0-5        | flashdancehostname02 | flashdancehostname04 | bcudomain01 | Online  | Normal    | -           |
| 6-15       | flashdancehostname07 | flashdancehostname05 | bcudomain02 | Online  | Normal    | -           |
| 16-25      | flashdancehostname06 | flashdancehostname05 | bcudomain02 | Online  | Normal    | -           |

## Phase 6: Prepare for the next cycle.

1. Command: Run the stage07 check utility to check the status of all nodes. The output below does not contain the hosts '03', '04', and '05' indicating that those host have completed their stage 07 updates.

```
dsh -n ${ALL} -e /BCU_share/FP8_FP4/fixpack_tools/status/stageSeven_status.sh | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} -e /BCU_share/FP8_FP4/fixpack_tools/status/stageSeven_status.sh | dshbak -c
HOSTS -----
flashdancehostname01
-----
Firmware Version: IBM,FW860.70 (SV860_205)

HOSTS -----
flashdancehostname02
-----
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
sissas:53495351.19512300

HOSTS -----
flashdancehostname06, flashdancehostname07
-----
Firmware Version: IBM,FW860.70 (SV860_205)
7100-05-04-1914
fcs:7710322514101e04.0320080270
sissas:53495351.19512300
```

2. Command: Run hals to see the current HA Status and node assignments.

**hals**

Example Output:

```
$ hals
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
=====+=====+=====+=====+=====+=====+=====+

CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT | STANDBY | DOMAIN | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| 0-5        | flashdancehostname02 | flashdancehostname04 | bcudomain01 | Online | Normal | - |
| 6-15       | flashdancehostname07 | flashdancehostname05 | bcudomain02 | Online | Normal | - |
| 16-25      | flashdancehostname06 | flashdancehostname05 | bcudomain02 | Online | Normal | - |
=====+=====+=====+=====+=====+=====+=====+
```

3. Using the output from 1 and 2, identify if stage 07 is complete or the next set of hosts to update. In the example output '01', '02', '06' and '07' require updates. Return the Phase 1 if any hosts require updates.



## STAGE 8 - CORE NODES update in DOWNTIME window

### Stage 8 Description

Stage 8 represents the outage phase, which is like the previous PDOA fixpack core apply phases. Where it is not similar is that it uses a phased approach that can be interrupted to bring the system back into production if needed.

#### Steps

- Stage 8 Phase 1: Quiesce the appliance.
- Stage 8 Phase 2: BNT Firmware Updates.
- Stage 8 Phase 3: Core GPFS Updates
- Stage 8 Phase 4: Core TSA Domain Updates
- Stage 8 Phase 5: Update HA Tools
- Stage 8 Phase 6: Core DB2 Updates.
- Stage 8 Phase 7: mksysb
- Stage 8 Phase 8: Remirror rootvg on all hosts.

#### Outage Requirements

- All services will be offline in the appliance during the update.

#### Time Per Step

- Stage 8 Phase 1: 10 to 15 Minutes.
- Stage 8 Phase 2: 30 to 40 Minutes.
- Stage 8 Phase 3: 30 minutes for GPFS
- Stage 8 Phase 4: 25 minutes for TSA updates.
- Stage 8 Phase 5:
- Stage 8 Phase 6: 45 minutes Core DB2 Updates.
- Stage 8 Phase 7: 1 hour and run in parallel on all hosts.
- Stage 8 Phase 8: 3 hours and run in parallel..

#### Risk Mitigation

- System can be put back into production between completed phases.
- mksysb and alt\_disk\_install methods to recover host in some cases
- TSA domain backups.
- DB2 installed in multiple copies.
- Customer should backup their database as per their normal processes.

#### Backout Options

- mksysb [ not available after GPFS commit ]

## STAGE 8 - CORE NODES update in DOWNTIME window

- alt\_disk\_install [ not available after GPFS commit ]
- Revert to previous DB2 copies [ may require database restore ]

## Phase 1: Quiesce The Appliance

1. Login as root in a screen or vtmenu console session on the management host.
2. Command: Change the directory if not already to /BCU\_share/FP8\_FP4/fixpack\_tools/application

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

3. In Stage 07 hosts, LPARs and CECs were quiesced to allow for partial updates. In Stage 08 all services, TSA domains, GPFS clusters will be quiesced on the whole appliance. This can also be performed at any stage depending on the risk tolerance of the customer.
4. Command: Determine if the services that are running. This is run as root on the management host. Preferably in a screen or vtmenu session. The following command shows that DPM, and the core database services are online. The expectation is that all services are online when starting this stage, however many customers are not using DPM so DPM may be Offline as well as the management domain.

```
hals
```

Example Output:

```
$ hals
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY          | STANDBY          | CURRENT          | OPSTATE          | HA STATUS        | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| DPM        | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online           | Normal           | -           |
| DB2DPM     | flashdancehostname01 | flashdancehostname03 | flashdancehostname03 | Online           | Normal           | -           |
|-----+-----+-----+-----+-----+-----+=====+

CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT          | STANDBY          | DOMAIN           | OPSTATE          | HA STATUS        | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| 0-5        | flashdancehostname02 | flashdancehostname04 | bcudomain01      | Online           | Normal           | -           |
| 6-15       | flashdancehostname07 | flashdancehostname06 | bcudomain02      | Online           | Normal           | -           |
| 16-25      | flashdancehostname05 | flashdancehostname06 | bcudomain02      | Online           | Normal           | -           |
|-----+-----+-----+-----+-----+-----+=====+
```

5. Command: If DPM is started, the stop DPM.

```
hastopdpm
```

Example Output:

```
$ hastopdpm
Stopping DPM and DB2 instance.....Resources offline
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY          | STANDBY          | CURRENT          | OPSTATE          | HA STATUS        | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| DPM        | flashdancehostname01 | N/A              | N/A              | Offline          | Offline          | -           |
| DB2DPM     | flashdancehostname01 | N/A              | N/A              | Offline          | Offline          | -           |
|-----+-----+-----+-----+-----+-----+=====+
```

6. Command: If the core partitions are Online then stop the core partitions.

```
hastopdb2
```

Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
$ hastopdb2
Stopping DB2.....DB2 Resources offline
CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT          | STANDBY          | DOMAIN           | OPSTATE          | HA STATUS        | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| 0-5        | N/A              | N/A              | bcudomain01      | Offline          | Offline          | -           |
| 6-15       | N/A              | N/A              | bcudomain02      | Offline          | Offline          | -           |
| 16-25      | N/A              | N/A              | bcudomain02      | Offline          | Offline          | -           |
|-----+-----+-----+-----+-----+-----+=====+
```

## STAGE 8 - CORE NODES update in DOWNTIME window

7. Command: At this point all PDOA services (DPM, Db2 Partitions or MLNs) should be stopped. Stop the core domain.

```
hadomain -core stop
```

Example Output:

```
$ hadomain -core stop
```

8. Command: Verify the core domain is stopped or listed as DOMAIN OFFLINE.

```
hals
```

Example Output:

```
$ hals
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
| DB2DPM    | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
=====+=====+=====+=====+=====+=====+=====+

CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT | STANDBY | DOMAIN | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| N/A       | N/A | N/A | bcudomain01 | DOMAIN OFFLINE | N/A | N/A |
| N/A       | N/A | N/A | bcudomain02 | DOMAIN OFFLINE | N/A | N/A |
=====+=====+=====+=====+=====+=====+=====+
```

9. Stop the Management domain.

```
hadomain -mgmt stop
```

Example Output:

```
$ hadomain -mgmt stop
```

10. Command: Verify the domains are stopped. There are three commands to check the status.

```
hals
```

Example Output:

```
$ hals
none are available... returning
CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT | STANDBY | DOMAIN | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| N/A       | N/A | N/A | bcudomain01 | DOMAIN OFFLINE | N/A | N/A |
| N/A       | N/A | N/A | bcudomain02 | DOMAIN OFFLINE | N/A | N/A |
=====+=====+=====+=====+=====+=====+=====+
```

11. Command: Check the status of the management domain.

```
hadomain -mgmt status
```

Example Output:

```
$ hadomain -mgmt status
mgmtdomain Offline 3.2.5.2 No 12347 12348
```

12. Command: Check the status of the core domains.

```
hadomain -mgmt status
```

## STAGE 8 - CORE NODES update in DOWNTIME window

### Example Output:

```
$ hadomain -core status
bcudomain01 Offline 3.2.4.3      No      12347  12348
bcudomain02 Offline 3.2.4.3      No      12347  12348
```

13. Command: Stop the filesystems on all hosts. This step will attempt to unmount all GPFS filesystems on all AIX servers in the appliance. This includes the '/stage', '/dwhome', and '/db2home' filesystems which are often used for user logins. If your environment has applications running that access these filesystems then it will be necessary to quiesce or stop those applications prior to running this step. Any server that has filesystems that cannot be unmounted must be rebooted if the applications or sessions using those filesystems cannot be determined or killed. Please note that rebooting a host will automatically start and mount GPFS filesystems, so this step will need be repeated until all hosts do not have any GPFS filesystems mounted.

```
dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmumount all'
```

### Example Output:

```
$ dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmumount all'
flashdancehostname01: Tue Jan  5 02:52:13 IST 2021: 6027-1674 mmumount: Unmounting file systems ...
flashdancehostname03: Tue Jan  5 02:52:14 IST 2021: 6027-1674 mmumount: Unmounting file systems ...
flashdancehostname02: Tue Jan  5 02:52:14 IST 2021: 6027-1674 mmumount: Unmounting file systems ...
flashdancehostname04: Tue Jan  5 02:52:14 IST 2021: 6027-1674 mmumount: Unmounting file systems ...
flashdancehostname07: Tue Jan  5 02:52:14 IST 2021: 6027-1674 mmumount: Unmounting file systems ...
flashdancehostname06: Tue Jan  5 02:52:14 IST 2021: 6027-1674 mmumount: Unmounting file systems ...
flashdancehostname05: Tue Jan  5 02:52:14 IST 2021: 6027-1674 mmumount: Unmounting file systems ...
```

14. Command: Verify that there are no GPFS filesystems mounted. Do not proceed past this step if any host has GPFS filesystems mounted.

```
dsh -n ${ALL} 'mount | grep -c mmfs' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} 'mount | grep -c mmfs' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
0
```

15. Command: Shutdown GPFS on all hosts.

```
dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmshutdown' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmshutdown' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
Tue Jan  5 02:56:53 IST 2021: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Tue Jan  5 02:56:58 IST 2021: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 4457002
Tue Jan  5 02:57:04 IST 2021: 6027-1345 mmshutdown: Finished

HOSTS -----
flashdancehostname07
-----
Tue Jan  5 02:56:54 IST 2021: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Tue Jan  5 02:56:59 IST 2021: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 2163214
Tue Jan  5 02:57:05 IST 2021: 6027-1345 mmshutdown: Finished
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
HOSTS -----
flashdancehostname04
-----
Tue Jan  5 02:56:54 IST 2021: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Tue Jan  5 02:56:59 IST 2021: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 8192402
Tue Jan  5 02:57:15 IST 2021: 6027-1345 mmshutdown: Finished

HOSTS -----
flashdancehostname05
-----
Tue Jan  5 02:56:54 IST 2021: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Tue Jan  5 02:56:59 IST 2021: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 5243622
Tue Jan  5 02:57:15 IST 2021: 6027-1345 mmshutdown: Finished

HOSTS -----
flashdancehostname06
-----
Tue Jan  5 02:56:54 IST 2021: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Tue Jan  5 02:56:59 IST 2021: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 3539252
Tue Jan  5 02:57:17 IST 2021: 6027-1345 mmshutdown: Finished

HOSTS -----
flashdancehostname02
-----
Tue Jan  5 02:56:54 IST 2021: 6027-1341 mmshutdown: Starting force unmount of GPFS file systems
Tue Jan  5 02:56:59 IST 2021: 6027-1344 mmshutdown: Shutting down GPFS daemons
Shutting down!
'shutdown' command about to kill process 3473822
Master did not clean up; attempting cleanup now
2021-01-05_02:57:59.493+0530: GPFS: 6027-311 [N] mmfsd is shutting down.
2021-01-05_02:57:59.494+0530: [N] Reason for shutdown: mmfsadm shutdown command timed out
Tue Jan  5 02:57:59 IST 2021: mmcommon mmfsdown invoked. Subsystem: mmfs Status: down
Tue Jan  5 02:57:59 IST 2021: 6027-1674 mmcommon: Unmounting file systems ...
Tue Jan  5 02:58:04 IST 2021: 6027-1345 mmshutdown: Finished
```

16. Command: Verify that all hosts are shutdown. All hosts should report 'down' in the output.

```
dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmgetstate'
```

### Example Output:

```
$ dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmgetstate'
flashdancehostname01:
flashdancehostname01: Node number Node name GPFS state
flashdancehostname01: -----
flashdancehostname01: 1 flashdancehostname01 down
flashdancehostname02:
flashdancehostname02: Node number Node name GPFS state
flashdancehostname02: -----
flashdancehostname02: 1 flashdancehostname02 down
flashdancehostname04:
flashdancehostname04: Node number Node name GPFS state
flashdancehostname04: -----
flashdancehostname04: 2 flashdancehostname04 down
flashdancehostname07:
flashdancehostname07: Node number Node name GPFS state
flashdancehostname07: -----
flashdancehostname07: 5 flashdancehostname07 down
flashdancehostname05:
flashdancehostname05: Node number Node name GPFS state
flashdancehostname05: -----
flashdancehostname05: 3 flashdancehostname05 down
flashdancehostname03:
flashdancehostname03: Node number Node name GPFS state
flashdancehostname03: -----
flashdancehostname03: 2 flashdancehostname03 down
flashdancehostname06:
flashdancehostname06: Node number Node name GPFS state
flashdancehostname06: -----
flashdancehostname06: 4 flashdancehostname06 down
```

17. Command: Unload GPFS from the environment on each host. If any host fails to unload, then reboot that host and return to step 9 as the GPFS daemons will be restarted on that host. If that host is a

## STAGE 8 - CORE NODES update in DOWNTIME window

primary or secondary configuration host it will be able to start GPFS cluster and mount filesystems and those will have to unmounted, GPFS on that host will need to be stopped and the GPFS will need to be removed form the environment.

```
dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmfsenv -u' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmfsenv -u' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
GPFS: 6027-501 /usr/lpp/mmfs/bin/mmfskxunload: module /usr/lpp/mmfs/bin/mmfs unloaded.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## 18. Command: Verify that GPFS is unloaded from the environment.

```
dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmfsenv -u' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmfsenv -u' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
GPFS: 6027-507 /usr/lpp/mmfs/bin/mmfskxload: /usr/lpp/mmfs/bin/mmfs is not loaded.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## Phase 2: Update the network switches.

Apply BNT firmware update on all the network switches. This step will result in full network outage for the update duration as the switches reboot. The following commands should be run through a screen session or vtmenu session on the management host as the root user. Platform layer commands are logged to `/BCU_share/aixappl/pflayer/log/platform_layer.log` and `/BCU_share/aixappl/pflayer/log/platform_layer.trace`.

1. Command: Validate the BNT updates. This command will check to see if there are available updates and if the network switches need to be updated and will run the platform layer validation tests.

```
./update_bnt.sh validate
```

Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
$ ./update_bnt.sh validate
20210105_040810 (flashdancehostname01:update_bnt.sh): Starting date: Tue Jan 5 04:08:10 IST 2021.
20210105_040810 (flashdancehostname01:update_bnt.sh): Running validation.
20210105_040810 (flashdancehostname01:update_bnt.sh): Collecting switch types.
20210105_040811 (flashdancehostname01:update_bnt.sh): Loading available updates.
20210105_040811 (flashdancehostname01:update_bnt.sh): Found server 'net0' which requires an update.
20210105_040811 (flashdancehostname01:update_bnt.sh): Found server 'net1' which requires an update.
20210105_040812 (flashdancehostname01:update_bnt.sh): Found server 'net2' which requires an update.
20210105_040812 (flashdancehostname01:update_bnt.sh): Found server 'net3' which requires an update.
20210105_040812 (flashdancehostname01:update_bnt.sh): Found the following model:target versions.
7.11.19.0:/BCU_share/FP8_FP4/firmware/net/:G8052:net0,net1 7.11.19.0:/BCU_share/FP8_FP4/firmware/net/:G8264:net2,net3.
20210105_040812 (flashdancehostname01:update_bnt.sh): Running '/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_net update -validate
-l net0,net1,net2,net3 -f /BCU_share/FP8_FP4/firmware/net/'.
BNT:net2:172.23.1.252:0:Validation process completed:Configuration backup process success for 172.23.1.252.
BNT:net1:172.23.1.253:0:Validation process completed:Configuration backup process success for 172.23.1.253.
BNT:net3:172.23.1.251:0:Validation process completed:Configuration backup process success for 172.23.1.251.
BNT:net0:172.23.1.254:0:Validation process completed:Configuration backup process success for 172.23.1.254.
20210105_040846 (flashdancehostname01:update_bnt.sh): Verifying all nodes are quiesced.
flashdancehostname02: Host is quiesced.
flashdancehostname01: Host is quiesced.
flashdancehostname04: Host is quiesced.
flashdancehostname07: Host is quiesced.
flashdancehostname03: Host is quiesced.
flashdancehostname06: Host is quiesced.
flashdancehostname05: Host is quiesced.
20210105_040850 (flashdancehostname01:update_bnt.sh): Starting date: Tue Jan 5 04:08:10 IST 2021 Ending Date: Tue Jan 5
04:08:50 IST 2021.
```

2. Command: Update the BNT network switches. This may or may not result in a loss of access to the session. This command will rerun the validate step which checks that all hosts are quiesced. The platform layer will attempt to copy the OS and boot images to each switch. If this fails on any switch the platform layer will stop. The 1Gb switches will reboot faster than the 10Gb switches. If not running in a vtmenu or screen session there will be no output after the `appl_ctrl_net` update command however all switches should reboot and complete their update.

```
./update_bnt.sh update
```

Example Output:

```
$ ./update_bnt.sh update
20210105_041237 (flashdancehostname01:update_bnt.sh): Starting date: Tue Jan 5 04:12:37 IST 2021.
20210105_041237 (flashdancehostname01:update_bnt.sh): Running update.
20210105_041237 (flashdancehostname01:update_bnt.sh): Running validation.
20210105_041237 (flashdancehostname01:update_bnt.sh): Collecting switch types.
20210105_041238 (flashdancehostname01:update_bnt.sh): Loading available updates.
20210105_041239 (flashdancehostname01:update_bnt.sh): Found server 'net0' which requires an update.
20210105_041239 (flashdancehostname01:update_bnt.sh): Found server 'net1' which requires an update.
20210105_041239 (flashdancehostname01:update_bnt.sh): Found server 'net2' which requires an update.
20210105_041239 (flashdancehostname01:update_bnt.sh): Found server 'net3' which requires an update.
20210105_041239 (flashdancehostname01:update_bnt.sh): Found the following model:target versions.
7.11.19.0:/BCU_share/FP8_FP4/firmware/net/:G8052:net0,net1 7.11.19.0:/BCU_share/FP8_FP4/firmware/net/:G8264:net2,net3.
20210105_041239 (flashdancehostname01:update_bnt.sh): Running '/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_net update -validate
-l net0,net1,net2,net3 -f /BCU_share/FP8_FP4/firmware/net/'.
BNT:net1:172.23.1.253:0:Validation process completed:Configuration backup process success for 172.23.1.253.
```

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```
BNT:net0:172.23.1.254:0:Validation process completed:Configuration backup process success for 172.23.1.254.
BNT:net3:172.23.1.251:0:Validation process completed:Configuration backup process success for 172.23.1.251.
BNT:net2:172.23.1.252:0:Validation process completed:Configuration backup process success for 172.23.1.252.
20210105_041311 (flashdancehostname01:update_bnt.sh): Verifying all nodes are quiesced.
flashdancehostname04: Host is quiesced.
flashdancehostname01: Host is quiesced.
flashdancehostname02: Host is quiesced.
flashdancehostname07: Host is quiesced.
flashdancehostname03: Host is quiesced.
flashdancehostname06: Host is quiesced.
flashdancehostname05: Host is quiesced.
20210105_041315 (flashdancehostname01:update_bnt.sh): Running '/opt/ibm/aixappl/pflayer/bin/icmds/appl_ctrl_net update -install -
l net0,net1,net2,net3 -f /BCU_share/FP8_FP4/firmware/net/'.
BNT:net1:172.23.1.253:0:Ping success for Switch: 172.23.1.253.
BNT:net2:172.23.1.252:0:Ping success for Switch: 172.23.1.252.
BNT:net0:172.23.1.254:0:Ping success for Switch: 172.23.1.254.
BNT:net3:172.23.1.251:0:Ping success for Switch: 172.23.1.251.
20210105_043515 (flashdancehostname01:update_bnt.sh): Starting date: Tue Jan 5 04:12:37 IST 2021 Ending Date: Tue Jan 5
04:35:15 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 3. Command: Verify the update. The FWLevel should be 7.11.19.0 for all switches.

```
appl_ls_hw -r net -A Logical_name | sed 's|'|g' | while read x;do $PL_ROOT/bin/icmds/appl_ctrl_net query -l ${x};done
```

#### Example Output:

```
$ appl_ls_hw -r net -A Logical_name | sed 's|'|g' | while read x;do $PL_ROOT/bin/icmds/appl_ctrl_net query -l ${x};done
Details:
MachineType: -
FWLevel: 7.11.19.0
Manufacturer: IBM
SerialNumber: YL13CM3CK019
Description: BNT
AccessState: Unlocked
IPv4Address: ["172.23.1.254"]
Model: G8052
PLLogicalName: net0
Status: Online
Details:
Description: BNT
Manufacturer: IBM
AccessState: Unlocked
FWLevel: 7.11.19.0
SerialNumber: YL13CM3CJ050
IPv4Address: ["172.23.1.253"]
PLLogicalName: net1
MachineType: -
Status: Online
Model: G8052
Details:
Status: Online
FWLevel: 7.11.19.0
AccessState: Unlocked
MachineType: -
Manufacturer: IBM
IPv4Address: ["172.23.1.252"]
Model: G8264
SerialNumber: Y010CM36A186
PLLogicalName: net2
Description: BNT
Details:
Description: BNT
AccessState: Unlocked
PLLogicalName: net3
IPv4Address: ["172.23.1.251"]
SerialNumber: Y010CM36A197
FWLevel: 7.11.19.0
Manufacturer: IBM
Status: Online
Model: G8264
MachineType: -
```

## STAGE 8 - CORE NODES update in DOWNTIME window

4. Command: Verify all AIX LPARs have fully SYNC etherchannel adapters. Management LPARs have 2 adapters and core LPARs have 4 adapters.

```
dsh -n ${ALL} 'entstat -d ent11 | egrep "Number of adapters|Aggregation:|Synchronization" | sort | uniq -c' | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} 'entstat -d ent11 | egrep "Number of adapters|Aggregation:|Synchronization" | sort | uniq -c' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
      4          Aggregation: Aggregatable
      4          Synchronization: IN_SYNC
      1 Number of adapters: 2
      2 Receive TCP Segment Aggregation: Enabled
      1 Statistics for every adapter in the IEEE 802.3ad Link Aggregation:

HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
      8          Aggregation: Aggregatable
      8          Synchronization: IN_SYNC
      1 Number of adapters: 4
      4 Receive TCP Segment Aggregation: Enabled
      1 Statistics for every adapter in the IEEE 802.3ad Link Aggregation:

(0) root @ flashdancehostname01: 7.1.0.0: /
```

## Phase 3: Update GPFS on the core hosts.

1. Command: Run the GPFS validation script on the core hosts. This will show that the current version is 4.2.3.17 with 2 updates available, 5.0.5.0 and 5.0.5.4.

```
dsh -f 1 -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh validate' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -f 1 -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh validate' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname02
-----
20210105_073741 (flashdancehostname02:gpfs_utility.sh): Starting date: Tue Jan  5 07:37:41 IST 2021.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): Checking current gpfs version.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): Checking for available gpfs updates.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): There is an available update for this host.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): validate completed on this host.
20210105_073741 (flashdancehostname02:gpfs_utility.sh): Starting date: Tue Jan  5 07:37:41 IST 2021   Ending Date: Tue Jan  5
07:37:41 IST 2021.

HOSTS -----
flashdancehostname04
-----
20210105_073742 (flashdancehostname04:gpfs_utility.sh): Starting date: Tue Jan  5 07:37:42 IST 2021.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): Checking current gpfs version.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): Checking for available gpfs updates.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): There is an available update for this host.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): validate completed on this host.
20210105_073742 (flashdancehostname04:gpfs_utility.sh): Starting date: Tue Jan  5 07:37:42 IST 2021   Ending Date: Tue Jan  5
07:37:42 IST 2021.

HOSTS -----
flashdancehostname05
-----
20210105_073743 (flashdancehostname05:gpfs_utility.sh): Starting date: Tue Jan  5 07:37:43 IST 2021.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): Checking current gpfs version.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): Checking for available gpfs updates.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): There is an available update for this host.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): validate completed on this host.
20210105_073743 (flashdancehostname05:gpfs_utility.sh): Starting date: Tue Jan  5 07:37:43 IST 2021   Ending Date: Tue Jan  5
07:37:43 IST 2021.

HOSTS -----
flashdancehostname06
-----
20210105_073743 (flashdancehostname06:gpfs_utility.sh): Starting date: Tue Jan  5 07:37:43 IST 2021.
20210105_073743 (flashdancehostname06:gpfs_utility.sh): Checking current gpfs version.
20210105_073743 (flashdancehostname06:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_073743 (flashdancehostname06:gpfs_utility.sh): Checking for available gpfs updates.
20210105_073743 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_073743 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_073743 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_073744 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_073744 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_073744 (flashdancehostname06:gpfs_utility.sh): There is an available update for this host.
20210105_073744 (flashdancehostname06:gpfs_utility.sh): validate completed on this host.
20210105_073744 (flashdancehostname06:gpfs_utility.sh): Starting date: Tue Jan  5 07:37:43 IST 2021   Ending Date: Tue Jan  5
07:37:44 IST 2021.

HOSTS -----
flashdancehostname07
-----
20210105_073744 (flashdancehostname07:gpfs_utility.sh): Starting date: Tue Jan  5 07:37:44 IST 2021.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
20210105_073744 (flashdancehostname07:gpfs_utility.sh): Checking current gpfs version.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): Checking for available gpfs updates.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): There is an available update for this host.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): validate completed on this host.
20210105_073744 (flashdancehostname07:gpfs_utility.sh): Starting date: Tue Jan 5 07:37:44 IST 2021 Ending Date: Tue Jan 5
07:37:44 IST 2021.
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

2. Command: Update GPFS to 5.0.5.0. This is the first of two updates, similar to what happened in Stage06 with the management hosts.

```
dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh update' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh update' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname05
-----
20210105_074052 (flashdancehostname05:gpfs_utility.sh): Starting date: Tue Jan 5 07:40:52 IST 2021.
20210105_074052 (flashdancehostname05:gpfs_utility.sh): Checking current gpfs version.
20210105_074053 (flashdancehostname05:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_074053 (flashdancehostname05:gpfs_utility.sh): Checking for available gpfs updates.
20210105_074053 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_074053 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_074053 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_074053 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_074053 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_074053 (flashdancehostname05:gpfs_utility.sh): There is an available update for this host.
20210105_074053 (flashdancehostname05:gpfs_utility.sh): Verifying this host is ready to update.
20210105_074053 (flashdancehostname05:check_server_state.sh): Starting date: Tue Jan 5 07:40:53 IST 2021.
20210105_074053 (flashdancehostname05:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_074053 (flashdancehostname05:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_074055 (flashdancehostname05:check_server_state.sh): GPFS State: 'down'.
20210105_074055 (flashdancehostname05:check_server_state.sh): Starting date: Tue Jan 5 07:40:53 IST 2021 Ending Date: Tue Jan
5 07:40:55 IST 2021.
20210105_074055 (flashdancehostname05:gpfs_utility.sh): Updating GPFS.
20210105_074055 (flashdancehostname05:gpfs_utility.sh): Running cmd 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' to update gpfs to version
'5.0.5.0'.
20210105_074218 (flashdancehostname05:gpfs_utility.sh): The command 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' returned '0'.
20210105_074218 (flashdancehostname05:gpfs_utility.sh): update completed on this host.
20210105_074218 (flashdancehostname05:gpfs_utility.sh): Starting date: Tue Jan 5 07:40:52 IST 2021 Ending Date: Tue Jan 5
07:42:18 IST 2021.

HOSTS -----
flashdancehostname02
-----
20210105_074052 (flashdancehostname02:gpfs_utility.sh): Starting date: Tue Jan 5 07:40:52 IST 2021.
20210105_074052 (flashdancehostname02:gpfs_utility.sh): Checking current gpfs version.
20210105_074052 (flashdancehostname02:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_074052 (flashdancehostname02:gpfs_utility.sh): Checking for available gpfs updates.
20210105_074052 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_074052 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_074052 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_074052 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_074052 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_074053 (flashdancehostname02:gpfs_utility.sh): There is an available update for this host.
20210105_074053 (flashdancehostname02:gpfs_utility.sh): Verifying this host is ready to update.
20210105_074053 (flashdancehostname02:check_server_state.sh): Starting date: Tue Jan 5 07:40:53 IST 2021.
20210105_074053 (flashdancehostname02:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_074053 (flashdancehostname02:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_074055 (flashdancehostname02:check_server_state.sh): GPFS State: 'down'.
20210105_074055 (flashdancehostname02:check_server_state.sh): Starting date: Tue Jan 5 07:40:53 IST 2021 Ending Date: Tue Jan
5 07:40:55 IST 2021.
20210105_074055 (flashdancehostname02:gpfs_utility.sh): Updating GPFS.
20210105_074055 (flashdancehostname02:gpfs_utility.sh): Running cmd 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' to update gpfs to version
'5.0.5.0'.
20210105_074218 (flashdancehostname02:gpfs_utility.sh): The command 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' returned '0'.
20210105_074218 (flashdancehostname02:gpfs_utility.sh): update completed on this host.
20210105_074218 (flashdancehostname02:gpfs_utility.sh): Starting date: Tue Jan 5 07:40:52 IST 2021 Ending Date: Tue Jan 5
07:42:18 IST 2021.
HOSTS -----
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
flashdancehostname07
-----
20210105_074052 (flashdancehostname07:gpfs_utility.sh): Starting date: Tue Jan  5 07:40:52 IST 2021.
20210105_074052 (flashdancehostname07:gpfs_utility.sh): Checking current gpfs version.
20210105_074052 (flashdancehostname07:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_074052 (flashdancehostname07:gpfs_utility.sh): Checking for available gpfs updates.
20210105_074052 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_074052 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_074052 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_074052 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_074053 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_074053 (flashdancehostname07:gpfs_utility.sh): There is an available update for this host.
20210105_074053 (flashdancehostname07:gpfs_utility.sh): Verifying this host is ready to update.
20210105_074053 (flashdancehostname07:check_server_state.sh): Starting date: Tue Jan  5 07:40:53 IST 2021.
20210105_074053 (flashdancehostname07:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_074053 (flashdancehostname07:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_074055 (flashdancehostname07:check_server_state.sh): GPFS State: 'down'.
20210105_074055 (flashdancehostname07:check_server_state.sh): Starting date: Tue Jan  5 07:40:53 IST 2021   Ending Date: Tue Jan
5 07:40:55 IST 2021.
20210105_074055 (flashdancehostname07:gpfs_utility.sh): Updating GPFS.
20210105_074055 (flashdancehostname07:gpfs_utility.sh): Running cmd 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' to update gpfs to version
'5.0.5.0'.
20210105_074219 (flashdancehostname07:gpfs_utility.sh): The command 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' returned '0'.
20210105_074219 (flashdancehostname07:gpfs_utility.sh): update completed on this host.
20210105_074219 (flashdancehostname07:gpfs_utility.sh): Starting date: Tue Jan  5 07:40:52 IST 2021   Ending Date: Tue Jan  5
07:42:19 IST 2021.

HOSTS -----
flashdancehostname04
-----
20210105_074052 (flashdancehostname04:gpfs_utility.sh): Starting date: Tue Jan  5 07:40:52 IST 2021.
20210105_074052 (flashdancehostname04:gpfs_utility.sh): Checking current gpfs version.
20210105_074052 (flashdancehostname04:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_074052 (flashdancehostname04:gpfs_utility.sh): Checking for available gpfs updates.
20210105_074052 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_074052 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_074052 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_074052 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_074053 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_074053 (flashdancehostname04:gpfs_utility.sh): There is an available update for this host.
20210105_074053 (flashdancehostname04:gpfs_utility.sh): Verifying this host is ready to update.
20210105_074053 (flashdancehostname04:check_server_state.sh): Starting date: Tue Jan  5 07:40:53 IST 2021.
20210105_074053 (flashdancehostname04:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_074053 (flashdancehostname04:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_074055 (flashdancehostname04:check_server_state.sh): GPFS State: 'down'.
20210105_074055 (flashdancehostname04:check_server_state.sh): Starting date: Tue Jan  5 07:40:53 IST 2021   Ending Date: Tue Jan
5 07:40:55 IST 2021.
20210105_074055 (flashdancehostname04:gpfs_utility.sh): Updating GPFS.
20210105_074055 (flashdancehostname04:gpfs_utility.sh): Running cmd 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' to update gpfs to version
'5.0.5.0'.
20210105_074220 (flashdancehostname04:gpfs_utility.sh): The command 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' returned '0'.
20210105_074220 (flashdancehostname04:gpfs_utility.sh): update completed on this host.
20210105_074220 (flashdancehostname04:gpfs_utility.sh): Starting date: Tue Jan  5 07:40:52 IST 2021   Ending Date: Tue Jan  5
07:42:20 IST 2021.

HOSTS -----
flashdancehostname06
-----
20210105_074052 (flashdancehostname06:gpfs_utility.sh): Starting date: Tue Jan  5 07:40:52 IST 2021.
20210105_074052 (flashdancehostname06:gpfs_utility.sh): Checking current gpfs version.
20210105_074052 (flashdancehostname06:gpfs_utility.sh): My GPFS version is '4.2.3.17'.
20210105_074052 (flashdancehostname06:gpfs_utility.sh): Checking for available gpfs updates.
20210105_074052 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_074052 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_074053 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_074053 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_074053 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_074053 (flashdancehostname06:gpfs_utility.sh): There is an available update for this host.
20210105_074053 (flashdancehostname06:gpfs_utility.sh): Verifying this host is ready to update.
20210105_074053 (flashdancehostname06:check_server_state.sh): Starting date: Tue Jan  5 07:40:53 IST 2021.
20210105_074053 (flashdancehostname06:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_074053 (flashdancehostname06:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_074056 (flashdancehostname06:check_server_state.sh): GPFS State: 'down'.
20210105_074056 (flashdancehostname06:check_server_state.sh): Starting date: Tue Jan  5 07:40:53 IST 2021   Ending Date: Tue Jan
5 07:40:56 IST 2021.
20210105_074056 (flashdancehostname06:gpfs_utility.sh): Updating GPFS.
20210105_074056 (flashdancehostname06:gpfs_utility.sh): Running cmd 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' to update gpfs to version
'5.0.5.0'.
20210105_074221 (flashdancehostname06:gpfs_utility.sh): The command 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-5.0.5.0_pwraix.tar.gz_extract gpfs' returned '0'.
20210105_074221 (flashdancehostname06:gpfs_utility.sh): update completed on this host.
20210105_074221 (flashdancehostname06:gpfs_utility.sh): Starting date: Tue Jan  5 07:40:52 IST 2021   Ending Date: Tue Jan  5
07:42:21 IST 2021.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

(0) root @ flashdancehostname01: 7.1.0.0: /BCU\_share/FP8\_FP4/fixpack\_tools/application

3. Command: If all hosts are successful, rerun the validation to prepare for the 5.0.5.4 level. All hosts should show their GPFS version is 5.0.5.0 and that there is an update available.

```
dsh -f 1 -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh validate' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -f 1 -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh validate' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname02
-----
20210105_083854 (flashdancehostname02:gpfs_utility.sh): Starting date: Tue Jan  5 08:38:54 IST 2021.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): Checking current gpfs version.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): Checking for available gpfs updates.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): There is an available update for this host.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): validate completed on this host.
20210105_083854 (flashdancehostname02:gpfs_utility.sh): Starting date: Tue Jan  5 08:38:54 IST 2021   Ending Date: Tue Jan  5
08:38:54 IST 2021.

HOSTS -----
flashdancehostname04
-----
20210105_083855 (flashdancehostname04:gpfs_utility.sh): Starting date: Tue Jan  5 08:38:55 IST 2021.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): Checking current gpfs version.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): Checking for available gpfs updates.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): There is an available update for this host.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): validate completed on this host.
20210105_083855 (flashdancehostname04:gpfs_utility.sh): Starting date: Tue Jan  5 08:38:55 IST 2021   Ending Date: Tue Jan  5
08:38:55 IST 2021.

HOSTS -----
flashdancehostname05
-----
20210105_083855 (flashdancehostname05:gpfs_utility.sh): Starting date: Tue Jan  5 08:38:55 IST 2021.
20210105_083855 (flashdancehostname05:gpfs_utility.sh): Checking current gpfs version.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): Checking for available gpfs updates.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): There is an available update for this host.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): validate completed on this host.
20210105_083856 (flashdancehostname05:gpfs_utility.sh): Starting date: Tue Jan  5 08:38:55 IST 2021   Ending Date: Tue Jan  5
08:38:56 IST 2021.

HOSTS -----
flashdancehostname06
-----
20210105_083856 (flashdancehostname06:gpfs_utility.sh): Starting date: Tue Jan  5 08:38:56 IST 2021.
20210105_083856 (flashdancehostname06:gpfs_utility.sh): Checking current gpfs version.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): Checking for available gpfs updates.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): There is an available update for this host.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): validate completed on this host.
20210105_083857 (flashdancehostname06:gpfs_utility.sh): Starting date: Tue Jan  5 08:38:56 IST 2021   Ending Date: Tue Jan  5
08:38:57 IST 2021.

HOSTS -----
flashdancehostname07
-----
20210105_083857 (flashdancehostname07:gpfs_utility.sh): Starting date: Tue Jan  5 08:38:57 IST 2021.
20210105_083857 (flashdancehostname07:gpfs_utility.sh): Checking current gpfs version.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
20210105_083857 (flashdancehostname07:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_083857 (flashdancehostname07:gpfs_utility.sh): Checking for available gpfs updates.
20210105_083858 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_083858 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_083858 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_083858 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_083858 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_083858 (flashdancehostname07:gpfs_utility.sh): There is an available update for this host.
20210105_083858 (flashdancehostname07:gpfs_utility.sh): validate completed on this host.
20210105_083858 (flashdancehostname07:gpfs_utility.sh): Starting date: Tue Jan 5 08:38:57 IST 2021 Ending Date: Tue Jan 5
08:38:58 IST 2021.
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 4. Command: Run the command to update GPFS on the core hosts to 5.0.5.4.

```
dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh update' 2>&1 | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/gpfs_utility.sh update' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname02
-----
20210105_084219 (flashdancehostname02:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): Checking current gpfs version.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): Checking for available gpfs updates.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): There is an available update for this host.
20210105_084219 (flashdancehostname02:gpfs_utility.sh): Verifying this host is ready to update.
20210105_084219 (flashdancehostname02:check_server_state.sh): Starting date: Tue Jan 5 08:42:19 IST 2021.
20210105_084219 (flashdancehostname02:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_084220 (flashdancehostname02:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_084222 (flashdancehostname02:check_server_state.sh): GPFS State: 'down'.
20210105_084222 (flashdancehostname02:check_server_state.sh): Starting date: Tue Jan 5 08:42:19 IST 2021 Ending Date: Tue Jan
5 08:42:22 IST 2021.
20210105_084222 (flashdancehostname02:gpfs_utility.sh): Updating GPFS.
20210105_084222 (flashdancehostname02:gpfs_utility.sh): Running cmd 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' to update gpfs to
version '5.0.5.4'.
20210105_084411 (flashdancehostname02:gpfs_utility.sh): The command 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' returned '0'.
20210105_084411 (flashdancehostname02:gpfs_utility.sh): update completed on this host.
20210105_084411 (flashdancehostname02:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021 Ending Date: Tue Jan 5
08:44:11 IST 2021.

HOSTS -----
flashdancehostname05
-----
20210105_084219 (flashdancehostname05:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): Checking current gpfs version.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): Checking for available gpfs updates.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): There is an available update for this host.
20210105_084219 (flashdancehostname05:gpfs_utility.sh): Verifying this host is ready to update.
20210105_084219 (flashdancehostname05:check_server_state.sh): Starting date: Tue Jan 5 08:42:19 IST 2021.
20210105_084219 (flashdancehostname05:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_084220 (flashdancehostname05:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_084222 (flashdancehostname05:check_server_state.sh): GPFS State: 'down'.
20210105_084222 (flashdancehostname05:check_server_state.sh): Starting date: Tue Jan 5 08:42:19 IST 2021 Ending Date: Tue Jan
5 08:42:22 IST 2021.
20210105_084222 (flashdancehostname05:gpfs_utility.sh): Updating GPFS.
20210105_084222 (flashdancehostname05:gpfs_utility.sh): Running cmd 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' to update gpfs to
version '5.0.5.4'.
20210105_084412 (flashdancehostname05:gpfs_utility.sh): The command 'installp -agXYd
/BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' returned '0'.
20210105_084412 (flashdancehostname05:gpfs_utility.sh): update completed on this host.
20210105_084412 (flashdancehostname05:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021 Ending Date: Tue Jan 5
08:44:12 IST 2021.

HOSTS -----
flashdancehostname07
-----
20210105_084219 (flashdancehostname07:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
20210105_084219 (flashdancehostname07:gpfs_utility.sh): Checking current gpfs version.
20210105_084219 (flashdancehostname07:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_084219 (flashdancehostname07:gpfs_utility.sh): Checking for available gpfs updates.
20210105_084219 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_084219 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_084219 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_084219 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_084219 (flashdancehostname07:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_084219 (flashdancehostname07:gpfs_utility.sh): There is an available update for this host.
20210105_084219 (flashdancehostname07:gpfs_utility.sh): Verifying this host is ready to update.
20210105_084219 (flashdancehostname07:check_server_state.sh): Starting date: Tue Jan 5 08:42:19 IST 2021.
20210105_084219 (flashdancehostname07:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_084220 (flashdancehostname07:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_084222 (flashdancehostname07:check_server_state.sh): GPFS State: 'down'.
20210105_084222 (flashdancehostname07:check_server_state.sh): Starting date: Tue Jan 5 08:42:19 IST 2021 Ending Date: Tue Jan 5 08:42:22 IST 2021.
20210105_084222 (flashdancehostname07:gpfs_utility.sh): Updating GPFS.
20210105_084222 (flashdancehostname07:gpfs_utility.sh): Running cmd 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' to update gpfs to version '5.0.5.4'.
20210105_084414 (flashdancehostname07:gpfs_utility.sh): The command 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' returned '0'.
20210105_084414 (flashdancehostname07:gpfs_utility.sh): update completed on this host.
20210105_084414 (flashdancehostname07:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021 Ending Date: Tue Jan 5 08:44:14 IST 2021.
```

HOSTS -----

flashdancehostname04

```
20210105_084219 (flashdancehostname04:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): Checking current gpfs version.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): Checking for available gpfs updates.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): There is an available update for this host.
20210105_084219 (flashdancehostname04:gpfs_utility.sh): Verifying this host is ready to update.
20210105_084219 (flashdancehostname04:check_server_state.sh): Starting date: Tue Jan 5 08:42:19 IST 2021.
20210105_084219 (flashdancehostname04:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_084220 (flashdancehostname04:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_084222 (flashdancehostname04:check_server_state.sh): GPFS State: 'down'.
20210105_084222 (flashdancehostname04:check_server_state.sh): Starting date: Tue Jan 5 08:42:19 IST 2021 Ending Date: Tue Jan 5 08:42:22 IST 2021.
20210105_084222 (flashdancehostname04:gpfs_utility.sh): Updating GPFS.
20210105_084222 (flashdancehostname04:gpfs_utility.sh): Running cmd 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' to update gpfs to version '5.0.5.4'.
20210105_084415 (flashdancehostname04:gpfs_utility.sh): The command 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' returned '0'.
20210105_084415 (flashdancehostname04:gpfs_utility.sh): update completed on this host.
20210105_084415 (flashdancehostname04:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021 Ending Date: Tue Jan 5 08:44:15 IST 2021.
```

HOSTS -----

flashdancehostname06

```
20210105_084219 (flashdancehostname06:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021.
20210105_084219 (flashdancehostname06:gpfs_utility.sh): Checking current gpfs version.
20210105_084219 (flashdancehostname06:gpfs_utility.sh): My GPFS version is '5.0.5.0'.
20210105_084219 (flashdancehostname06:gpfs_utility.sh): Checking for available gpfs updates.
20210105_084219 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.0'.
20210105_084219 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.7'.
20210105_084219 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '4.2.3.17'.
20210105_084219 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '5.0.5.0'.
20210105_084220 (flashdancehostname06:gpfs_utility.sh): Found GPFS version '5.0.5.4'.
20210105_084220 (flashdancehostname06:gpfs_utility.sh): There is an available update for this host.
20210105_084220 (flashdancehostname06:gpfs_utility.sh): Verifying this host is ready to update.
20210105_084220 (flashdancehostname06:check_server_state.sh): Starting date: Tue Jan 5 08:42:20 IST 2021.
20210105_084220 (flashdancehostname06:check_server_state.sh): Running command '/usr/lpp/mmfs/bin/mmfsenv -u'.
20210105_084220 (flashdancehostname06:check_server_state.sh): Ran command '/usr/lpp/mmfs/bin/mmfsenv -u' with rc='0'.
20210105_084223 (flashdancehostname06:check_server_state.sh): GPFS State: 'down'.
20210105_084223 (flashdancehostname06:check_server_state.sh): Starting date: Tue Jan 5 08:42:20 IST 2021 Ending Date: Tue Jan 5 08:42:23 IST 2021.
20210105_084223 (flashdancehostname06:gpfs_utility.sh): Updating GPFS.
20210105_084223 (flashdancehostname06:gpfs_utility.sh): Running cmd 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' to update gpfs to version '5.0.5.4'.
20210105_084416 (flashdancehostname06:gpfs_utility.sh): The command 'installp -agXYd /BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract gpfs' returned '0'.
20210105_084416 (flashdancehostname06:gpfs_utility.sh): update completed on this host.
20210105_084416 (flashdancehostname06:gpfs_utility.sh): Starting date: Tue Jan 5 08:42:19 IST 2021 Ending Date: Tue Jan 5 08:44:16 IST 2021.
```

(0) root @ flashdancehostname01: 7.1.0.0: /BCU\_share/FP8\_FP4/fixpack\_tools/application

## STAGE 8 - CORE NODES update in DOWNTIME window

### 5. Command: Verify the GPFS levels on the core nodes.

```
dsh -n ${BCUDB2ALL} 'ls1pp -l "gpfs*" | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUDB2ALL} 'ls1pp -l "gpfs*" | dshbak -c
HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
  Fileset              Level  State      Description
  -----
Path: /usr/lib/objrepos
  gpfs.base             5.0.5.4  APPLIED    GPFS File Manager
  gpfs.compression       5.0.5.1  APPLIED    GPFS Compression Libraries
  gpfs.ext               5.0.5.4  APPLIED    GPFS Extended Features
  gpfs.gskit             8.0.55.12 COMMITTED  GPFS GSKit Cryptography
                        Runtime
  gpfs.license.std       5.0.5.0  COMMITTED  IBM Spectrum Scale Standard
                        Edition License
  gpfs.msg.en_US         5.0.5.4  APPLIED    GPFS Server Messages - U.S.
                        English

Path: /etc/objrepos
  gpfs.base             5.0.5.4  APPLIED    GPFS File Manager

Path: /usr/share/lib/objrepos
  gpfs.docs.data         5.0.5.3  APPLIED    GPFS Server Manpages and
                        Documentation

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 6. Command: Start GPFS on all hosts. This command is different from the one used in Stage 06 as it uses dshset and starts GPFS individually on all hosts.

```
dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmstartup' 2>&1 | dshbak -c
```

#### Example Output:

```
$ dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmstartup' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
Tue Jan  5 08:56:11 IST 2021: 6027-1642 mmstartup: Starting GPFS ...

HOSTS -----
flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05, flashdancehostname06,
flashdancehostname07
-----
Tue Jan  5 08:56:12 IST 2021: 6027-1642 mmstartup: Starting GPFS ...

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 7. Command: Verify GPFS is started. Rerun this command until all hosts are no longer arbitrating.

```
dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmgetstate -a' 2>&1 | dshbak -c
```

#### Example Output:

```
$ dsh -n ${ALL} '/usr/lpp/mmfs/bin/mmgetstate -a' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----

Node number  Node name      GPFS state
-----
      1      flashdancehostname01 active
      2      flashdancehostname03 active

HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----

Node number  Node name      GPFS state
-----
      1      flashdancehostname02 active
      2      flashdancehostname04 active
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
3      flashdancehostname05 active
4      flashdancehostname06 active
5      flashdancehostname07 active
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

8. Verify that all filesystems are mounted. This may take several minutes before all filesystems are mounted.

```
dsh -n ${ALL} 'mount | grep -c mmfs' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} 'mount | grep -c mmfs' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
5

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
21

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
63
```

## Phase 4: Update TSA on the core hosts.

This phase requires all services to be stopped, all domains to be stopped, and GPFS to be started with all filesystems mounted. This is that state after State 8, Phase 3 is completed.

1. Command: As root running in a terminal or screen session on the management node, run the TSA validation. This command will unpack the appropriate TSA Fixpack (on first host only), will run prereqSAM to verify the fixpack is ready to be applied.

```
dsh -f 1 -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh validate' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -f 1 -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh validate' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname02
-----
20210111_215101 (flashdancehostname02:tsa_utility.sh): Starting date: Mon Jan 11 21:51:01 IST 2021.
20210111_215101 (flashdancehostname02:tsa_utility.sh): Checking current TSA version.
20210111_215101 (flashdancehostname02:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215101 (flashdancehostname02:tsa_utility.sh): Checking for available TSA updates.
20210111_215101 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215101 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215101 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215101 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215101 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215101 (flashdancehostname02:tsa_utility.sh): Next Version      : 4.1.0.0006.
20210111_215101 (flashdancehostname02:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215101 (flashdancehostname02:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215103 (flashdancehostname02:tsa_utility.sh): There is an available update for this host.
20210111_215103 (flashdancehostname02:tsa_utility.sh): Starting date: Mon Jan 11 21:51:01 IST 2021   Ending Date: Mon Jan 11
21:51:03 IST 2021.

HOSTS -----
flashdancehostname04
-----
20210111_215104 (flashdancehostname04:tsa_utility.sh): Starting date: Mon Jan 11 21:51:04 IST 2021.
20210111_215104 (flashdancehostname04:tsa_utility.sh): Checking current TSA version.
20210111_215104 (flashdancehostname04:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215104 (flashdancehostname04:tsa_utility.sh): Checking for available TSA updates.
20210111_215104 (flashdancehostname04:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215104 (flashdancehostname04:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215104 (flashdancehostname04:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215104 (flashdancehostname04:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215104 (flashdancehostname04:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215104 (flashdancehostname04:tsa_utility.sh): Next Version      : 4.1.0.0006.
20210111_215104 (flashdancehostname04:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215104 (flashdancehostname04:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215105 (flashdancehostname04:tsa_utility.sh): There is an available update for this host.
20210111_215106 (flashdancehostname04:tsa_utility.sh): Starting date: Mon Jan 11 21:51:04 IST 2021   Ending Date: Mon Jan 11
21:51:06 IST 2021.

HOSTS -----
flashdancehostname05
-----
20210111_215106 (flashdancehostname05:tsa_utility.sh): Starting date: Mon Jan 11 21:51:06 IST 2021.
20210111_215106 (flashdancehostname05:tsa_utility.sh): Checking current TSA version.
20210111_215106 (flashdancehostname05:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215106 (flashdancehostname05:tsa_utility.sh): Checking for available TSA updates.
20210111_215106 (flashdancehostname05:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215106 (flashdancehostname05:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215106 (flashdancehostname05:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215106 (flashdancehostname05:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215106 (flashdancehostname05:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215106 (flashdancehostname05:tsa_utility.sh): Next Version      : 4.1.0.0006.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
20210111_215106 (flashdancehostname05:tsa_utility.sh): Version Location      : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215106 (flashdancehostname05:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215108 (flashdancehostname05:tsa_utility.sh): There is an available update for this host.
20210111_215108 (flashdancehostname05:tsa_utility.sh): Starting date: Mon Jan 11 21:51:06 IST 2021    Ending Date: Mon Jan 11
21:51:08 IST 2021.

HOSTS -----
flashdancehostname06
-----
20210111_215108 (flashdancehostname06:tsa_utility.sh): Starting date: Mon Jan 11 21:51:08 IST 2021.
20210111_215108 (flashdancehostname06:tsa_utility.sh): Checking current TSA version.
20210111_215108 (flashdancehostname06:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215108 (flashdancehostname06:tsa_utility.sh): Checking for available TSA updates.
20210111_215108 (flashdancehostname06:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215108 (flashdancehostname06:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215108 (flashdancehostname06:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215109 (flashdancehostname06:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215109 (flashdancehostname06:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215109 (flashdancehostname06:tsa_utility.sh): Next Version      : 4.1.0.0006.
20210111_215109 (flashdancehostname06:tsa_utility.sh): Version Location      : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215109 (flashdancehostname06:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215110 (flashdancehostname06:tsa_utility.sh): There is an available update for this host.
20210111_215110 (flashdancehostname06:tsa_utility.sh): Starting date: Mon Jan 11 21:51:08 IST 2021    Ending Date: Mon Jan 11
21:51:10 IST 2021.

HOSTS -----
flashdancehostname07
-----
20210111_215111 (flashdancehostname07:tsa_utility.sh): Starting date: Mon Jan 11 21:51:11 IST 2021.
20210111_215111 (flashdancehostname07:tsa_utility.sh): Checking current TSA version.
20210111_215111 (flashdancehostname07:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215111 (flashdancehostname07:tsa_utility.sh): Checking for available TSA updates.
20210111_215111 (flashdancehostname07:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215111 (flashdancehostname07:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215111 (flashdancehostname07:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215111 (flashdancehostname07:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215111 (flashdancehostname07:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215111 (flashdancehostname07:tsa_utility.sh): Next Version      : 4.1.0.0006.
20210111_215111 (flashdancehostname07:tsa_utility.sh): Version Location      : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215111 (flashdancehostname07:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215113 (flashdancehostname07:tsa_utility.sh): There is an available update for this host.
20210111_215113 (flashdancehostname07:tsa_utility.sh): Starting date: Mon Jan 11 21:51:11 IST 2021    Ending Date: Mon Jan 11
21:51:13 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## 2. Command: Run the following command to update TSA on the core hosts.

```
dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh update' 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh update' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname06
-----
20210111_215457 (flashdancehostname06:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021.
20210111_215457 (flashdancehostname06:tsa_utility.sh): Checking current TSA version.
20210111_215458 (flashdancehostname06:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215458 (flashdancehostname06:tsa_utility.sh): Checking for available TSA updates.
20210111_215458 (flashdancehostname06:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215458 (flashdancehostname06:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215458 (flashdancehostname06:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215458 (flashdancehostname06:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215458 (flashdancehostname06:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215458 (flashdancehostname06:tsa_utility.sh): Next Version      : 4.1.0.0006.
20210111_215458 (flashdancehostname06:tsa_utility.sh): Version Location      : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215458 (flashdancehostname06:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215501 (flashdancehostname06:tsa_utility.sh): There is an available update for this host.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
20210111_215501 (flashdancehostname06:tsa_utility.sh): Verifying this host is ready to update. Domain must be offline on this node.
20210111_215501 (flashdancehostname06:check_server_state.sh): Starting date: Mon Jan 11 21:55:01 IST 2021.
20210111_215501 (flashdancehostname06:check_server_state.sh): Domain state: 'Offline'.
20210111_215501 (flashdancehostname06:check_server_state.sh): Starting date: Mon Jan 11 21:55:01 IST 2021   Ending Date: Mon Jan 11 21:55:01 IST 2021.
20210111_215501 (flashdancehostname06:tsa_utility.sh): Updating TSA.
20210111_215501 (flashdancehostname06:tsa_utility.sh): Running update command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM'.
20210111_220141 (flashdancehostname06:tsa_utility.sh): The command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM' returned '0'.
20210111_220141 (flashdancehostname06:tsa_utility.sh): Update completed. Checking TSA version.
20210111_220141 (flashdancehostname06:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210111_220141 (flashdancehostname06:tsa_utility.sh): Version verified.
20210111_220141 (flashdancehostname06:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021   Ending Date: Mon Jan 11 22:01:41 IST 2021.
```

```
HOSTS -----
flashdancehostname07
```

```
20210111_215457 (flashdancehostname07:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021.
20210111_215457 (flashdancehostname07:tsa_utility.sh): Checking current TSA version.
20210111_215457 (flashdancehostname07:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215457 (flashdancehostname07:tsa_utility.sh): Checking for available TSA updates.
20210111_215457 (flashdancehostname07:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215457 (flashdancehostname07:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping to next available version.
20210111_215457 (flashdancehostname07:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215457 (flashdancehostname07:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping to next available version.
20210111_215457 (flashdancehostname07:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215458 (flashdancehostname07:tsa_utility.sh): Next Version      : 4.1.0.0006.
20210111_215458 (flashdancehostname07:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215458 (flashdancehostname07:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215459 (flashdancehostname07:tsa_utility.sh): There is an available update for this host.
20210111_215459 (flashdancehostname07:tsa_utility.sh): Verifying this host is ready to update. Domain must be offline on this node.
20210111_215459 (flashdancehostname07:check_server_state.sh): Starting date: Mon Jan 11 21:54:59 IST 2021.
20210111_215500 (flashdancehostname07:check_server_state.sh): Domain state: 'Offline'.
20210111_215500 (flashdancehostname07:check_server_state.sh): Starting date: Mon Jan 11 21:54:59 IST 2021   Ending Date: Mon Jan 11 21:55:00 IST 2021.
20210111_215500 (flashdancehostname07:tsa_utility.sh): Updating TSA.
20210111_215500 (flashdancehostname07:tsa_utility.sh): Running update command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM'.
20210111_220239 (flashdancehostname07:tsa_utility.sh): The command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM' returned '0'.
20210111_220239 (flashdancehostname07:tsa_utility.sh): Update completed. Checking TSA version.
20210111_220239 (flashdancehostname07:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210111_220239 (flashdancehostname07:tsa_utility.sh): Version verified.
20210111_220239 (flashdancehostname07:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021   Ending Date: Mon Jan 11 22:02:39 IST 2021.
```

```
HOSTS -----
flashdancehostname04
```

```
20210111_215457 (flashdancehostname04:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021.
20210111_215457 (flashdancehostname04:tsa_utility.sh): Checking current TSA version.
20210111_215457 (flashdancehostname04:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215457 (flashdancehostname04:tsa_utility.sh): Checking for available TSA updates.
20210111_215457 (flashdancehostname04:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215457 (flashdancehostname04:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping to next available version.
20210111_215457 (flashdancehostname04:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215457 (flashdancehostname04:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping to next available version.
20210111_215457 (flashdancehostname04:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215457 (flashdancehostname04:tsa_utility.sh): Next Version      : 4.1.0.0006.
20210111_215457 (flashdancehostname04:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215457 (flashdancehostname04:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215459 (flashdancehostname04:tsa_utility.sh): There is an available update for this host.
20210111_215459 (flashdancehostname04:tsa_utility.sh): Verifying this host is ready to update. Domain must be offline on this node.
20210111_215459 (flashdancehostname04:check_server_state.sh): Starting date: Mon Jan 11 21:54:59 IST 2021.
20210111_215459 (flashdancehostname04:check_server_state.sh): Domain state: 'Offline'.
20210111_215459 (flashdancehostname04:check_server_state.sh): Starting date: Mon Jan 11 21:54:59 IST 2021   Ending Date: Mon Jan 11 21:54:59 IST 2021.
20210111_215459 (flashdancehostname04:tsa_utility.sh): Updating TSA.
20210111_215459 (flashdancehostname04:tsa_utility.sh): Running update command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM'.
20210111_220240 (flashdancehostname04:tsa_utility.sh): The command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM' returned '0'.
20210111_220240 (flashdancehostname04:tsa_utility.sh): Update completed. Checking TSA version.
20210111_220240 (flashdancehostname04:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210111_220240 (flashdancehostname04:tsa_utility.sh): Version verified.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
20210111_220240 (flashdancehostname04:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021    Ending Date: Mon Jan 11
22:02:40 IST 2021.
HOSTS -----
flashdancehostname05
-----
20210111_215457 (flashdancehostname05:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021.
20210111_215457 (flashdancehostname05:tsa_utility.sh): Checking current TSA version.
20210111_215457 (flashdancehostname05:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215457 (flashdancehostname05:tsa_utility.sh): Checking for available TSA updates.
20210111_215457 (flashdancehostname05:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215457 (flashdancehostname05:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215457 (flashdancehostname05:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215457 (flashdancehostname05:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215457 (flashdancehostname05:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215458 (flashdancehostname05:tsa_utility.sh): Next Version      : 4.1.0.0006.
20210111_215458 (flashdancehostname05:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215458 (flashdancehostname05:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215459 (flashdancehostname05:tsa_utility.sh): There is an available update for this host.
20210111_215459 (flashdancehostname05:tsa_utility.sh): Verifying this host is ready to update. Domain must be offline on this
node.
20210111_215459 (flashdancehostname05:check_server_state.sh): Starting date: Mon Jan 11 21:54:59 IST 2021.
20210111_215500 (flashdancehostname05:check_server_state.sh): Domain state: 'Offline'.
20210111_215500 (flashdancehostname05:check_server_state.sh): Starting date: Mon Jan 11 21:54:59 IST 2021    Ending Date: Mon Jan
11 21:55:00 IST 2021.
20210111_215500 (flashdancehostname05:tsa_utility.sh): Updating TSA.
20210111_215500 (flashdancehostname05:tsa_utility.sh): Running update command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM'.
20210111_220257 (flashdancehostname05:tsa_utility.sh): The command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM' returned '0'.
20210111_220257 (flashdancehostname05:tsa_utility.sh): Update completed. Checking TSA version.
20210111_220257 (flashdancehostname05:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210111_220257 (flashdancehostname05:tsa_utility.sh): Version verified.
20210111_220257 (flashdancehostname05:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021    Ending Date: Mon Jan 11
22:02:57 IST 2021.

HOSTS -----
flashdancehostname02
-----
20210111_215457 (flashdancehostname02:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021.
20210111_215457 (flashdancehostname02:tsa_utility.sh): Checking current TSA version.
20210111_215457 (flashdancehostname02:tsa_utility.sh): My TSA version is '4.1.0.5'.
20210111_215457 (flashdancehostname02:tsa_utility.sh): Checking for available TSA updates.
20210111_215458 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_215458 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215458 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_215458 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.5'. Skipping
to next available version.
20210111_215458 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_215458 (flashdancehostname02:tsa_utility.sh): Next Version      : 4.1.0.0006.
20210111_215458 (flashdancehostname02:tsa_utility.sh): Version Location   : /BCU_share/FP8_FP4/software/TSA/4.1.0.0006.
20210111_215458 (flashdancehostname02:tsa_utility.sh): Running Update Validation
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/prereqSAM'.
prereqSAM: All prerequisites for the ITSAMP installation are met on operating system: AIX 7100-05
20210111_215459 (flashdancehostname02:tsa_utility.sh): There is an available update for this host.
20210111_215459 (flashdancehostname02:tsa_utility.sh): Verifying this host is ready to update. Domain must be offline on this
node.
20210111_215459 (flashdancehostname02:check_server_state.sh): Starting date: Mon Jan 11 21:54:59 IST 2021.
20210111_215500 (flashdancehostname02:check_server_state.sh): Domain state: 'Offline'.
20210111_215500 (flashdancehostname02:check_server_state.sh): Starting date: Mon Jan 11 21:54:59 IST 2021    Ending Date: Mon Jan
11 21:55:00 IST 2021.
20210111_215500 (flashdancehostname02:tsa_utility.sh): Updating TSA.
20210111_215500 (flashdancehostname02:tsa_utility.sh): Running update command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM'.
20210111_220257 (flashdancehostname02:tsa_utility.sh): The command
'/BCU_share/FP8_FP4/software/TSA/4.1.0.0006/SAM4106MPAIX/installSAM' returned '0'.
20210111_220257 (flashdancehostname02:tsa_utility.sh): Update completed. Checking TSA version.
20210111_220257 (flashdancehostname02:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210111_220257 (flashdancehostname02:tsa_utility.sh): Version verified.
20210111_220257 (flashdancehostname02:tsa_utility.sh): Starting date: Mon Jan 11 21:54:57 IST 2021    Ending Date: Mon Jan 11
22:02:57 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 3. Command: If there are no errors, start the core domain.

```
$ hadomain -core start
```

## STAGE 8 - CORE NODES update in DOWNTIME window

4. Command: Check the state of the core domain.

```
hals -core
```

Example Output:

```
$ hals -core
CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT | STANDBY | DOMAIN | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| 0-5        | N/A     | N/A     | bcudomain01 | Offline | Offline | - |
| 6-15       | N/A     | N/A     | bcudomain02 | Offline | Offline | - |
| 16-25      | N/A     | N/A     | bcudomain02 | Offline | Offline | - |
=====+=====+=====+=====+=====+=====+=====+
```

5. Command: Verify the domain is in mixed mode and is still running the old RSCT level (3.2.4.3). Mixed Versions indicates that RSCT has not been migrated after being updated.

```
dsh -n ${BCUDB2ALL} 'lsrpdomain' | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUDB2ALL} 'lsrpdomain' | dshbak -c
HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
Name      OpState RSCTActiveVersion MixedVersions TSPort GSPort
bcudomain02 Online  3.2.4.3          Yes          12347 12348

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
Name      OpState RSCTActiveVersion MixedVersions TSPort GSPort
bcudomain01 Online  3.2.4.3          Yes          12347 12348
```

6. Command: Verify that TSA is not yet migrated and shows the AVN is 4.1.0.5 and the IVN is 4.1.0.6.

```
dsh -n ${BCUDB2ALL} 'lssrc -ls IBM.RecoveryRM | egrep 'IVN|AVN'' | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUDB2ALL} 'lssrc -ls IBM.RecoveryRM | egrep 'IVN|AVN'' | dshbak -c
HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
Our IVN      : 4.1.0.6
Our AVN      : 4.1.0.5
```

7. Command: Migrate RSCT and TSA using the following command. This command will only run the migration on the current domain leader. It will first run the RSCT migration and then the TSA migration if that is successful.

```
dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh commit' 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh commit' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname04
-----
20210112_012211 (flashdancehostname04:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021.
20210112_012211 (flashdancehostname04:tsa_utility.sh): Checking current TSA version.
20210112_012211 (flashdancehostname04:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210112_012211 (flashdancehostname04:tsa_utility.sh): Checking for available TSA updates.
20210112_012211 (flashdancehostname04:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210112_012211 (flashdancehostname04:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname04:tsa_utility.sh): Found TSA version '4.1.0.0005'.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
20210112_012211 (flashdancehostname04:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname04:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210112_012211 (flashdancehostname04:tsa_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname04:tsa_utility.sh): There is no available update for this host.
20210112_012211 (flashdancehostname04:tsa_utility.sh): Collecting domain details.
20210112_012212 (flashdancehostname04:tsa_utility.sh): Domain is online.
20210112_012212 (flashdancehostname04:tsa_utility.sh): Domain RSCT is in mixed mode.
20210112_012212 (flashdancehostname04:tsa_utility.sh): All nodes are online.
20210112_012212 (flashdancehostname04:tsa_utility.sh): Will not run RSCT migration on this host as it is not the leader.
20210112_012212 (flashdancehostname04:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021   Ending Date: Tue Jan 12
01:22:12 IST 2021.
```

```
HOSTS -----
flashdancehostname07
```

```
20210112_012211 (flashdancehostname07:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021.
20210112_012211 (flashdancehostname07:tsa_utility.sh): Checking current TSA version.
20210112_012211 (flashdancehostname07:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210112_012211 (flashdancehostname07:tsa_utility.sh): Checking for available TSA updates.
20210112_012211 (flashdancehostname07:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210112_012211 (flashdancehostname07:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname07:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210112_012211 (flashdancehostname07:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname07:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210112_012211 (flashdancehostname07:tsa_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname07:tsa_utility.sh): There is no available update for this host.
20210112_012211 (flashdancehostname07:tsa_utility.sh): Collecting domain details.
20210112_012212 (flashdancehostname07:tsa_utility.sh): Domain is online.
20210112_012212 (flashdancehostname07:tsa_utility.sh): Domain RSCT is in mixed mode.
20210112_012212 (flashdancehostname07:tsa_utility.sh): All nodes are online.
20210112_012212 (flashdancehostname07:tsa_utility.sh): Will not run RSCT migration on this host as it is not the leader.
20210112_012212 (flashdancehostname07:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021   Ending Date: Tue Jan 12
01:22:12 IST 2021.
```

```
HOSTS -----
flashdancehostname06
```

```
20210112_012211 (flashdancehostname06:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021.
20210112_012211 (flashdancehostname06:tsa_utility.sh): Checking current TSA version.
20210112_012211 (flashdancehostname06:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210112_012211 (flashdancehostname06:tsa_utility.sh): Checking for available TSA updates.
20210112_012211 (flashdancehostname06:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210112_012211 (flashdancehostname06:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname06:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210112_012211 (flashdancehostname06:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname06:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210112_012211 (flashdancehostname06:tsa_utility.sh): Will not run RSCT migration on this host as it is not the leader.
20210112_012211 (flashdancehostname06:tsa_utility.sh): There is no available update for this host.
20210112_012211 (flashdancehostname06:tsa_utility.sh): Collecting domain details.
20210112_012212 (flashdancehostname06:tsa_utility.sh): Domain is online.
20210112_012212 (flashdancehostname06:tsa_utility.sh): Domain RSCT is in mixed mode.
20210112_012212 (flashdancehostname06:tsa_utility.sh): All nodes are online.
20210112_012212 (flashdancehostname06:tsa_utility.sh): Will not run RSCT migration on this host as it is not the leader.
20210112_012212 (flashdancehostname06:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021   Ending Date: Tue Jan 12
01:22:12 IST 2021.
```

```
HOSTS -----
flashdancehostname05
```

```
20210112_012211 (flashdancehostname05:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021.
20210112_012211 (flashdancehostname05:tsa_utility.sh): Checking current TSA version.
20210112_012211 (flashdancehostname05:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210112_012211 (flashdancehostname05:tsa_utility.sh): Checking for available TSA updates.
20210112_012211 (flashdancehostname05:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210112_012211 (flashdancehostname05:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname05:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210112_012211 (flashdancehostname05:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname05:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210112_012211 (flashdancehostname05:tsa_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname05:tsa_utility.sh): There is no available update for this host.
20210112_012211 (flashdancehostname05:tsa_utility.sh): Collecting domain details.
20210112_012212 (flashdancehostname05:tsa_utility.sh): Domain is online.
20210112_012212 (flashdancehostname05:tsa_utility.sh): Domain RSCT is in mixed mode.
20210112_012212 (flashdancehostname05:tsa_utility.sh): All nodes are online.
20210112_012212 (flashdancehostname05:tsa_utility.sh): Running rsct migration 'runact -c IBM.PeerDomain CompleteMigration
Options=0' on this host as it is the leader.
Resource Class Action Response for CompleteMigration
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
20210112_012213 (flashdancehostname05:tsa_utility.sh): Collecting domain details.
20210112_012214 (flashdancehostname05:tsa_utility.sh): Domain is online.
20210112_012214 (flashdancehostname05:tsa_utility.sh): Domain is not in mixed mode.
20210112_012214 (flashdancehostname05:tsa_utility.sh): TSA migration is required.
20210112_012215 (flashdancehostname05:tsa_utility.sh): This host is the domain leader.
20210112_012215 (flashdancehostname05:tsa_utility.sh): Running 'echo Y | samctrl -m' to migrate TSA domain.
The cluster bcudomain02 is ready to be migrated from "4.1.0.5" to a new level. Type Y to perform migration [Y|N]:

Active version successfully migrated to new version "4.1.0.6"!
20210112_012219 (flashdancehostname05:tsa_utility.sh): Collecting domain details.
20210112_012220 (flashdancehostname05:tsa_utility.sh): Domain is online.
20210112_012220 (flashdancehostname05:tsa_utility.sh): Domain is not in mixed mode.
20210112_012220 (flashdancehostname05:tsa_utility.sh): AVN: '4.1.0.6' is equal to IVN: '4.1.0.6'. TSA Migration is not required.
20210112_012220 (flashdancehostname05:tsa_utility.sh): RSCT and TSA Migration were successful.
20210112_012220 (flashdancehostname05:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021    Ending Date: Tue Jan 12
01:22:20 IST 2021.
HOSTS -----
flashdancehostname02
-----
20210112_012211 (flashdancehostname02:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021.
20210112_012211 (flashdancehostname02:tsa_utility.sh): Checking current TSA version.
20210112_012211 (flashdancehostname02:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210112_012211 (flashdancehostname02:tsa_utility.sh): Checking for available TSA updates.
20210112_012211 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210112_012211 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210112_012211 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210112_012211 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210112_012211 (flashdancehostname02:tsa_utility.sh): There is no available update for this host.
20210112_012211 (flashdancehostname02:tsa_utility.sh): Collecting domain details.
20210112_012212 (flashdancehostname02:tsa_utility.sh): Domain is online.
20210112_012212 (flashdancehostname02:tsa_utility.sh): Domain RSCT is in mixed mode.
20210112_012212 (flashdancehostname02:tsa_utility.sh): All nodes are online.
20210112_012212 (flashdancehostname02:tsa_utility.sh): Running rsct migration 'runact -c IBM.PeerDomain CompleteMigration
Options=0' on this host as it is the leader.
Resource Class Action Response for CompleteMigration
20210112_012213 (flashdancehostname02:tsa_utility.sh): Collecting domain details.
20210112_012214 (flashdancehostname02:tsa_utility.sh): Domain is online.
20210112_012214 (flashdancehostname02:tsa_utility.sh): Domain is not in mixed mode.
20210112_012215 (flashdancehostname02:tsa_utility.sh): TSA migration is required.
20210112_012215 (flashdancehostname02:tsa_utility.sh): This host is the domain leader.
20210112_012215 (flashdancehostname02:tsa_utility.sh): Running 'echo Y | samctrl -m' to migrate TSA domain.
The cluster bcudomain01 is ready to be migrated from "4.1.0.5" to a new level. Type Y to perform migration [Y|N]:

Active version successfully migrated to new version "4.1.0.6"!
20210112_012220 (flashdancehostname02:tsa_utility.sh): Collecting domain details.
20210112_012220 (flashdancehostname02:tsa_utility.sh): Domain is online.
20210112_012220 (flashdancehostname02:tsa_utility.sh): Domain is not in mixed mode.
20210112_012221 (flashdancehostname02:tsa_utility.sh): AVN: '4.1.0.6' is equal to IVN: '4.1.0.6'. TSA Migration is not required.
20210112_012221 (flashdancehostname02:tsa_utility.sh): RSCT and TSA Migration were successful.
20210112_012221 (flashdancehostname02:tsa_utility.sh): Starting date: Tue Jan 12 01:22:11 IST 2021    Ending Date: Tue Jan 12
01:22:21 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## Example Output: (With an error on flashdancehostname06 – bcudomain02)

```
$ dsh -n ${BCUDB2ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/tsa_utility.sh commit' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname02
-----
20210111_221711 (flashdancehostname02:tsa_utility.sh): Starting date: Mon Jan 11 22:17:11 IST 2021.
20210111_221711 (flashdancehostname02:tsa_utility.sh): Checking current TSA version.
20210111_221711 (flashdancehostname02:tsa_utility.sh): My TSA version is '4.1.0.6'.
20210111_221711 (flashdancehostname02:tsa_utility.sh): Checking for available TSA updates.
20210111_221712 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0004'.
20210111_221712 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210111_221712 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_221712 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210111_221712 (flashdancehostname02:tsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_221712 (flashdancehostname02:tsa_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210111_221712 (flashdancehostname02:tsa_utility.sh): There is no available update for this host.
20210111_221712 (flashdancehostname02:tsa_utility.sh): Collecting domain details.
20210111_221712 (flashdancehostname02:tsa_utility.sh): Domain is online.
20210111_221712 (flashdancehostname02:tsa_utility.sh): Domain RSCT is in mixed mode.
20210111_221712 (flashdancehostname02:tsa_utility.sh): All nodes are online.
20210111_221712 (flashdancehostname02:tsa_utility.sh): Will not run RSCT migration on this host as it is not the leader.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

20210111\_221712 (flashdancehostname02:tsa\_utility.sh): Starting date: Mon Jan 11 22:17:11 IST 2021 Ending Date: Mon Jan 11 22:17:12 IST 2021.

HOSTS -----  
flashdancehostname05

20210111\_221712 (flashdancehostname05:tsa\_utility.sh): Starting date: Mon Jan 11 22:17:12 IST 2021.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): Checking current TSA version.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): My TSA version is '4.1.0.6'.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): Checking for available TSA updates.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): Found TSA version '4.1.0.0004'.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping to next available version.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): Found TSA version '4.1.0.0005'.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping to next available version.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): Found TSA version '4.1.0.0006'.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping to next available version.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): There is no available update for this host.  
20210111\_221712 (flashdancehostname05:tsa\_utility.sh): Collecting domain details.  
20210111\_221713 (flashdancehostname05:tsa\_utility.sh): Domain is online.  
20210111\_221713 (flashdancehostname05:tsa\_utility.sh): Domain RSCT is in mixed mode.  
20210111\_221713 (flashdancehostname05:tsa\_utility.sh): All nodes are online.  
20210111\_221713 (flashdancehostname05:tsa\_utility.sh): Will not run RSCT migration on this host as it is not the leader.  
20210111\_221713 (flashdancehostname05:tsa\_utility.sh): Starting date: Mon Jan 11 22:17:12 IST 2021 Ending Date: Mon Jan 11 22:17:13 IST 2021.

HOSTS -----  
flashdancehostname07

20210111\_221712 (flashdancehostname07:tsa\_utility.sh): Starting date: Mon Jan 11 22:17:12 IST 2021.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): Checking current TSA version.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): My TSA version is '4.1.0.6'.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): Checking for available TSA updates.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): Found TSA version '4.1.0.0004'.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping to next available version.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): Found TSA version '4.1.0.0005'.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping to next available version.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): Found TSA version '4.1.0.0006'.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping to next available version.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): There is no available update for this host.  
20210111\_221712 (flashdancehostname07:tsa\_utility.sh): Collecting domain details.  
20210111\_221713 (flashdancehostname07:tsa\_utility.sh): Domain is online.  
20210111\_221713 (flashdancehostname07:tsa\_utility.sh): Domain RSCT is in mixed mode.  
20210111\_221713 (flashdancehostname07:tsa\_utility.sh): All nodes are online.  
20210111\_221713 (flashdancehostname07:tsa\_utility.sh): Will not run RSCT migration on this host as it is not the leader.  
20210111\_221713 (flashdancehostname07:tsa\_utility.sh): Starting date: Mon Jan 11 22:17:12 IST 2021 Ending Date: Mon Jan 11 22:17:13 IST 2021.

HOSTS -----  
flashdancehostname06

20210111\_221712 (flashdancehostname06:tsa\_utility.sh): Starting date: Mon Jan 11 22:17:12 IST 2021.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): Checking current TSA version.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): My TSA version is '4.1.0.6'.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): Checking for available TSA updates.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): Found TSA version '4.1.0.0004'.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping to next available version.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): Found TSA version '4.1.0.0005'.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping to next available version.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): Found TSA version '4.1.0.0006'.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping to next available version.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): There is no available update for this host.  
20210111\_221712 (flashdancehostname06:tsa\_utility.sh): Collecting domain details.  
20210111\_221713 (flashdancehostname06:tsa\_utility.sh): Domain is online.  
20210111\_221713 (flashdancehostname06:tsa\_utility.sh): Domain RSCT is in mixed mode.  
20210111\_221713 (flashdancehostname06:tsa\_utility.sh): All nodes are online.  
20210111\_221713 (flashdancehostname06:tsa\_utility.sh): Running rsct migration 'runact -c IBM.PeerDomain CompleteMigration Options=0' on this host as it is the leader.  
Resource Class Action Response for CompleteMigration  
20210111\_221713 (flashdancehostname06:tsa\_utility.sh): Error: RSCT migration failed.  
20210111\_221713 (flashdancehostname06:tsa\_utility.sh): Starting date: Mon Jan 11 22:17:12 IST 2021 Ending Date: Mon Jan 11 22:17:13 IST 2021.

HOSTS -----  
flashdancehostname04

20210111\_221712 (flashdancehostname04:tsa\_utility.sh): Starting date: Mon Jan 11 22:17:12 IST 2021.  
20210111\_221712 (flashdancehostname04:tsa\_utility.sh): Checking current TSA version.  
20210111\_221712 (flashdancehostname04:tsa\_utility.sh): My TSA version is '4.1.0.6'.  
20210111\_221712 (flashdancehostname04:tsa\_utility.sh): Checking for available TSA updates.  
20210111\_221712 (flashdancehostname04:tsa\_utility.sh): Found TSA version '4.1.0.0004'.

## STAGE 8 - CORE NODES update in DOWNTIME window

```
20210111_221712 (flashdancehostname04:tlsa_utility.sh): TSA version '4.1.0.0004' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): Found TSA version '4.1.0.0005'.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): TSA version '4.1.0.0005' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): Found TSA version '4.1.0.0006'.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): TSA version '4.1.0.0006' at at or below my TSA version '4.1.0.6'. Skipping
to next available version.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): There is no available update for this host.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): Collecting domain details.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): Domain is online.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): Domain RSCT is in mixed mode.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): All nodes are online.
20210111_221712 (flashdancehostname04:tlsa_utility.sh): Running rsct migration 'runact -c IBM.PeerDomain CompleteMigration
Options=0' on this host as it is the leader.
Resource Class Action Response for CompleteMigration
20210111_221714 (flashdancehostname04:tlsa_utility.sh): Collecting domain details.
20210111_221715 (flashdancehostname04:tlsa_utility.sh): Domain is online.
20210111_221715 (flashdancehostname04:tlsa_utility.sh): Domain is not in mixed mode.
20210111_221715 (flashdancehostname04:tlsa_utility.sh): TSA migration is required.
20210111_221716 (flashdancehostname04:tlsa_utility.sh): This host is the domain leader.
20210111_221716 (flashdancehostname04:tlsa_utility.sh): Running 'echo Y | samctrl -m' to migrate TSA domain.
The cluster bcudomain01 is ready to be migrated from "4.1.0.5" to a new level. Type Y to perform migration [Y|N]:

Active version successfully migrated to new version "4.1.0.6"!
20210111_221720 (flashdancehostname04:tlsa_utility.sh): Collecting domain details.
20210111_221720 (flashdancehostname04:tlsa_utility.sh): Domain is online.
20210111_221720 (flashdancehostname04:tlsa_utility.sh): Domain is not in mixed mode.
20210111_221721 (flashdancehostname04:tlsa_utility.sh): AVN: '4.1.0.6' is equal to IVN: '4.1.0.6'. TSA Migration is not required.
20210111_221721 (flashdancehostname04:tlsa_utility.sh): RSCT and TSA Migration were successful.
20210111_221721 (flashdancehostname04:tlsa_utility.sh): Starting date: Mon Jan 11 22:17:12 IST 2021   Ending Date: Mon Jan 11
22:17:21 IST 2021.
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 8. Command: Verify the domain is no longer in mixed mode.

```
dsh -n ${BCUDB2ALL} 'lsrpdomain' | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUDB2ALL} 'lsrpdomain' | dshbak -c
HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
Name      OpState RSCTActiveVersion MixedVersions TSPort GSPort
bcudomain02 Online  3.2.5.2           No           12347  12348

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
Name      OpState RSCTActiveVersion MixedVersions TSPort GSPort
bcudomain01 Online  3.2.5.2           No           12347  12348
```

### 9. Command: Verify that TSA is migrated and shows the AVN is 4.1.0.6 and the IVN is 4.1.0.6.

```
dsh -n ${BCUDB2ALL} "lssrc -ls IBM.RecoveryRM | egrep 'IVN|AVN'" | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUDB2ALL} "lssrc -ls IBM.RecoveryRM | egrep 'IVN|AVN'" | dshbak -c
HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
Our IVN      : 4.1.0.6
Our AVN      : 4.1.0.6

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 10. Command: Check that RSCT filesets are still in the Applied state.

```
dsh -n ${BCUDB2ALL} 'installp -s rsct*' 2>&1 | dshbak -c
```

#### Expected Output:

```
$ dsh -n ${BCUDB2ALL} 'installp -s rsct*' 2>&1 | dshbak -c
HOSTS -----
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
kf5hostname02, kf5hostname04, kf5hostname05, kf5hostname06, kf5hostname07
-----
rsct.basic.rte          ROOT    3.2.5.2      APPLIED
rsct.basic.rte          USR     3.2.5.2      APPLIED
rsct.basic.rte          USR     3.2.5.3      APPLIED
rsct.basic.rte          ROOT    3.2.5.3      APPLIED
rsct.core.errm          USR     3.2.5.1      APPLIED
rsct.core.errm          ROOT    3.2.5.1      APPLIED
rsct.core.hostrm        USR     3.2.5.2      APPLIED
rsct.core.hostrm        ROOT    3.2.5.2      APPLIED
rsct.core.hostrm        USR     3.2.5.3      APPLIED
rsct.core.hostrm        ROOT    3.2.5.3      APPLIED
rsct.core.rmc           USR     3.2.5.2      APPLIED
rsct.core.rmc           ROOT    3.2.5.2      APPLIED
rsct.core.rmc           USR     3.2.5.3      APPLIED
rsct.core.rmc           ROOT    3.2.5.3      APPLIED
rsct.core.utils         USR     3.2.5.2      APPLIED
rsct.core.utils         ROOT    3.2.5.2      APPLIED
rsct.core.utils         ROOT    3.2.5.3      APPLIED
rsct.core.utils         USR     3.2.5.3      APPLIED
Installp Status
-----
Name                      Part      Level      State
-----
```

### 11. Command: Commit the rsct filesets.

```
dsh -n ${BCUDB2ALL} 'installp -cgX rsct*' 2>&1 | dshbak -c
```

Example Output: (May show in multiple stanzas, only one stanza shown)

```
$ dsh -n ${BCUDB2ALL} 'installp -cgX rsct*' 2>&1 | dshbak -c
HOSTS -----
kf5hostname04, kf5hostname05
-----
SUCSESSES
-----
Filesets listed in this section passed pre-commit verification
and will be committed.

Selected Filesets
-----
rsct.basic.rte 3.2.5.2      # RSCT Basic Function
rsct.basic.rte 3.2.5.3      # RSCT Basic Function
rsct.core.errm 3.2.5.1      # RSCT Event Response Resource...
rsct.core.hostrm 3.2.5.2    # RSCT Host Resource Manager
rsct.core.hostrm 3.2.5.3    # RSCT Host Resource Manager
rsct.core.rmc 3.2.5.2       # RSCT Resource Monitoring and...
rsct.core.rmc 3.2.5.3       # RSCT Resource Monitoring and...
rsct.core.utils 3.2.5.2     # RSCT Utilities
rsct.core.utils 3.2.5.3     # RSCT Utilities

<< End of Success Section >>
+-----+
+-----+
Pre-commit Verification...
+-----+
Verifying selections...done
Verifying requisites...done
Results...

FILESET STATISTICS
-----
9 Selected to be committed, of which:
9 Passed pre-installation verification
-----
9 Total to be committed
+-----+
+-----+
Committing Software...
+-----+

installp: COMMITTING software for:
rsct.core.utils 3.2.5.2

Filesets processed: 1 of 9 (Total time: 0 secs).

installp: COMMITTING software for:
rsct.core.utils 3.2.5.3

Filesets processed: 2 of 9 (Total time: 1 secs).

installp: COMMITTING software for:
rsct.core.rmc 3.2.5.2

Filesets processed: 3 of 9 (Total time: 1 secs).
```

```

install: COMMITTING software for:
        rsct.basic.rte 3.2.5.2

Filesets processed: 4 of 9 (Total time: 1 secs).

install: COMMITTING software for:
        rsct.core.errm 3.2.5.1

Filesets processed: 5 of 9 (Total time: 1 secs).

install: COMMITTING software for:
        rsct.core.hostrm 3.2.5.2

Filesets processed: 6 of 9 (Total time: 2 secs).

install: COMMITTING software for:
        rsct.core.rmc 3.2.5.3

Filesets processed: 7 of 9 (Total time: 2 secs).

install: COMMITTING software for:
        rsct.basic.rte 3.2.5.3

Filesets processed: 8 of 9 (Total time: 2 secs).

install: COMMITTING software for:
        rsct.core.hostrm 3.2.5.3

Finished processing all filesets. (Total time: 2 secs).
+-----+
Summaries:
+-----+

Installation Summary
-----

```

| Name             | Level   | Part | Event  | Result  |
|------------------|---------|------|--------|---------|
| rsct.core.utils  | 3.2.5.2 | USR  | COMMIT | SUCCESS |
| rsct.core.utils  | 3.2.5.2 | ROOT | COMMIT | SUCCESS |
| rsct.core.utils  | 3.2.5.3 | USR  | COMMIT | SUCCESS |
| rsct.core.utils  | 3.2.5.3 | ROOT | COMMIT | SUCCESS |
| rsct.core.rmc    | 3.2.5.2 | USR  | COMMIT | SUCCESS |
| rsct.core.rmc    | 3.2.5.2 | ROOT | COMMIT | SUCCESS |
| rsct.basic.rte   | 3.2.5.2 | USR  | COMMIT | SUCCESS |
| rsct.basic.rte   | 3.2.5.2 | ROOT | COMMIT | SUCCESS |
| rsct.core.errm   | 3.2.5.1 | USR  | COMMIT | SUCCESS |
| rsct.core.errm   | 3.2.5.1 | ROOT | COMMIT | SUCCESS |
| rsct.core.hostrm | 3.2.5.2 | USR  | COMMIT | SUCCESS |
| rsct.core.hostrm | 3.2.5.2 | ROOT | COMMIT | SUCCESS |
| rsct.core.rmc    | 3.2.5.3 | USR  | COMMIT | SUCCESS |
| rsct.core.rmc    | 3.2.5.3 | ROOT | COMMIT | SUCCESS |
| rsct.basic.rte   | 3.2.5.3 | USR  | COMMIT | SUCCESS |
| rsct.basic.rte   | 3.2.5.3 | ROOT | COMMIT | SUCCESS |
| rsct.core.hostrm | 3.2.5.3 | USR  | COMMIT | SUCCESS |
| rsct.core.hostrm | 3.2.5.3 | ROOT | COMMIT | SUCCESS |

```
dsh -n ${BCUDB2ALL} 'installp -s rsct*' 2>&1 | dshbak -c
```

```
$ dsh -n ${BCUDB2ALL} 'installp -s rsct* 2>&1 | dshbak -c
HOSTS -----
kf5hostname02, kf5hostname04, kf5hostname05, kf5hostname06, kf5hostname07
-----
0503-459 installp: No filesets were found in the Software
Vital Product Database in the APPLIED state.
```

## Phase 5: Update HA Tools.

The last time HA Tools was updated in a PDOA fixpack was during V1.0 FP5 and V1.1 FP7. In late 2020, HA Tools 2.0.8.0 was released. During the testing for 2.0.8.0 there were several defects discovered that could not be shipped with 2.0.8.0 that are included in 2.0.8.1. HA Tools 2.0.8.1 includes all the fixes in 2.0.8.0. This step is done with domains online, but with all services quiesced.

1. In very early PDOA V1.1 installations there is an inconsistent in the naming convention for relationships between db2 partition resources and network equivalencies during the corporate network setup tasks. This creates a problem with the ha tool's commands *hareset* and *hachkconfig*. This step will check for issues and correct them.

- a. Command: Find the relationships that are improperly named. If this is blank then skip to the `hadomain -core auto` step as this system does not need to be corrected.

```
dsh -n ${BCUDB2ALL} "lsrel -D@ -s 'Name like \"%network\"" Name | grep network | cut -d@ -f1" 2> /dev/null | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUDB2ALL} "lsrel -D@ -s 'Name like \"%network\"" Name | grep network | cut -d@ -f1" 2> /dev/null | dshbak -c
HOSTS -----
b30i02, b30i04
-----
db2_bcuaix_0_1_2_3_4_5-rs_Dependson_db2_VLAN501_network
HOSTS -----
b30i05, b30i06, b30i07
-----
db2_bcuaix_16_17_18_19_20_21_22_23_24_25-rs_Dependson_db2_VLAN501_network
db2_bcuaix_6_7_8_9_10_11_12_13_14_15-rs_Dependson_db2_VLAN501_network
```

- b. Command: Use the following command to rename all relationships that are incorrect.

```
dsh -f 1 -n ${BCUDB2ALL} "sleep 1;lsrel -D@ -s 'Name like \"%network\"" Name 2> /dev/null | grep network | cut -d@ -f1 |
while read f;do echo \${f};chrel -c \${f}-rel \${f};done" | dshbak -c
```

Example Output:

```
$ dsh -f 1 -n ${BCUDB2ALL} "sleep 1;lsrel -D@ -s 'Name like \"%network\"" Name 2> /dev/null | grep network | cut -d@ -f1 |
while read f;do echo \${f};chrel -c \${f}-rel \${f};done" | dshbak -c
HOSTS -----
b30i02
-----
db2_bcuaix_0_1_2_3_4_5-rs_Dependson_db2_VLAN501_network
HOSTS -----
b30i05
-----
db2_bcuaix_16_17_18_19_20_21_22_23_24_25-rs_Dependson_db2_VLAN501_network
db2_bcuaix_6_7_8_9_10_11_12_13_14_15-rs_Dependson_db2_VLAN501_network
```

- c. Command: Verify that the the relationships are renamed. The following should return blank.

```
dsh -n ${BCUDB2ALL} "lsrel -D@ -s 'Name like \"%network\"" Name | grep network | cut -d@ -f1" 2> /dev/null | dshbak -c
```

2. Command: Backup the current hatools directory on the management host. In case of an odd error this will prevent the need to restore via `mksysb`.

```
cp -r /usr/IBM/analytics/ha_tools /usr/IBM/analytics/ha_tools. $(date +%s)
```

## STAGE 8 - CORE NODES update in DOWNTIME window

3. Command: Verify the backup is available.

```
ls -drt /usr/IBM/analytics/ha_tools.*
```

Example Output:

```
$ ls -drt /usr/IBM/analytics/ha_tools.*
/usr/IBM/analytics/ha_tools.1610398833
```

4. Command: Verify that the HA Tools compressed file is available on all hosts.

```
dsh -n ${ALL} 'ls /BCU_share/FP8_FP4/software/HA_DB2/hatools*tgz' 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'ls /BCU_share/FP8_FP4/software/HA_DB2/hatools*tgz' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
/BCU_share/FP8_FP4/software/HA_DB2/hatools_2.0.8.1_20210109.081433.tgz
```

5. Command: Unpack hatools on all hosts. There is no output unless there is an error.

```
dsh -n ${ALL} 'gzip -d < $(ls -t /BCU_share/FP8_FP4/software/HA_DB2/hatools*tgz | head -1) | tar -xf - -C /usr/IBM/analytics' |
dshbak -c
```

6. Command: Verify the cksums on all hosts. Note that hatools.conf is not included in this update so will appear as different.

```
dsh -n ${ALL} '(cd /usr/IBM/analytics;cksum $(find ha_tools -type f| sort)) | diff $(ls -t
/BCU_share/FP8_FP4/software/HA_DB2/hatools*cksum* | head -1) -' 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} '(cd /usr/IBM/analytics;cksum $(find ha_tools -type f| sort)) | diff $(ls -t
/BCU_share/FP8_FP4/software/HA_DB2/hatools*cksum* | head -1) -' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname01
-----
25a29,31
> 2717039358 1498 ha_tools/hatools.conf
> 2717039358 1498 ha_tools/hatools.conf.bak
35a47,48
> 3688272476 1497 ha_tools/hatools.conf_iptool_2015_11_28_00_41_50
> 2717039358 1498 ha_tools/hatools.conf_iptool_2015_11_28_00_41_50.tmp

HOSTS -----
flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05, flashdancehostname06,
flashdancehostname07
-----
34a35
> 2717039358 1498 ha_tools/hatools.conf

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/HA_DB2
```

7. Command: Verify the .buildinfo matches.

```
dsh -n ${ALL} 'cd /usr/IBM/analytics/ha_tools/;cat .buildinfo' | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'cd /usr/IBM/analytics/ha_tools/;cat .buildinfo' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
hatools_2.0.8.1_20210109.081433
```

## STAGE 8 - CORE NODES update in DOWNTIME window

### 8. Command: Verify the version.txt file contains 2.0.8.1.

```
dsh -n ${ALL} 'cd /usr/IBM/analytics/ha_tools/;cat version.txt' | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'cd /usr/IBM/analytics/ha_tools/;cat version.txt' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
2.0.8.1
```

### 9. Command: Backup the domain.

```
hareset -backup
```

Example Output:

```
$ hareset -backup
```

It is recommended that the HA configuration is verified using the 'hachkconfig' tool before creating a backup.

Type 'yes' to continue or any other key to quit  
yes

```
Backed up host: flashdancehostname07
Backed up host: flashdancehostname06
Backed up host: flashdancehostname05
Backed up host: flashdancehostname04
Backed up host: flashdancehostname02
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/HA_DB2
```

### 10. Command: Run hachkconfig without any arguments. This should highlight policy missing or mismatch errors. This is expected as the TSA/HA Tools integration scripts have not been copied. The output below shows only the policy error output.

```
hachkconfig
```

Example Output:

```
$ hachkconfig
Inspecting CORE resource model

Logging to /tmp/halog/hachkconfig.2021.01.12-02.48.31*.out

Inspecting Policies: HA Group 1
** Problem with Policy: Policy missing or mismatch: flashdancehostname04:/usr/sbin/rsct/sapolicies/db2/crISAS_rsrc.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname04:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname04:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname04:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname04:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname04:/usr/sbin/rsct/sapolicies/db2/db2ISAS_stop.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname04:/usr/sbin/rsct/sapolicies/db2/mountISAS_monitor_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname02:/usr/sbin/rsct/sapolicies/db2/crISAS_rsrc.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname02:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname02:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname02:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname02:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname02:/usr/sbin/rsct/sapolicies/db2/db2ISAS_stop.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname02:/usr/sbin/rsct/sapolicies/db2/mountISAS_monitor_pdoa_trouble.ksh
Inspecting Policies: HA Group 2
** Problem with Policy: Policy missing or mismatch: flashdancehostname05:/usr/sbin/rsct/sapolicies/db2/crISAS_rsrc.ksh
```

```

** Problem with Policy: Policy missing or mismatch: flashdancehostname05:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname05:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname05:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname05:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname05:/usr/sbin/rsct/sapolicies/db2/db2ISAS_stop.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname05:/usr/sbin/rsct/sapolicies/db2/mountISAS_monitor_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname07:/usr/sbin/rsct/sapolicies/db2/crISAS_rsrc.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname07:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname07:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname07:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname07:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname07:/usr/sbin/rsct/sapolicies/db2/db2ISAS_stop.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname07:/usr/sbin/rsct/sapolicies/db2/mountISAS_monitor_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/crISAS_rsrc.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start_pdoa_trouble.ksh
** Problem with Policy: Policy missing or mismatch: flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/db2ISAS_stop.ksh
** Problem with Policy: Policy missing or mismatch:
flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/mountISAS_monitor_pdoa_trouble.ksh
Checking host roles: HA Group 1
Checking host roles: HA Group 2

...

** 35 problem(s) found

```

## hachkconfig -repair

```
$ hachkconfig -repair
Inspecting and repairing CORE resource model
```

```
Logging to /tmp/halog/hachkconfig.2021.01.12-02.54.58*.out
```

[illegible]

## STAGE 8 - CORE NODES update in DOWNTIME window

```
** Problem with Policy: Policy missing or mismatch: flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/db2ISAS_monitor.ksh
Copy /usr/IBM/analytics/ha_tools/HAscripts/db2ISAS_monitor.ksh to flashdancehostname06:/usr/sbin/rsct/sapolicies/db2
** Problem with Policy: Policy missing or mismatch: flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/db2ISAS_start.ksh
Copy /usr/IBM/analytics/ha_tools/HAscripts/db2ISAS_start.ksh to flashdancehostname06:/usr/sbin/rsct/sapolicies/db2
** Problem with Policy: Policy missing or mismatch: flashdancehostname06:/usr/sbin/rsct/sapolicies/db2/db2ISAS_stop.ksh
Copy /usr/IBM/analytics/ha_tools/HAscripts/db2ISAS_stop.ksh to flashdancehostname06:/usr/sbin/rsct/sapolicies/db2

Checking host roles: HA Group 1
Checking host roles: HA Group 2
...

** 20 problem(s) found
** All problems fixed
```

### 12. Command: Run the hachkconfig again to verify no more problems are detected.

**hachkconfig**

#### Example Output:

```
$ hachkconfig
Inspecting CORE resource model

Logging to /tmp/halog/hachkconfig.2021.01.12-03.09.01.*.out

Inspecting Policies: HA Group 1
Verified Policies
Inspecting Policies: HA Group 2
Verified Policies

Checking host roles: HA Group 1
Checking host roles: HA Group 2
...

** No issues found

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/HA_DB2
```

## Phase 6 : Update DB2 on the core hosts.

In Stage 6, Phase 6 Db2 was updated on the management hosts. In these steps Db2 copies were extracted and several scripts were generated. If this phase was skipped, then return to those steps to unpack and prepare the db2 files.

### Phase 6: Step 1 Installing the Db2 Update

1. Command: Run the following to verify the Db2 versions on your environment. PDOA supports Db2 10.5 only on the management hosts and Db2 10.5 or 11.1 on the core nodes. Over time it is possible to have multiple copies of Db2 on the core nodes. It may be necessary to uninstall older Db2 versions that are no longer in use and will no longer be needed for reversion in order to free up space on the /usr filesystem. The commands below show one copy of Db2 10.5 and 3 copies of Db2 11.1 on the core nodes. The latest level V11.1.4.5..0 is the level that is being used for the instance owner *bcuaix*. Experience shows that PDOA can usually have 3 to 4 Db2 copies at the same time without having to expand the /usr filesystem.

```
dsh -n ${ALL} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2> /dev/null | dshbak -c
```

#### Example Output:

```
$ dsh -n ${ALL} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2> /dev/null | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
/usr/IBM/dwe/mgmt_db2/V10.5|10.5|10.5.0.11|10.5.0.11..2|db2opm|db2opm||

HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
/usr/IBM/dwe/db2/V10.5.0.5..1|10.5|10.5.0.5|10.5.0.5..5||||
/usr/IBM/dwe/db2/V11.1|11.1|11.1.0.0|11.1.0.0..0||||
/usr/IBM/dwe/db2/V11.1.4.4.a.2|11.1|11.1.4.4|11.1.4.4.a.2||||
/usr/IBM/dwe/db2/V11.1.4.5..0|11.1|11.1.4.5|11.1.4.5..0|bcuaix|bcuaix||
```

2. Command: Uninstall any Db2 copies on the core that are no longer needed to free space, if needed, on '/usr'. The following example will show an uninstall V11.1 GA. The expectation and standard is that all data nodes are treated the same which allows the use of dsh commands.

```
dsh -n ${BCUDB2ALL} '/usr/IBM/dwe/db2/V11.1/install/db2_deinstall -a' 2>&1 | dshbak -c
```

#### Example Output:

```
$ dsh -n ${BCUDB2ALL} '/usr/IBM/dwe/db2/V11.1/install/db2_deinstall -a' 2>&1 | dshbak -c
HOSTS -----
flashdancehostname06
-----
DBI1016I Program db2_deinstall is performing uninstallation. Please
wait.

The execution completed successfully.

For more information see the DB2 uninstallation log at
"/tmp/db2_deinstall.log.4653064".

HOSTS -----
flashdancehostname07
-----
DBI1016I Program db2_deinstall is performing uninstallation. Please
wait.

The execution completed successfully.

For more information see the DB2 uninstallation log at
"/tmp/db2_deinstall.log.14352586".

HOSTS -----
flashdancehostname05
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
-----
DBI1016I  Program db2_deinstall is performing uninstallation. Please
        wait.
```

The execution completed successfully.

For more information see the DB2 uninstallation log at  
"/tmp/db2\_deinstall.log.14156004".

```
HOSTS -----
flashdancehostname04
-----
```

```
DBI1016I  Program db2_deinstall is performing uninstallation. Please
        wait.
```

The execution completed successfully.

For more information see the DB2 uninstallation log at  
"/tmp/db2\_deinstall.log.8192222".

```
HOSTS -----
flashdancehostname02
-----
```

```
DBI1016I  Program db2_deinstall is performing uninstallation. Please
        wait.
```

The execution completed successfully.

For more information see the DB2 uninstallation log at  
"/tmp/db2\_deinstall.log.7733864".

3. Check for the generated scripts for the core nodes. The following examples show the installation, instance update, and registry fixes for Db2 version 11.1.4.5..4 updating from 11.1.4.5..0. Your system may have a different db2 source copy, or you may decide not to update Db2 at this time.

- a. Command: Change the working directory to /BCU\_share/FP8\_FP4/software/DB2

```
cd /BCU_share/FP8_FP4/software/DB2
```

- b. Command: Verify the contents of the generated corefixpack.sh file.

```
cat corefixpack.sh
```

Example Output:

```
$ cat corefixpack.sh
/BCU_share/FP8_FP4/software/DB2/unpack_11.1.4.5..4/universal/installFixPack -n -b /usr/IBM/dwe/db2/V11.1.4.5..0 -p
/usr/IBM/dwe/db2/V11.1.4.5..4 -f NOTSAMP -f update -t /tmp/${hostname}_db2_11.1.4.5..4_${date +%Y%m%d_%H%M%S}.trc -n
```

- c. Command: Verify the contents of the generate instance\_update\_<instance>.sh file.

```
cat instance_update_bcuaix.sh
```

Example Output:

```
$ cat instance_update_bcuaix.sh
/usr/IBM/dwe/db2/V11.1.4.5..4/instance/db2iupdt bcuaix
```

- d. Command: Verify the contents of the db2greg\_update\_<instance>.sh file.

```
cat db2greg_update_bcuaix.sh
```

Example Output:

```
$ cat db2greg_update_bcuaix.sh
pdir=$(/usr/IBM/dwe/db2/V11.1.4.5..4/bin/db2greg -dump | grep '^I,DB2' | cut -d, -f 4,9 | grep bcuaix, | cut -d, -f2)
if [ ! "${pdir}" == "/usr/IBM/dwe/db2/V11.1.4.5..4" ];then echo "Updating registry for instance bcuaix on
${hostname}";/usr/IBM/dwe/db2/V11.1.4.5..4/bin/db2greg -delinstrec
instancename=bcuaix,installpath=${pdir};/usr/IBM/dwe/db2/V11.1.4.5..4/instance/db2iset -a bcuaix;else echo "Instance is
correctly assigned.";fi
```

## STAGE 8 - CORE NODES update in DOWNTIME window

4. Command: If proceeding with the Db2 update, run the following command to install Db2 on all core hosts.

```
time dsh -n ${BCUDB2ALL} -F /BCU_share/support/FP8_FP4/log/db2install -e /BCU_share/FP8_FP4/software/DB2/corefixpack.sh
```

### Example Output:

```
$ time dsh -n ${BCUDB2ALL} -F /BCU_share/support/FP8_FP4/log/db2install -e /BCU_share/FP8_FP4/software/DB2/corefixpack.sh
flashdancehostname02: DBI1017I  installFixPack is updating the database products installed in
flashdancehostname02:          location /usr/IBM/dwe/db2/V11.1.4.5..0.
flashdancehostname02:
flashdancehostname02:
flashdancehostname02: The execution completed successfully.
flashdancehostname02:
flashdancehostname02: For more information see the DB2 installation log at
flashdancehostname02: "/tmp/installFixPack.log.7930446".
flashdancehostname02: 0516-010 : Volume group must be varied on; use varyonvg command.
flashdancehostname04: DBI1017I  installFixPack is updating the database products installed in
flashdancehostname04:          location /usr/IBM/dwe/db2/V11.1.4.5..0.
flashdancehostname04:
flashdancehostname04:
flashdancehostname04: The execution completed successfully.
flashdancehostname04:
flashdancehostname04: For more information see the DB2 installation log at
flashdancehostname04: "/tmp/installFixPack.log.5833570".
flashdancehostname04: 0516-010 : Volume group must be varied on; use varyonvg command.
flashdancehostname07: DBI1017I  installFixPack is updating the database products installed in
flashdancehostname07:          location /usr/IBM/dwe/db2/V11.1.4.5..0.
flashdancehostname07:
flashdancehostname07:
flashdancehostname07: DBI1165E  Instance bcuaix is not accessible on the following
flashdancehostname07:          database partitions: flashdancehostname04
flashdancehostname07:
flashdancehostname07: Explanation:
flashdancehostname07:
flashdancehostname07: Your db2nodes.cfg file is referring to nodes that cannot be accessed
flashdancehostname07: from this node. Furthermore, the remote node might also not be sharing
flashdancehostname07: the sqllib with this node. With DPF, all nodes must have the same sqllib
flashdancehostname07: mounted.
flashdancehostname07:
flashdancehostname07: User response:
flashdancehostname07:
flashdancehostname07: You must either fix your db2nodes.cfg file or ensure that the same
flashdancehostname07: sqllib is mounted on all nodes, or both.
flashdancehostname07:
flashdancehostname07:
flashdancehostname07: The execution completed successfully.
flashdancehostname07:
flashdancehostname07: For more information see the DB2 installation log at
flashdancehostname07: "/tmp/installFixPack.log.14680694".
flashdancehostname07: 0516-010 : Volume group must be varied on; use varyonvg command.
flashdancehostname05: DBI1017I  installFixPack is updating the database products installed in
flashdancehostname05:          location /usr/IBM/dwe/db2/V11.1.4.5..0.
flashdancehostname05:
flashdancehostname05:
flashdancehostname05: The execution completed successfully.
flashdancehostname05:
flashdancehostname05: For more information see the DB2 installation log at
flashdancehostname05: "/tmp/installFixPack.log.6750746".
flashdancehostname05: 0516-010 : Volume group must be varied on; use varyonvg command.
flashdancehostname06: DBI1017I  installFixPack is updating the database products installed in
flashdancehostname06:          location /usr/IBM/dwe/db2/V11.1.4.5..0.
flashdancehostname06:
flashdancehostname06:
flashdancehostname06: The execution completed successfully.
flashdancehostname06:
flashdancehostname06: For more information see the DB2 installation log at
flashdancehostname06: "/tmp/installFixPack.log.11468914".
flashdancehostname06: 0516-010 : Volume group must be varied on; use varyonvg command.

real    8m18.67s
user    0m0.62s
sys     0m0.11s

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

## STAGE 8 - CORE NODES update in DOWNTIME window

### 5. Command: Verify the new copy was installed on all hosts.

```
dsh -n ${ALL} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2> /dev/null | dshbak -c
```

#### Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
$ dsh -n ${ALL} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2> /dev/null | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
/usr/IBM/dwe/mgmt_db2/V10.5|10.5|10.5.0.11|10.5.0.11..2|db2opm|db2opm|

HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
/usr/IBM/dwe/db2/V10.5.0.5..1|10.5|10.5.0.5|10.5.0.5..5||||
/usr/IBM/dwe/db2/V11.1.4.4.a.2|11.1|11.1.4.4|11.1.4.4.a.2||||
/usr/IBM/dwe/db2/V11.1.4.5..0|11.1|11.1.4.5|11.1.4.5..0|bcuaix|bcuaix|
/usr/IBM/dwe/db2/V11.1.4.5..4|11.1|11.1.4.5|11.1.4.5..4||||

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

### 6. Command: Verify the licenses are consistent. Expiry Date should show Permanent and Product Identifier should show db2aese for all Db2 V10.5 and 11.1 versions.

```
dsh -n ${ALL} '/usr/local/bin/db2ls -c | cut -d: -f 1 | grep -v "#" | while read dcopy;do echo " ** ${dcopy} **";${dcopy}/adm/db2licm -l;done' | dshbak -c
```

#### Example Output:

```
$ dsh -n ${ALL} '/usr/local/bin/db2ls -c | cut -d: -f 1 | grep -v "#" | while read dcopy;do echo " ** ${dcopy} **";${dcopy}/adm/db2licm -l;done' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
** /usr/IBM/dwe/mgmt_db2/V10.5 **
Product name:          "DB2 Advanced Enterprise Server Edition"
License type:           "CPU Option"
Expiry date:            "Permanent"
Product identifier:     "db2aese"
Version information:    "10.5"
Enforcement policy:    "Soft Stop"

HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
** /usr/IBM/dwe/db2/V10.5.0.5..1 **
Product name:          "DB2 Advanced Enterprise Server Edition"
License type:           "CPU Option"
Expiry date:            "Permanent"
Product identifier:     "db2aese"
Version information:    "10.5"
Enforcement policy:    "Soft Stop"

** /usr/IBM/dwe/db2/V11.1.4.4.a.2 **
Product name:          "DB2 Advanced Enterprise Server Edition"
License type:           "CPU Option"
Expiry date:            "Permanent"
Product identifier:     "db2aese"
Version information:    "11.1"
Enforcement policy:    "Soft Stop"
Features:
IBM DB2 Performance Management Offering:          "Not licensed"

** /usr/IBM/dwe/db2/V11.1.4.5..0 **
Product name:          "DB2 Advanced Enterprise Server Edition"
License type:           "CPU Option"
Expiry date:            "Permanent"
Product identifier:     "db2aese"
Version information:    "11.1"
Enforcement policy:    "Soft Stop"
Features:
IBM DB2 Performance Management Offering:          "Not licensed"
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
** /usr/IBM/dwe/db2/V11.1.4.5..4 **
Product name:          "DB2 Advanced Enterprise Server Edition"
License type:          "CPU Option"
Expiry date:           "Permanent"
Product identifier:    "db2aese"
Version information:   "11.1"
Enforcement policy:    "Soft Stop"
Features:
IBM DB2 Performance Management Offering:    "Not licensed"
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

## STAGE 8 - CORE NODES update in DOWNTIME window

### Phase 6: Step 2 Migrating the Db2 Instance

1. Before migrating the instance, consider the following points.
  - a. Preparing to migrate the instance. The following steps come from the [DB2 Post Fixpack Link in the DB2 Knowledge Center](#).
  - b. If you are using Federation, please refer to Procedure 1 in the link above for instructions on what to do prior to migrating the instance.
  - c. Verify there are no intentional changes made to the file `~bcuaix/sqllib/db2profile`. Replace `bcuaix` with your instance owner's username. This file is not modified as shipped, but customers may have modified it for other DB2 purposes. Any updates to this file should preferably be placed in the `~bcuaix/sqllib/userprofile` file which is not modified by `db2iupdt`.  
If in doubt, backup the `db2profile` file.
  - d. Verify that your instance owner's `.profile` to ensure it is not running `bash`. This will need to be removed as it can cause the `db2iupdt` command to hang.
2. Command: Identify the current host owner for partition 0 and assign that to the variable `$h` and the instance owner to variable `i`. This command only works if the core domains are Online.

```
i=$(grep INSTANCE /usr/IBM/analytics/ha_tools/hatools.conf | cut -d= -f2);h=$(grep "^0" ~${i}/sqllib/db2nodes.cfg | awk '{print $2}');echo "i=${i};h=${h}"
```

#### Example Output:

```
$ i=$(grep INSTANCE /usr/IBM/analytics/ha_tools/hatools.conf | cut -d= -f2);h=$(grep "^0" ~${i}/sqllib/db2nodes.cfg | awk '{print $2}');echo "i=${i};h=${h}"  
  
i=bcuaix;h=flashdancehostname04
```

3. Command: Run the migration script.

```
time ssh ${h} "/BCU_share/FP8_FP4/software/DB2/instance_update_${i}.sh" 2>&1 | tee -a  
/BCU_share/support/FP8_FP4/log/instance_update_${i}.log
```

#### Example Output:

```
$ time ssh ${h} "/BCU_share/FP8_FP4/software/DB2/instance_update_${i}.sh" 2>&1 | tee -a  
/BCU_share/support/FP8_FP4/log/instance_update_${i}.log
```

```
DB2 installation is being initialized.
```

```
Total number of tasks to be performed: 4  
Total estimated time for all tasks to be performed: 309 second(s)
```

```
Task #1 start  
Description: Setting default global profile registry variables  
Estimated time 1 second(s)  
Task #1 end
```

```
Task #2 start  
Description: Initializing instance list  
Estimated time 5 second(s)  
Task #2 end
```

```
Task #3 start  
Description: Configuring DB2 instances  
Estimated time 300 second(s)  
Task #3 end
```

```
Task #4 start  
Description: Updating global profile registry  
Estimated time 3 second(s)  
Task #4 end
```

```
The execution completed successfully.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
For more information see the DB2 installation log at
"/tmp/db2iupdt.log.5243052".
DBI1446I The db2iupdt command is running.
```

```
DBI1070I Program db2iupdt completed successfully.
```

```
real    0m36.98s
user    0m0.05s
sys     0m0.00s
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

4. Command: Verify that the instance is updated on all hosts. It will only be updated and present on the hosts listed in the ~/sqllib/db2nodes.cfg file. This is expected as shown below. The standby nodes are not updated. In example output case the standby nodes are '02' and '05'.

```
dsh -n ${ALL} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2> /dev/null | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2> /dev/null | dshbak -c

HOSTS -----
flashdancehostname01, flashdancehostname03
-----
/usr/IBM/dwe/mgmt_db2/V10.5|10.5|10.5.0.11|10.5.0.11..2|db2opm|db2opm||

HOSTS -----
flashdancehostname02, flashdancehostname05
-----
/usr/IBM/dwe/db2/V10.5.0.5..1|10.5|10.5.0.5|10.5.0.5..5||||
/usr/IBM/dwe/db2/V11.1.4.4.a.2|11.1|11.1.4.4|11.1.4.4.a.2||||
/usr/IBM/dwe/db2/V11.1.4.5..0|11.1|11.1.4.5|11.1.4.5..0|bcuaix|bcuaix||
/usr/IBM/dwe/db2/V11.1.4.5..4|11.1|11.1.4.5|11.1.4.5..4||||

HOSTS -----
flashdancehostname04, flashdancehostname06, flashdancehostname07
-----
/usr/IBM/dwe/db2/V10.5.0.5..1|10.5|10.5.0.5|10.5.0.5..5||||
/usr/IBM/dwe/db2/V11.1.4.4.a.2|11.1|11.1.4.4|11.1.4.4.a.2||||
/usr/IBM/dwe/db2/V11.1.4.5..0|11.1|11.1.4.5|11.1.4.5..0||||
/usr/IBM/dwe/db2/V11.1.4.5..4|11.1|11.1.4.5|11.1.4.5..4|bcuaix|bcuaix||

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

5. Command: To update the registry entries on the core standby nodes, run the following.

```
dsh -n ${BCUDB2ALL} -e /BCU_share/FP8_FP4/software/DB2/db2greg_update_${i}.sh 2>&1 | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUDB2ALL} -e /BCU_share/FP8_FP4/software/DB2/db2greg_update_${i}.sh 2>&1 | dshbak -c

HOSTS -----
flashdancehostname02
-----
Updating registry for instance bcuaix on flashdancehostname02

HOSTS -----
flashdancehostname04, flashdancehostname06, flashdancehostname07
-----
Instance is correctly assigned.

HOSTS -----
flashdancehostname05
-----
Updating registry for instance bcuaix on flashdancehostname05
```

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6. Command: Rerun the command again to verify that no more changes are needed.

```
dsh -n ${BCUDB2ALL} -e /BCU_share/FP8_FP4/software/DB2/db2greg_update_${i}.sh 2>&1 | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUDB2ALL} -e /BCU_share/FP8_FP4/software/DB2/db2greg_update_${i}.sh 2>&1 | dshbak -c

HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
Instance is correctly assigned.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

7. Command: Run the get\_db2\_data.sh command to verify all core nodes are consistent.

```
dsh -n ${ALL} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2> /dev/null | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} -e /BCU_share/FP8_FP4/software/DB2/scripts/get_db2_data.sh 2> /dev/null | dshbak -c

HOSTS -----
flashdancehostname01, flashdancehostname03
-----
/usr/IBM/dwe/mgmt_db2/V10.5|10.5|10.5.0.11|10.5.0.11..2|db2opm|db2opm||

HOSTS -----
flashdancehostname02, flashdancehostname04, flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
/usr/IBM/dwe/db2/V10.5.0.5..1|10.5|10.5.0.5|10.5.0.5..5||||
/usr/IBM/dwe/db2/V11.1.4.4.a.2|11.1|11.1.4.4|11.1.4.4.a.2||||
/usr/IBM/dwe/db2/V11.1.4.5..0|11.1|11.1.4.5|11.1.4.5..0||||
/usr/IBM/dwe/db2/V11.1.4.5..4|11.1|11.1.4.5|11.1.4.5..4|bcuaix|bcuaix||
```

8. Command: Start the database.

```
time hastartdb2
```

Example Output:

```
(5) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
$ time hastartdb2
Starting DB2.....DB2 resources online
Activating DB BCUDB
DB20000I The ACTIVATE DATABASE command completed successfully.
CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT | STANDBY | DOMAIN | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| 0-5 | flashdancehostname04 | flashdancehostname02 | bcudomain01 | Online | Normal | - |
| 6-15 | flashdancehostname06 | flashdancehostname05 | bcudomain02 | Online | Normal | - |
| 16-25 | flashdancehostname07 | flashdancehostname05 | bcudomain02 | Online | Normal | - |
=====+=====+=====+=====+=====+=====+=====+

real    0m55.10s
user    0m1.67s
sys      0m0.34s

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/software/DB2
```

9. If migrating the database proceed to stage 6 phase 3. If not migrating yet, proceed to stage 6 phase 4 to start rebinding the database.

## STAGE 8 - CORE NODES update in DOWNTIME window

### Phase 6: Step 3 Migrating the database.

[ Optional ]: Migrate the database. This will update the database to use some new features. Once you run this to revert to an older db2 copy you must restore the database. In this example the update took a small amount of time. Where *flashdancehostname04* is the admin host, *bcuaix* is the instance owner, *bcudb* is the database. This step can be done at a later time if desired.

1. The following command will determine the admin host and which version of db2 is used between 10.1, 10.5 and 11.1 and will run that upgrade command if it exists for the database *bcudb* for the user *bcuaix*. You can use the simpler DB2 V.R commands below as well and skip this more complicated command.

- a. Command: Set the *\$i* and *\$h* variables.

```
i=$(grep INSTANCE /usr/IBM/analytics/ha_tools/hatools.conf | cut -d= -f2);h=$(grep "^0" ~${i}/sqllib/db2nodes.cfg | awk '{print $2}');echo "i=${i};h=${h}"
```

Example Output:

```
$ i=$(grep INSTANCE /usr/IBM/analytics/ha_tools/hatools.conf | cut -d= -f2);h=$(grep "^0" ~${i}/sqllib/db2nodes.cfg | awk '{print $2}');echo "i=${i};h=${h}"
```

```
i=bcuaix;h=flashdancehostname04
```

- b. Command: Set the *\$db* variable.

```
db=$(grep DB /usr/IBM/analytics/ha_tools/hatools.conf | cut -d= -f2);echo ${db}
```

Example Output:

```
$ db=$(grep DB /usr/IBM/analytics/ha_tools/hatools.conf | cut -d= -f2);echo ${db}
```

```
BCUDB
```

- c. Command: Run the following as the root user in the same session as above. Alternatively simply login to the admin host as the instance owner and run the appropriate *db2updv##* command.

```
dsh -n ${h} "su - ${i} -c 'for c in db2updv10 db2updv105 db2updv111;do which ${c} 2>/dev/null && ${c} -d ${db};done'"
```

Example Output:

```
$ dsh -n ${h} "su - ${i} -c 'for c in db2updv10 db2updv105 db2updv111;do which ${c} 2>/dev/null && ${c} -d ${db};done'"
```

```
flashdancehostname04: /db2home/bcuaix/sqllib/bin/db2updv111
flashdancehostname04: db2updv111 completed successfully for database 'BCUDB'.
flashdancehostname04:
flashdancehostname04:
flashdancehostname04: _____
flashdancehostname04:                      DB2 Service Tools                      _____
flashdancehostname04:
flashdancehostname04:                      I      B      M
flashdancehostname04:
flashdancehostname04:                      db2updv111
flashdancehostname04:
flashdancehostname04: This tool is a service utility designed to update a DB2 Version 11.1
flashdancehostname04: database to the current fix pack level.
flashdancehostname04: _____
flashdancehostname04:
flashdancehostname04:
flashdancehostname04: DB2 Universal Database Version 11.1, 5622-044 (c) Copyright IBM Corp. 2017
flashdancehostname04: Licensed Material - Program Property of IBM
flashdancehostname04: IBM DATABASE 2 Database update to current fix pack tool
flashdancehostname04:
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /
```

## STAGE 8 - CORE NODES update in DOWNTIME window

### Phase 6: Step 4 Rebinding the database.

Rebinding should occur automatically however some applications can experience odd behavior after a db2 fixpack is applied. Performing these rebind steps right after the update can avoid some of these issues.

1. Check the following DB2 Knowledge Center links for other rebind instructions if using DB2 Spatial or DB2 Federation rebind steps.

|           |                                                                                                                                                                                                                                         |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DB2 V10.1 | <a href="https://www.ibm.com/support/knowledgecenter/en/SSEPGG_10.1.0/com.ibm.db2.luw.qb.server.doc/doc/t0024970.html">https://www.ibm.com/support/knowledgecenter/en/SSEPGG_10.1.0/com.ibm.db2.luw.qb.server.doc/doc/t0024970.html</a> |
| DB2 V10.5 | <a href="https://www.ibm.com/support/knowledgecenter/en/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/t0024970.html">https://www.ibm.com/support/knowledgecenter/en/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/t0024970.html</a> |
| DB2 V11.1 | <a href="https://www.ibm.com/support/knowledgecenter/en/SSEPGG_11.1.0/com.ibm.db2.luw.qb.server.doc/doc/t0024970.html">https://www.ibm.com/support/knowledgecenter/en/SSEPGG_11.1.0/com.ibm.db2.luw.qb.server.doc/doc/t0024970.html</a> |

2. Command: Determine the current host for partiitons 0 through 5.

```
hals
```

#### Example Output:

```
$ hals
none are available... returning
CORE DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| PARTITIONS | CURRENT          | STANDBY          | DOMAIN          | OPSTATE          | HA STATUS        | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| 0-5        | kf5hostname04    | kf5hostname02    | bcudomain01    | Online           | Normal           | -           |
| 6-15       | kf5hostname06    | kf5hostname07    | bcudomain02    | Online           | Normal           | -           |
| 16-25      | kf5hostname05    | kf5hostname07    | bcudomain02    | Online           | Normal           | -           |
=====+=====+=====+=====+=====+=====+=====+
```

3. Command: Using ssh, login to the current host. Repace *kf5hostname* with the hostname shown in the CURRENT column for partitions 0-5.

```
ssh kf5hostname04
```

#### Example Output:

```
$ ssh kf5hostname04
Last unsuccessful login: Fri Oct  4 20:32:39 -03 2019 on ssh from 172.23.1.245
Last login: Wed Mar  3 20:06:36 -03 2021 on ssh from 172.23.1.1
*****
*
*                               *
* Welcome to AIX Version 7.1!   *
*                               *
*                               *
* Please see the README file in /usr/lpp/bos for information pertinent to *
* this release of the AIX Operating System.                             *
*                               *
*                               *
*****
```

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4. Command: Determine the instance owner. In general PDOA only allows one instance owner, however in some cases there may be multiple instances. The default instance owner is *bcuaix* as shown below. This command selects that last Db2 copy installed and runs its db2greg dump command to list all registered instances on this system.

```
$ (/usr/local/bin/db2ls -c | cut -d: -f1 | tail -1)/bin/db2greg -dump | grep "^I"
```

### Example Output:

```
$ (/usr/local/bin/db2ls -c | cut -d: -f1 | tail -1)/bin/db2greg -dump | grep "^I"
I,DB2,11.1.4.5,bcuaix,/db2home/bcuaix/sqlib,,1,0,/usr/IBM/dwe/db2/V11.1.4.5..4,,
(0) root @ kf5hostname04: 7.1.0.0: /
```

5. Command: Using the su command switch the user to the instance owner. This is listed in the 4<sup>th</sup> column of the output above.

```
su - bcuaix
```

6. Command: List all of the database. PDOA generally only supports one database in production environments, however some customers have multiple databases. This command will only show the indirect or non-Alias names.

```
db2 list database directory | grep -p Indirect
```

### Example Output:

```
$ db2 list database directory | grep -p Indirect
Database alias           = BCUDB
Database name            = BCUDB
Local database directory = /db2home/bcuaix
Database release level   = 14.00
Comment                  =
Directory entry type     = Indirect
Catalog database partition number = 0
Alternate server hostname =
Alternate server port number =
```

7. Command: Connect to the database.

```
db2 connect to bcudb
```

### Example Output:

```
$ db2 connect to bcudb
connect to bcudb

Database Connection Information

Database server           = DB2/AIX64 11.1.4.5
SQL authorization ID      = BCUAIX
Local database alias      = BCUDB
```

## STAGE 8 - CORE NODES update in DOWNTIME window

### 8. Rebinding.

- Command: Run the three rebind commands below. The second command may have errors which are expected.

```
time db2 BIND ~/sqllib/bnd/db2schema.bnd BLOCKING ALL GRANT PUBLIC SQLERROR CONTINUE
```

```
time db2 BIND ~/sqllib/bnd/@db2ubind.lst BLOCKING ALL GRANT PUBLIC ACTION ADD
```

```
time db2 BIND ~/sqllib/bnd/@db2cli.lst BLOCKING ALL GRANT PUBLIC ACTION ADD
```

#### Example Output:

```
$ time db2 BIND ~/sqllib/bnd/db2schema.bnd BLOCKING ALL GRANT PUBLIC SQLERROR CONTINUE
BIND /db2home/bcuai/sqllib/bnd/db2schema.bnd BLOCKING ALL GRANT PUBLIC SQLERROR CONTINUE
```

```
LINE      MESSAGES FOR db2schema.bnd
-----
SQL0061W  The binder is in progress.
SQL0091N  Binding was ended with "0" errors and "0" warnings.
```

```
real      0m9.30s
user      0m0.02s
sys       0m0.01s
$
```

```
$ time db2 BIND ~/sqllib/bnd/@db2ubind.lst BLOCKING ALL GRANT PUBLIC ACTION ADD
BIND /db2home/bcuai/sqllib/bnd/@db2ubind.lst BLOCKING ALL GRANT PUBLIC ACTION ADD
```

```
LINE      MESSAGES FOR db2ubind.lst
-----
SQL0061W  The binder is in progress.
```

```
LINE      MESSAGES FOR db2ajgrt.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLABO02" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2ueiwi.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLUAO20" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2uigsi.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLUCO09" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2ucktb.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLUJO0H" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2uici.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLUDO02" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2uiict.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLUEO01" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2uexpm.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLUBO05" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2uimpb.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLUFO17" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2uImpInsUpdate.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLUPO03" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2uiDescribe.bnd
-----
SQL0719N  Bind error for user "BCUAIX ". Package
          "NULLID.SQLUPO00" already exists.  SQLSTATE=42710
```

```
LINE      MESSAGES FOR db2ugtpi.bnd
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLUH00B" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2pctsp.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLP1002" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2uredp.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLUI000" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2clpcs.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLC2029" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2clprp.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLC3028" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2clpur.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLC4028" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2clprs.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLC5028" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2clpnc.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLC6028" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2arxcs.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLA1000" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2arxrr.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLA2000" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2arxrs.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLA4000" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2arxnc.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLA5000" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2arxur.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLA3000" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2dropv.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLE3002" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2uimtb.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLUK00C" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2uqtpd.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLUM000" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2uqtnm.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLUL000" already exists.  SQLSTATE=42710
LINE      MESSAGES FOR db2ulxld.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLUN001" already exists.  SQLSTATE=42710
```

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```
LINE      MESSAGES FOR db2uiXmlparse.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLUZO00" already exists.  SQLSTATE=42710

LINE      MESSAGES FOR db2uipkg.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.SQLUO001" already exists.  SQLSTATE=42710

LINE      MESSAGES FOR db2_adminotm.bnd
-----
SQL0719N  Bind error for user "BCUAIX  ". Package
          "NULLID.AOTMO05" already exists.  SQLSTATE=42710
SQL0082C  An error has occurred which has terminated
          processing.
SQL0092N  No package was created because of previous errors.
SQL0091N  Binding was ended with "33" errors and "0"
          warnings.

real      0m0.20s
user      0m0.01s
sys       0m0.01s
$

$ time db2 BIND ~/sqllib/bnd/@db2cli.lst BLOCKING ALL GRANT PUBLIC ACTION ADD
BIND /db2home/bcuaix/sqllib/bnd/@db2cli.lst BLOCKING ALL GRANT PUBLIC ACTION ADD

LINE      MESSAGES FOR db2cli.lst
-----
SQL0061W  The binder is in progress.
SQL0091N  Binding was ended with "0" errors and "0" warnings.

real      0m0.20s
user      0m0.02s
sys       0m0.01s
$
```

- b. Command: Update Invalid Packages. This command typically has errors. Proceed to c) if errors detected.

```
db2rbind bcudb -l ~/db2rbind.$(date +%s).log all
```

### Example Output:

```
$ db2rbind bcudb -l ~/db2rbind.$(date +%s).log all

Errors detected !!

Check log file '/db2home/bcuaix/db2rbind.1614817431.log' for details
$
```

- c. Command: Determine the error. SQL2453N is documented here: <http://www-01.ibm.com/support/docview.wss?uid=swg21679552>

```
grep -v -i succeed $(ls -rt ~/db2rbind/*.log | tail -1)
```

### Example Output:

```
$ grep -v -i succeed $(ls -rt ~/db2rbind/*.log | tail -1)

Starting time .... Wed Mar  3 21:24:04 2021

      sqlcode = -2453; sqlerrmc = SYSIBMADM; sqlrrp = SQLRA151SYSIBMADM
      SQL2453N  Rebinding the package failed because the SQL object that generated the package
needs to be revalidated.  SQL object name: "SYSIBMADM.DBMS_RANDOM_INITIALIZE". SQL object
type: "ROUTINE".  SQLSTATE=560D6

Failed to rebind                                = 1 (or more)

Ending time .... Wed Mar  3 21:24:50 2021
```

## STAGE 8 - CORE NODES update in DOWNTIME window

\$

- d. Command: Revalidate Objects. This should return without an error.

```
db2 "CALL SYSPROC.ADMIN_REVALIDATE_DB_OBJECTS(NULL, 'SYSIBMADM', NULL) "
```

### Example Output:

```
$ db2 "CALL SYSPROC.ADMIN_REVALIDATE_DB_OBJECTS(NULL, 'SYSIBMADM', NULL) "
CALL SYSPROC.ADMIN_REVALIDATE_DB_OBJECTS(NULL, 'SYSIBMADM', NULL)

Return Status = 0
```

- e. Command: Rerun the db2rbind command again. If it hangs, check 'db2top -d bcudb' for applications in 'Lock Waiting.' state. Force the rbind connection, issue a commit to remove the plan lock from the current session and retry. If that fails terminate all connections and retry.

```
db2rbind bcudb -l ~/db2rbind.%(date +%s).log all
```

### Example Output:

```
$ db2rbind bcudb -l ~/db2rbind.%(date +%s).log all

<CTRL-C> to cancel.

$ db2 list applications show detail | grep "Lock-wait"
BCUAIX
db2rbind          435          *N0.bcuaix.210304003143          BCUDB          00002 1          0
16769          Lock-wait          Not Collected
/db2home/bcuaix/bcuaix/NODE0000/SQL00001/MEMBER0000/
$

$ db2 list applications
list applications

Auth Id  Application  Appl.  Application Id  DB  # of
      Name      Handle                Name  Agents
-----
BCUAIX  db2bp         386      *N0.bcuaix.210304001604  BCUDB  1
BCUAIX  db2rbind      435      *N0.bcuaix.210304003143  BCUDB  1

$ db2 "force applications (435)"
force applications (435)
DB20000I  The FORCE APPLICATION command completed successfully.
DB21024I  This command is asynchronous and may not be effective immediately.

$ db2pd -db bcudb -locks

Database Member 0 -- Database BCUDB -- Active -- Up 0 days 00:26:54 -- Date 2021-03-03-21.42.58.220312

Locks:
Address      TranHdl  Lockname          Type          Mode Sts Owner      Dur HoldCount  Att
ReleaseFlg rrIID
0x0A000300018F6700 3          4141414141634A62AB2D1F36C1 PlanLock      ..S G 3          1 0          0x00000000
0x40000000 0
0x0A000300018B2C00 3          000000010000000100015700D6 VarLock      ..X G 3          1 0          0x00000000
0x40000000 0
0x0A000300018B2A00 3          0000009F0000000000000000054 TableLock      .IX G 3          21 0          0x00203000
0xC0000000 0

$ db2 list applications
list applications

Auth Id  Application  Appl.  Application Id  DB  # of
      Name      Handle                Name  Agents
-----
BCUAIX  db2bp         386      *N0.bcuaix.210304001604  BCUDB  1

$ db2 commit
commit
DB20000I  The SQL command completed successfully.

$ db2pd -db bcudb -locks

Database Member 0 -- Database BCUDB -- Active -- Up 0 days 00:27:07 -- Date 2021-03-03-21.43.11.011671
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
Locks:
Address      TranHdl   Lockname      Type      Mode Sts Owner      Dur HoldCount Att
ReleaseFlg rrIID
$

$ db2rbind bcudb -l ~/db2rbind.$(date +%s).log all

Rebind done successfully for database 'BCUDB'.

$
```

- f. Command: Check the rbind log for any other errors. The Failed to rebind count should be 0.

```
grep -v -i succeed $(ls -rt ~/db2rbind.*.log | tail -1)
```

### Example Output:

```
$ grep -v -i succeed $(ls -rt ~/db2rbind.*.log | tail -1)

Starting time .... Wed Mar  3 21:45:53 2021

Failed to rebind                                = 0 (or more)

Ending time .... Wed Mar  3 21:46:41 2021

$
```

- g. Contact your DBAs to begin validation tests.

## Phase 7: mksysb

At this point in the update all major changes to the local OS and rootvg are completed. However, before attempting to re-mirror rootvg it is a good idea to take another mksysb backup. This backup can help restore a host to the post-updated version of rootvg in the event of a disk failure during the re-mirror process. This can save a significant amount of time as it will avoid the need to re-apply the AIX, GPFS, TSA, HA Tools and Db2 updates on the pre-update mksysbs from phase 2. This Phase uses a script, /BCU\_share, and /stage to perform the mksysb. If you have a mksysb process of your own then follow your instructions for collecting mksysbs for all hosts. The script 'stage02\_phase01\_mksysb.sh' was used in stage 02, backs up all hosts in parallel to '/stage/backups/FP8\_FP4/<timestamp>/<hostname>'. The script also ensures it also copies the 'image.data' and 'bosinst.data' for those hosts as well.

1. Command: In a root login over a vtmenu or screen session ensure the session current working directory is correct.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

2. Command: Verify that the /BCU\_share filesystem is mounted on all hosts.

```
./enable_bcushare.sh
```

Example Output:

```
$ ./enable_bcushare.sh
20210115_010049 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20210115_010050 (flashdancehostname01:enable_bcushare.sh): Success: /BCU_share is mounted on all hosts.
20210115_010050 (flashdancehostname01:enable_bcushare.sh): enable_bcushare.sh completed with rc=0.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

3. Command: Verify the /stage filesystem is mounted on all hosts.

```
./enable_stage.sh
```

Example Output:

```
$ ./enable_stage.sh
20210115_010243 (flashdancehostname01:enable_stage.sh): Checking for /stage on all hosts.
20210115_010244 (flashdancehostname01:enable_stage.sh): Success: The /stage filesystem is mounted on all hosts.
20210115_010244 (flashdancehostname01:enable_stage.sh): enable_stage.sh completed with rc=0.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

4. Command: Run the mksysb utility script.

```
./stage02_phase01_mksysb.sh
```

Example Output:

```
$ ./stage02_phase01_mksysb.sh
20210115_010402 (flashdancehostname01:stage02_phase01_mksysb.sh): Starting date: Fri Jan 15 01:04:02 IST 2021.
20210115_010402 (flashdancehostname01:stage02_phase01_mksysb.sh): Verifying /stage is mounted on all nodes.
20210115_010402 (flashdancehostname01:enable_stage.sh): Checking for /stage on all hosts.
20210115_010403 (flashdancehostname01:enable_stage.sh): Success: The /stage filesystem is mounted on all hosts.
20210115_010403 (flashdancehostname01:enable_stage.sh): enable_stage.sh completed with rc=0.
20210115_010403 (flashdancehostname01:stage02_phase01_mksysb.sh): Looking for mksysb backups in /stage/backups/FP8_FP4/.
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname06/flashdancehostname06.mksysb
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname06/image.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname06/bosinst.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname05/flashdancehostname05.mksysb
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname05/image.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname05/bosinst.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname02/image.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname02/bosinst.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname04/image.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname04/flashdancehostname04.mksysb
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname04/bosinst.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname07/image.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname07/flashdancehostname07.mksysb
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname07/bosinst.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname01/image.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname01/bosinst.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname01/flashdancehostname01.mksysb
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname03/image.data
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname03/flashdancehostname03.mksysb
/stage/backups/FP8_FP4/20210109_132026/flashdancehostname03/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname06/flashdancehostname06.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname06/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname06/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname05/flashdancehostname05.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname05/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname05/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname02/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname02/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname02/flashdancehostname02.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname04/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname04/flashdancehostname04.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname04/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname07/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname07/flashdancehostname07.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname07/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname01/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname01/bosinst.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname01/flashdancehostname01.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname03/image.data
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname03/flashdancehostname03.mksysb
/stage/backups/FP8_FP4/20201117_080027/flashdancehostname03/bosinst.data
20210115_010404 (flashdancehostname01:stage02_phase01_mksysb.sh): Running mksysb on all hosts to
/stage/backups/FP8_FP4/20210115_010404.
20210115_010404 (flashdancehostname01:stage02_phase01_mksysb.sh): Running mksysb on all hosts to
/stage/backups/FP8_FP4/20210115_010404.
flashdancehostname07:
flashdancehostname07: Creating information file (/image.data) for rootvg.
flashdancehostname07:
flashdancehostname07: Creating list of files to back up.
flashdancehostname07: .
flashdancehostname07: Backing up 189681 files.....
flashdancehostname07: 168147 of 189681 files (88%)
flashdancehostname07:
flashdancehostname07: 189681 of 189681 files (100%)
flashdancehostname07: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname03:
flashdancehostname03: Creating information file (/image.data) for rootvg.
flashdancehostname03:
flashdancehostname03: Creating list of files to back up.
flashdancehostname03:
flashdancehostname03: Backing up 140623 files.....
flashdancehostname03: 43535 of 140623 files (30%).....
flashdancehostname03:
flashdancehostname03: 140623 of 140623 files (100%)
flashdancehostname03: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname04:
flashdancehostname04: Creating information file (/image.data) for rootvg.
flashdancehostname04:
flashdancehostname04: Creating list of files to back up.
flashdancehostname04: .
flashdancehostname04: Backing up 194203 files.....
flashdancehostname04: 30530 of 194203 files (15%).....
flashdancehostname04:
flashdancehostname04: 194203 of 194203 files (100%)
flashdancehostname04: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname05:
flashdancehostname05: Creating information file (/image.data) for rootvg.
flashdancehostname05:
flashdancehostname05: Creating list of files to back up.
flashdancehostname05: .
flashdancehostname05: Backing up 194516 files.....
flashdancehostname05:
flashdancehostname05: 194516 of 194516 files (100%)
flashdancehostname05: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname06:
flashdancehostname06: Creating information file (/image.data) for rootvg.
flashdancehostname06:
flashdancehostname06: Creating list of files to back up.
flashdancehostname06: .
flashdancehostname06: Backing up 187465 files.....
flashdancehostname06: 63211 of 187465 files (33%).....
flashdancehostname06:
flashdancehostname06: 187465 of 187465 files (100%)
flashdancehostname06: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname02:
flashdancehostname02: Creating information file (/image.data) for rootvg.
flashdancehostname02:
flashdancehostname02: Creating list of files to back up.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
flashdancehostname02: ...
flashdancehostname02: Backing up 190655 files.....
flashdancehostname02: 52112 of 190655 files (27%).....
flashdancehostname02: 130906 of 190655 files (68%).....
flashdancehostname02:
flashdancehostname02: 190655 of 190655 files (100%)
flashdancehostname02: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname01:
flashdancehostname01: Creating information file (/image.data) for rootvg.
flashdancehostname01:
flashdancehostname01: Creating list of files to back up.
flashdancehostname01: .
flashdancehostname01: Backing up 202455 files.....
flashdancehostname01: 21345 of 202455 files (10%).....
flashdancehostname01: 176695 of 202455 files (87%).....
flashdancehostname01: 176703 of 202455 files (87%).....
flashdancehostname01: 176711 of 202455 files (87%).....
flashdancehostname01:
flashdancehostname01: 202455 of 202455 files (100%)
flashdancehostname01: 0512-038 mksysb: Backup Completed Successfully.

real    24m51.17s
user    1m20.99s
sys      2m39.17s
20210115_012855 (flashdancehostname01:stage02_phase01_mksysb.sh): Looking for new mksysb backups in
/stage/backups/FP8_FP4/20210115_010404/20210115_010404
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname06/flashdancehostname06.mksysb
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname06/image.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname06/bosinst.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname05/flashdancehostname05.mksysb
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname05/image.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname05/bosinst.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname02/image.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname02/bosinst.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname02/flashdancehostname02.mksysb
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname04/image.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname04/flashdancehostname04.mksysb
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname04/bosinst.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname07/image.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname07/flashdancehostname07.mksysb
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname07/bosinst.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname01/image.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname01/bosinst.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname01/flashdancehostname01.mksysb
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname03/image.data
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname03/flashdancehostname03.mksysb
/stage/backups/FP8_FP4/20210115_010404/flashdancehostname03/bosinst.data
20210115_012855 (flashdancehostname01:stage02_phase01_mksysb.sh): Starting date: Fri Jan 15 01:04:02 IST 2021   Ending Date: Fri
Jan 15 01:28:55 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

5. Command: Verify that all hosts backed up successfully. Each host should have the mksysb file, image.data file, and bosinst.data file associated with the backup. Using the command below list the last mksysb file and look for the 'Backup Completed Successfully' message for each host.

```
ls -rt /BCU_share/support/FP8_FP4/log/*mksysb* | tail -1 | xargs grep '038 mksysb: Backup Completed Successfully' | sort
```

### Example Output:

```
$ ls -rt /BCU_share/support/FP8_FP4/log/*mksysb* | tail -1 | xargs grep '038 mksysb: Backup Completed Successfully' | sort
flashdancehostname01: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname02: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname03: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname04: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname05: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname06: 0512-038 mksysb: Backup Completed Successfully.
flashdancehostname07: 0512-038 mksysb: Backup Completed Successfully.
```

6. Optional: Copy the mksysb images to an offsystem location.

## **Phase 8: Committing GPFS/Spectrum Scale and Db2.**

Committing GPFS/Spectrum Scale and Db2 have a big impact in risk planning if there is a possibility or wanting to roll back. In general the PDOA goal is to test to provide some confidence that it will not be necessary to roll back changes, which in an appliance is a very complicated endeavor.

GPFS/Spectrum scale is committed in two parts. The first updates the minimum GPFS/Spectrum Scale code level. This does not change the filesystem structures, so reversion to an older GPFS level can be done by re-installing GPFS at a lower level, or restoring via mksysb. The second part is at each filesystem level, once each filesystem is updated then the only way to revert GPFS to an earlier level is to restore from mksysb or re-install GPFS and then to recreate all the filesystems and restore the filesystem contents. PDOA uses GPFS for 'db2home', 'stage', and 'dwhome' filesystems which are not part of the database backup this type of restore is prohibitively expensive.

For Db2, the commit depends on the differences between the original and updated fixpacks. For most fixpack updates committing (or migrating the database) updates the catalog tables to take advantage of new features. If the catalog tables are updated then the only way to revert to an earlier level is to migrate the instance back to a previous copy and restore the database.

The PDOA recommendation is to migrate GPFS and it is true that we have not had a customer in PDOA revert GPFS in our history of this appliance. For Db2 many of our customers are strong DBAs so they can decide whether they want to migrate their database, but in general the recommendation would be to migrate the database as well.

## STAGE 8 - CORE NODES update in DOWNTIME window

1. Command: Checking the state of the GPFS installp filesets, GPFS minimum release levels, and GPFS filesystem versions. If updated from V1.1 FP3 the minReleaseLevel will be 4.2.3.9. The original filesystem level will be 4.1.0.4 and the current filesystem level will be 4.2.3.9.

```
./gpfs_commit.sh
```

### Example Output:

```
$ ./gpfs_commit.sh
20210119_020702 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:07:02 IST 2021.
20210119_020702 (flashdancehostname01:gpfs_commit.sh): Checking current gpfs version.
20210119_020702 (flashdancehostname01:gpfs_commit.sh): Checking GPFS Uncommitted installp packages.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
gpfs.base          ROOT    5.0.5.4      APPLIED
gpfs.base          USR     5.0.5.4      APPLIED
gpfs.compression   USR     5.0.5.1      APPLIED
gpfs.docs.data     SHARE  5.0.5.3      APPLIED
gpfs.ext           USR     5.0.5.4      APPLIED
gpfs.msg.en_US     USR     5.0.5.4      APPLIED
Installp Status
-----
Name              Part    Level        State
-----
20210119_020703 (flashdancehostname01:gpfs_commit.sh): Checking GPFS release level for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
minReleaseLevel 4.2.3.9
20210119_020706 (flashdancehostname01:gpfs_commit.sh): Checking Filesystem Levels for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
5              14.10 (4.1.0.4)      Original file system version
5 -V           17.09 (4.2.3.9)      Current file system version
-----
HOSTS -----
flashdancehostname02, flashdancehostname04
-----
21             14.10 (4.1.0.4)      Original file system version
21 -V          17.09 (4.2.3.9)      Current file system version
-----
HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
63             14.10 (4.1.0.4)      Original file system version
63 -V          17.09 (4.2.3.9)      Current file system version
20210119_020811 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:07:02 IST 2021   Ending Date: Tue Jan 19
02:08:11 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

2. Command: Update the minimum release level for all PDOA GPFS clusters. If PDOA GPFS clusters are connected to remote (external) GPFS clusters those clusters must be updated before this step as they will lose access to shared filesystems. The updated release level will be 5.0.5.1. After this GPFS can be only be reverted using the mksysb taken in phase 7 or by re-installing GPFS.

```
./gpfs_commit.sh commitversion
```

### Example Output:

```
$ ./gpfs_commit.sh commitversion
20210119_022023 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:20:22 IST 2021.
20210119_022023 (flashdancehostname01:gpfs_commit.sh): Checking current gpfs version.
20210119_022023 (flashdancehostname01:gpfs_commit.sh): Checking GPFS Uncommitted installp packages.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
gpfs.base          ROOT    5.0.5.4      APPLIED
gpfs.base          USR     5.0.5.4      APPLIED
gpfs.compression   USR     5.0.5.1      APPLIED
gpfs.docs.data     SHARE  5.0.5.3      APPLIED
gpfs.ext           USR     5.0.5.4      APPLIED
gpfs.msg.en_US     USR     5.0.5.4      APPLIED
Installp Status
```

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```
-----
Name                               Part    Level                               State
-----
20210119_022024 (flashdancehostname01:gpfs_commit.sh): Checking GPFS release level for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
minReleaseLevel 4.2.3.9
20210119_022026 (flashdancehostname01:gpfs_commit.sh): Checking Filesystem Levels for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
      5                14.10 (4.1.0.4)      Original file system version
      5 -v             17.09 (4.2.3.9)      Current file system version

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
      21                14.10 (4.1.0.4)      Original file system version
      21 -v             17.09 (4.2.3.9)      Current file system version

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
      63                14.10 (4.1.0.4)      Original file system version
      63 -v             17.09 (4.2.3.9)      Current file system version
20210119_022131 (flashdancehostname01:gpfs_commit.sh): Running op commitversion.
20210119_022131 (flashdancehostname01:gpfs_commit.sh): Committing GPFS by updating release to LATEST.
flashdancehostname01: Update GPFS Cluster.
flashdancehostname01: Verifying that all nodes in the cluster are up-to-date ...
flashdancehostname02: Update GPFS Cluster.
flashdancehostname02: Verifying that all nodes in the cluster are up-to-date ...
20210119_022234 (flashdancehostname01:gpfs_commit.sh): Rechecking version.
20210119_022234 (flashdancehostname01:gpfs_commit.sh): Checking GPFS Uncommitted installp packages.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
gpfs.base                        ROOT    5.0.5.4      APPLIED
gpfs.base                        USR     5.0.5.4      APPLIED
gpfs.compression                 USR     5.0.5.1      APPLIED
gpfs.docs.data                  SHARE   5.0.5.3      APPLIED
gpfs.ext                        USR     5.0.5.4      APPLIED
gpfs.msg.en_US                  USR     5.0.5.4      APPLIED
Installp Status
-----
Name                               Part    Level                               State
-----
20210119_022235 (flashdancehostname01:gpfs_commit.sh): Checking GPFS release level for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
minReleaseLevel 5.0.5.1
20210119_022237 (flashdancehostname01:gpfs_commit.sh): Checking Filesystem Levels for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
      5                14.10 (4.1.0.4)      Original file system version
      5 -v             17.09 (4.2.3.9)      Current file system version

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
      21                14.10 (4.1.0.4)      Original file system version
      21 -v             17.09 (4.2.3.9)      Current file system version

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
      63                14.10 (4.1.0.4)      Original file system version
      63 -v             17.09 (4.2.3.9)      Current file system version
20210119_022343 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:20:22 IST 2021   Ending Date: Tue Jan 19
02:23:43 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

3. Command: Update the minimum levels for all GPFS filesystems. The new filesystem level will be 5.0.5.0. Note that after this the only way to revert to the older GPFS version is to recreate all filesystems and restore from backups. Filesystem updates are done one at a time. Output size and time will depend on

## STAGE 8 - CORE NODES update in DOWNTIME window

the size of the PDOA environment. Example output is truncated so that only a few filesystem examples are displayed.

```
./gpfs_commit.sh commitfilesystems
```

### Example Output:

```
$ ./gpfs_commit.sh commitfilesystems
20210119_022716 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:27:16 IST 2021.
20210119_022716 (flashdancehostname01:gpfs_commit.sh): Checking current gpfs version.
20210119_022716 (flashdancehostname01:gpfs_commit.sh): Checking GPFS Uncommitted installp packages.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
gpfs.base                ROOT    5.0.5.4      APPLIED
gpfs.base                USR     5.0.5.4      APPLIED
gpfs.compression         USR     5.0.5.1      APPLIED
gpfs.docs.data           SHARE   5.0.5.3      APPLIED
gpfs.ext                 USR     5.0.5.4      APPLIED
gpfs.msg.en_US           USR     5.0.5.4      APPLIED
Installp Status
-----
Name                      Part    Level        State
-----
20210119_022717 (flashdancehostname01:gpfs_commit.sh): Checking GPFS release level for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
minReleaseLevel 5.0.5.1
20210119_022720 (flashdancehostname01:gpfs_commit.sh): Checking Filesystem Levels for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
5                14.10 (4.1.0.4)      Original file system version
5 -v            17.09 (4.2.3.9)      Current file system version
-----
HOSTS -----
flashdancehostname02, flashdancehostname04
-----
21                14.10 (4.1.0.4)      Original file system version
21 -v            17.09 (4.2.3.9)      Current file system version
-----
HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
63                14.10 (4.1.0.4)      Original file system version
63 -v            17.09 (4.2.3.9)      Current file system version
20210119_022828 (flashdancehostname01:gpfs_commit.sh): Running op commitfilesystems.
20210119_022828 (flashdancehostname01:gpfs_commit.sh): Committing GPFS filesystems by updating filesystem levels to latest level.
flashdancehostname01: Updating appsvr on flashdancehostname01...
flashdancehostname01: Successfully upgraded file system format version to 23.00 (5.0.5.0).
flashdancehostname01: Updating opm on flashdancehostname01...
flashdancehostname01: Successfully upgraded file system format version to 23.00 (5.0.5.0).
...
flashdancehostname05: Successfully upgraded file system format version to 23.00 (5.0.5.0).
flashdancehostname05: Updating db2path9 on flashdancehostname05...
flashdancehostname05: Successfully upgraded file system format version to 23.00 (5.0.5.0).
20210119_023056 (flashdancehostname01:gpfs_commit.sh): Rechecking version.
20210119_023056 (flashdancehostname01:gpfs_commit.sh): Checking GPFS Uncommitted installp packages.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
gpfs.base                ROOT    5.0.5.4      APPLIED
gpfs.base                USR     5.0.5.4      APPLIED
gpfs.compression         USR     5.0.5.1      APPLIED
gpfs.docs.data           SHARE   5.0.5.3      APPLIED
gpfs.ext                 USR     5.0.5.4      APPLIED
gpfs.msg.en_US           USR     5.0.5.4      APPLIED
Installp Status
-----
Name                      Part    Level        State
-----
20210119_023057 (flashdancehostname01:gpfs_commit.sh): Checking GPFS release level for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
minReleaseLevel 5.0.5.1
20210119_023059 (flashdancehostname01:gpfs_commit.sh): Checking Filesystem Levels for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
```

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```
5          14.10 (4.1.0.4)      Original file system version
5  -V      23.00 (5.0.5.0)      Current file system version

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
21          14.10 (4.1.0.4)      Original file system version
21  -V      23.00 (5.0.5.0)      Current file system version

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
63          14.10 (4.1.0.4)      Original file system version
63  -V      23.00 (5.0.5.0)      Current file system version
20210119_023204 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:27:16 IST 2021   Ending Date: Tue Jan 19
02:32:04 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

4. **Command:** Run the following to commit all GPFS installp filesets. Output size will vary depending on the size of the PDOA system. Example output is truncated to only show one hosts output for the commit command.

```
./gpfs_commit.sh commitinstallp
```

### Example Output:

```
$ ./gpfs_commit.sh commitinstallp
20210119_023339 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:33:39 IST 2021.
20210119_023339 (flashdancehostname01:gpfs_commit.sh): Checking current gpfs version.
20210119_023339 (flashdancehostname01:gpfs_commit.sh): Checking GPFS Uncommitted installp packages.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
gpfs.base          ROOT    5.0.5.4      APPLIED
gpfs.base          USR    5.0.5.4      APPLIED
gpfs.compression   USR    5.0.5.1      APPLIED
gpfs.docs.data     SHARE  5.0.5.3      APPLIED
gpfs.ext           USR    5.0.5.4      APPLIED
gpfs.msg.en_US     USR    5.0.5.4      APPLIED
Installp Status
-----
Name               Part    Level      State
-----
20210119_023340 (flashdancehostname01:gpfs_commit.sh): Checking GPFS release level for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
minReleaseLevel 5.0.5.1
20210119_023342 (flashdancehostname01:gpfs_commit.sh): Checking Filesystem Levels for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
5          14.10 (4.1.0.4)      Original file system version
5  -V      23.00 (5.0.5.0)      Current file system version

HOSTS -----
flashdancehostname02, flashdancehostname04
-----
21          14.10 (4.1.0.4)      Original file system version
21  -V      23.00 (5.0.5.0)      Current file system version

HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
63          14.10 (4.1.0.4)      Original file system version
63  -V      23.00 (5.0.5.0)      Current file system version
20210119_023446 (flashdancehostname01:gpfs_commit.sh): Running op commitinstallp.
20210119_023446 (flashdancehostname01:gpfs_commit.sh): Committing GPFS installp packages.
flashdancehostname01: SUCCESSES
flashdancehostname01: -----
flashdancehostname01: Filesets listed in this section passed pre-commit verification
flashdancehostname01: and will be committed.
flashdancehostname01:
flashdancehostname01: Selected Filesets
flashdancehostname01: -----
flashdancehostname01: gpfs.base 5.0.5.4          # GPFS File Manager
flashdancehostname01: gpfs.compression 5.0.5.1  # GPFS Compression Libraries
flashdancehostname01: gpfs.docs.data 5.0.5.3   # GPFS Server Manpages and Doc...
flashdancehostname01: gpfs.ext 5.0.5.4        # GPFS Extended Features
flashdancehostname01: gpfs.msg.en_US 5.0.5.4   # GPFS Server Messages - U.S. ...
flashdancehostname01:
flashdancehostname01: << End of Success Section >>
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
flashdancehostname01:
...
20210119_023453 (flashdancehostname01:gpfs_commit.sh): Rechecking version.
20210119_023453 (flashdancehostname01:gpfs_commit.sh): Checking GPFS Uncommitted installp packages.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
0503-459 installp: No filesets were found in the Software
Vital Product Database in the APPLIED state.
20210119_023454 (flashdancehostname01:gpfs_commit.sh): Checking GPFS release level for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
minReleaseLevel 5.0.5.1
20210119_023457 (flashdancehostname01:gpfs_commit.sh): Checking Filesystem Levels for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
5          14.10 (4.1.0.4)      Original file system version
5 -v       23.00 (5.0.5.0)      Current file system version
-----
HOSTS -----
flashdancehostname02, flashdancehostname04
-----
21          14.10 (4.1.0.4)      Original file system version
21 -v       23.00 (5.0.5.0)      Current file system version
-----
HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
63          14.10 (4.1.0.4)      Original file system version
63 -v       23.00 (5.0.5.0)      Current file system version
20210119_023610 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:33:39 IST 2021   Ending Date: Tue Jan 19
02:36:10 IST 2021.
```

### 5. Run the following to verify all commit steps have completed.

```
./gpfs_commit.sh
```

#### Example Output:

```
$ ./gpfs_commit.sh
20210119_023731 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:37:31 IST 2021.
20210119_023731 (flashdancehostname01:gpfs_commit.sh): Checking current gpfs version.
20210119_023731 (flashdancehostname01:gpfs_commit.sh): Checking GPFS Uncommitted installp packages.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
0503-459 installp: No filesets were found in the Software
Vital Product Database in the APPLIED state.
20210119_023732 (flashdancehostname01:gpfs_commit.sh): Checking GPFS release level for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
minReleaseLevel 5.0.5.1
20210119_023734 (flashdancehostname01:gpfs_commit.sh): Checking Filesystem Levels for all hosts.
HOSTS -----
flashdancehostname01, flashdancehostname03
-----
5          14.10 (4.1.0.4)      Original file system version
5 -v       23.00 (5.0.5.0)      Current file system version
-----
HOSTS -----
flashdancehostname02, flashdancehostname04
-----
21          14.10 (4.1.0.4)      Original file system version
21 -v       23.00 (5.0.5.0)      Current file system version
-----
HOSTS -----
flashdancehostname05, flashdancehostname06, flashdancehostname07
-----
63          14.10 (4.1.0.4)      Original file system version
63 -v       23.00 (5.0.5.0)      Current file system version
20210119_023839 (flashdancehostname01:gpfs_commit.sh): Starting date: Tue Jan 19 02:37:31 IST 2021   Ending Date: Tue Jan 19
02:38:39 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

## Phase 9: Committing Power Firmware Updates

This Phase commits the Power Firmware updates on the servers.

1. Command: Check the Power Firmware updates. This is run on the management host as root in a vtmenu or screen session. The below shows that the PFW levels are not committed on any of the servers.

```
./commit_pfw.sh
```

Example Output:

```
$ ./commit_pfw.sh
20210122_062628 (flashdancehostname01:commit_pfw.sh): Starting date: Fri Jan 22 06:26:28 IST 2021.
20210122_062628 (flashdancehostname01:commit_pfw.sh): Collecting hmc ip address.
20210122_062628 (flashdancehostname01:commit_pfw.sh): Collecting servers.
20210122_062629 (flashdancehostname01:commit_pfw.sh): Checking server 'Data1-8284-22A-SN216B47V' licensed code.
20210122_062630 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_062630 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_062630 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_062630 (flashdancehostname01:commit_pfw.sh): Checking server 'Data2-8284-22A-SN216B44V' licensed code.
20210122_062631 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_062631 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_062631 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_062631 (flashdancehostname01:commit_pfw.sh): Checking server 'FDNactive-8286-42A-SN2168BFV' licensed code.
20210122_062632 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_062632 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_062632 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_062632 (flashdancehostname01:commit_pfw.sh): Checking server 'FDNstby-8286-42A-SN2168C1V' licensed code.
20210122_062633 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_062633 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_062633 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_062633 (flashdancehostname01:commit_pfw.sh): Checking server 'Stby-Data-8284-22A-SN216B42V' licensed code.
20210122_062634 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_062634 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_062634 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_062634 (flashdancehostname01:commit_pfw.sh): Starting date: Fri Jan 22 06:26:28 IST 2021 Ending Date: Fri Jan 22 06:26:34 IST 2021.

(1) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

2. Command: Commit the power firmware on the servers. This is run serially on each server. The command will check each server, if needed apply the commit, and then check each server again to verify.

```
./commit_pfw.sh commit
```

Example Output:

```
$ ./commit_pfw.sh commit
20210122_063329 (flashdancehostname01:commit_pfw.sh): Starting date: Fri Jan 22 06:33:29 IST 2021.
20210122_063329 (flashdancehostname01:commit_pfw.sh): Collecting hmc ip address.
20210122_063330 (flashdancehostname01:commit_pfw.sh): Collecting servers.
20210122_063331 (flashdancehostname01:commit_pfw.sh): Checking server 'Data1-8284-22A-SN216B47V' licensed code.
20210122_063331 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_063331 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_063331 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_063331 (flashdancehostname01:commit_pfw.sh): Committing Power Firmware on server 'Data1-8284-22A-SN216B47V'.
20210122_063749 (flashdancehostname01:commit_pfw.sh): Checking server 'Data1-8284-22A-SN216B47V' licensed code.
20210122_063750 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_063750 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,226.
20210122_063750 (flashdancehostname01:commit_pfw.sh): PFW is committed.
20210122_063750 (flashdancehostname01:commit_pfw.sh): Checking server 'Data2-8284-22A-SN216B44V' licensed code.
20210122_063751 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_063751 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_063751 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_063751 (flashdancehostname01:commit_pfw.sh): Committing Power Firmware on server 'Data2-8284-22A-SN216B44V'.
20210122_064203 (flashdancehostname01:commit_pfw.sh): Checking server 'Data2-8284-22A-SN216B44V' licensed code.
20210122_064204 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_064204 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,226.
20210122_064204 (flashdancehostname01:commit_pfw.sh): PFW is committed.
20210122_064204 (flashdancehostname01:commit_pfw.sh): Checking server 'FDNactive-8286-42A-SN2168BFV' licensed code.
20210122_064205 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_064205 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_064205 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_064205 (flashdancehostname01:commit_pfw.sh): Committing Power Firmware on server 'FDNactive-8286-42A-SN2168BFV'.
20210122_064537 (flashdancehostname01:commit_pfw.sh): Checking server 'FDNactive-8286-42A-SN2168BFV' licensed code.
20210122_064538 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_064538 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,226.
```

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```
20210122_064538 (flashdancehostname01:commit_pfw.sh): PFW is committed.
20210122_064538 (flashdancehostname01:commit_pfw.sh): Checking server 'FDNstby-8286-42A-SN2168C1V' licensed code.
20210122_064539 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_064539 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_064539 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_064539 (flashdancehostname01:commit_pfw.sh): Committing Power Firmware on server 'FDNstby-8286-42A-SN2168C1V'.
20210122_064911 (flashdancehostname01:commit_pfw.sh): Checking server 'FDNstby-8286-42A-SN2168C1V' licensed code.
20210122_064912 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_064912 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,226.
20210122_064912 (flashdancehostname01:commit_pfw.sh): PFW is committed.
20210122_064912 (flashdancehostname01:commit_pfw.sh): Checking server 'Stby-Data-8284-22A-SN216B42V' licensed code.
20210122_064913 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_064913 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,205.
20210122_064913 (flashdancehostname01:commit_pfw.sh): PFW is not committed.
20210122_064913 (flashdancehostname01:commit_pfw.sh): Committing Power Firmware on server 'Stby-Data-8284-22A-SN216B42V'.
20210122_065313 (flashdancehostname01:commit_pfw.sh): Checking server 'Stby-Data-8284-22A-SN216B42V' licensed code.
20210122_065314 (flashdancehostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210122_065314 (flashdancehostname01:commit_pfw.sh): Active version: 01SV860,226.
20210122_065314 (flashdancehostname01:commit_pfw.sh): PFW is committed.
20210122_065314 (flashdancehostname01:commit_pfw.sh): Starting date: Fri Jan 22 06:33:29 IST 2021    Ending Date: Fri Jan 22
06:53:14 IST 2021.
```

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

### 3. Command: Rerun the command from item 1 to verify all are committed.

```
./commit_pfw.sh
```

#### Example Output:

```
$ ./commit_pfw.sh
20210308_160924 (kf5hostname01:commit_pfw.sh): Starting date: Mon Mar  8 16:09:24 -03 2021.
20210308_160924 (kf5hostname01:commit_pfw.sh): Collecting hmc ip address.
20210308_160925 (kf5hostname01:commit_pfw.sh): Collecting servers.
20210308_160926 (kf5hostname01:commit_pfw.sh): Checking server 'Data1-8284-22A-SN218040V' licensed code.
20210308_160927 (kf5hostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210308_160927 (kf5hostname01:commit_pfw.sh): Active version: 01SV860,226.
20210308_160927 (kf5hostname01:commit_pfw.sh): PFW is committed.
20210308_160927 (kf5hostname01:commit_pfw.sh): Checking server 'Data2-8284-22A-SN218041V' licensed code.
20210308_160928 (kf5hostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210308_160928 (kf5hostname01:commit_pfw.sh): Active version: 01SV860,226.
20210308_160928 (kf5hostname01:commit_pfw.sh): PFW is committed.
20210308_160928 (kf5hostname01:commit_pfw.sh): Checking server 'FDNactive-8286-42A-SN21803FV' licensed code.
20210308_160930 (kf5hostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210308_160930 (kf5hostname01:commit_pfw.sh): Active version: 01SV860,226.
20210308_160930 (kf5hostname01:commit_pfw.sh): PFW is committed.
20210308_160930 (kf5hostname01:commit_pfw.sh): Checking server 'FDNstby-8286-42A-SN218043V' licensed code.
20210308_160931 (kf5hostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210308_160931 (kf5hostname01:commit_pfw.sh): Active version: 01SV860,226.
20210308_160931 (kf5hostname01:commit_pfw.sh): PFW is committed.
20210308_160931 (kf5hostname01:commit_pfw.sh): Checking server 'Stby-Data-8284-22A-SN218042V' licensed code.
20210308_160932 (kf5hostname01:commit_pfw.sh): Installed version: 01SV860,226.
20210308_160932 (kf5hostname01:commit_pfw.sh): Active version: 01SV860,226.
20210308_160932 (kf5hostname01:commit_pfw.sh): PFW is committed.
20210308_160932 (kf5hostname01:commit_pfw.sh): Starting date: Mon Mar  8 16:09:24 -03 2021    Ending Date: Mon Mar  8 16:09:32 -03
2021.
```

## Phase 10: Remirror the rootvg volume group after the update is successful

This step uses a new utility in V1.1 FP4 to perform the re-mirror operation. This utility was used in Phase 6 and Phase 7 to clone rootvg and is now used to remove the clone and perform the re-mirror operations. This utility runs in parallel on all hosts. After the utility completes it is necessary to redo the paging and system dump settings according to updated best practices.

1. Command: In a root login over a vtmenu or screen session ensure the session current working directory is correct.

```
cd /BCU_share/FP8_FP4/fixpack_tools/application
```

2. Command: Verify that the /BCU\_share filesystems are mounted on all hosts. Both commands will attempt to mount those filesystems on any host that does not have it mounted yet.

```
./enable_bcushare.sh
```

Example Output:

```
$ ./enable_bcushare.sh
20210115_014124 (flashdancehostname01:enable_bcushare.sh): Checking for /BCU_share on all hosts.
20210115_014125 (flashdancehostname01:enable_bcushare.sh): Success: /BCU_share is mounted on all hosts.
20210115_014125 (flashdancehostname01:enable_bcushare.sh): enable_bcushare.sh completed with rc=0.
```

3. Verify that all PDOA environments can be restored.

```
dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/mirror_utility.sh -action query -statustype rootvg_cloned | grep -i Value' | sort
```

Example Output:

```
$ dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/mirror_utility.sh -action query -statustype rootvg_cloned | grep -i Value' | sort
flashdancehostname01: 20210115014601: (mirror_utility.pl) Value: True.
flashdancehostname02: 20210115014602: (mirror_utility.pl) Value: True.
flashdancehostname03: 20210115014602: (mirror_utility.pl) Value: True.
flashdancehostname04: 20210115014602: (mirror_utility.pl) Value: True.
flashdancehostname05: 20210115014602: (mirror_utility.pl) Value: True.
flashdancehostname06: 20210115014602: (mirror_utility.pl) Value: True.
flashdancehostname07: 20210115014602: (mirror_utility.pl) Value: True.
```

4. Command: Run the following command to remirror rootvg. This command will not return output until it is finished on each host. This command should be run within a vtmenu session or screen session. It is a long running command.

```
dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/mirror_utility.sh -action mirror'
```

Example Output: (Only one host's output is shown.)

```
$ dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/mirror_utility.sh -action mirror'
flashdancehostname06: 20210120_063441 (flashdancehostname06:mirror_utility.sh): Starting date: Wed Jan 20 06:34:41 IST 2021.
flashdancehostname06: 20210120063441: (mirror_utility.pl) Retrieving the current boot disk.
flashdancehostname06: 20210120063441: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
flashdancehostname06: 20210120063442: (mirror_utility.pl) Found boot disk is hdisk0.
flashdancehostname06: 20210120063442: (mirror_utility.pl) Retrieving disk statistics for volume groups.
flashdancehostname06: 20210120063442: (mirror_utility.pl) Retrieving Internal Disks.
flashdancehostname06: 20210120063442: (mirror_utility.pl) Retrieving Free Disks.
flashdancehostname06: 20210120063443: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hdisk0 -g menu.
flashdancehostname06: 20210120063443: (mirror_utility.pl) Running cmd lspv -l hdisk0.
flashdancehostname06: 20210120063443: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blvset -d /dev/hdisk1 -g menu.
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
flashdancehostname06: 20210120063443: (mirror_utility.pl) Running cmd lspv -l hdisk1.
flashdancehostname06: 20210120063443: (mirror_utility.pl) Retrieving lv stats for rootvg.
flashdancehostname06: 20210120063443: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
flashdancehostname06: 20210120063443: (mirror_utility.pl) Determining rootvg status.
flashdancehostname06: 20210120063443: (mirror_utility.pl) Attempting to restore rootvg mirror.
flashdancehostname06: 20210120063443: (mirror_utility.pl) Running command 'alt_disk_install -X altinst_rootvg'.
flashdancehostname06: 20210120063446: (mirror_utility.pl) Running command 'bosboot -a'.
flashdancehostname06: 20210120063502: (mirror_utility.pl) Running command 'bootlist -m normal hdisk0'.
flashdancehostname06: 20210120063502: (mirror_utility.pl) Retrieving the current boot disk.
flashdancehostname06: 20210120063502: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
flashdancehostname06: 20210120063502: (mirror_utility.pl) Found boot disk is hdisk0.
flashdancehostname06: 20210120063502: (mirror_utility.pl) Retrieving disk statistics for volume groups.
flashdancehostname06: 20210120063503: (mirror_utility.pl) Retrieving Internal Disks.
flashdancehostname06: 20210120063503: (mirror_utility.pl) Retrieving Free Disks.
flashdancehostname06: 20210120063503: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk0 -g menu.
flashdancehostname06: 20210120063503: (mirror_utility.pl) Running cmd lspv -l hdisk0.
flashdancehostname06: 20210120063503: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk1 -g menu.
flashdancehostname06: 20210120063503: (mirror_utility.pl) Running cmd lspv -l hdisk1.
flashdancehostname06: 20210120063503: (mirror_utility.pl) Retrieving lv stats for rootvg.
flashdancehostname06: 20210120063503: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
flashdancehostname06: 20210120063504: (mirror_utility.pl) Determining rootvg status.
flashdancehostname06: 20210120063504: (mirror_utility.pl) Running command 'extendvg -f rootvg hdisk1'.
flashdancehostname06: 20210120063504: (mirror_utility.pl) Retrieving the current boot disk.
flashdancehostname06: 20210120063504: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
flashdancehostname06: 20210120063505: (mirror_utility.pl) Found boot disk is hdisk0.
flashdancehostname06: 20210120063505: (mirror_utility.pl) Retrieving disk statistics for volume groups.
flashdancehostname06: 20210120063505: (mirror_utility.pl) Retrieving Internal Disks.
flashdancehostname06: 20210120063505: (mirror_utility.pl) Retrieving Free Disks.
flashdancehostname06: 20210120063505: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk0 -g menu.
flashdancehostname06: 20210120063505: (mirror_utility.pl) Running cmd lspv -l hdisk0.
flashdancehostname06: 20210120063506: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk1 -g menu.
flashdancehostname06: 20210120063506: (mirror_utility.pl) Running cmd lspv -l hdisk1.
flashdancehostname06: 20210120063506: (mirror_utility.pl) Retrieving lv stats for rootvg.
flashdancehostname06: 20210120063506: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
flashdancehostname06: 20210120063506: (mirror_utility.pl) Determining rootvg status.
flashdancehostname06: 20210120063506: (mirror_utility.pl) Running command 'mirrorvg rootvg hdisk1'.
flashdancehostname06: 20210120093155: (mirror_utility.pl) Retrieving the current boot disk.
flashdancehostname06: 20210120093155: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
flashdancehostname06: 20210120093155: (mirror_utility.pl) Found boot disk is hdisk0.
flashdancehostname06: 20210120093155: (mirror_utility.pl) Retrieving disk statistics for volume groups.
flashdancehostname06: 20210120093155: (mirror_utility.pl) Retrieving Internal Disks.
flashdancehostname06: 20210120093156: (mirror_utility.pl) Retrieving Free Disks.
flashdancehostname06: 20210120093156: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk0 -g menu.
flashdancehostname06: 20210120093156: (mirror_utility.pl) Running cmd lspv -l hdisk0.
flashdancehostname06: 20210120093156: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk1 -g menu.
flashdancehostname06: 20210120093156: (mirror_utility.pl) Running cmd lspv -l hdisk1.
flashdancehostname06: 20210120093156: (mirror_utility.pl) Retrieving lv stats for rootvg.
flashdancehostname06: 20210120093156: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
flashdancehostname06: 20210120093156: (mirror_utility.pl) Determining rootvg status.
flashdancehostname06: 20210120093157: (mirror_utility.pl) Running command 'bosboot -a'.
flashdancehostname06: 20210120093215: (mirror_utility.pl) Running command 'bootlist -m normal hdisk0 hdisk1'.
flashdancehostname06: 20210120093215: (mirror_utility.pl) Retrieving the current boot disk.
flashdancehostname06: 20210120093215: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
flashdancehostname06: 20210120093215: (mirror_utility.pl) Found boot disk is hdisk0.
flashdancehostname06: 20210120093216: (mirror_utility.pl) Retrieving disk statistics for volume groups.
flashdancehostname06: 20210120093216: (mirror_utility.pl) Retrieving Internal Disks.
flashdancehostname06: 20210120093216: (mirror_utility.pl) Retrieving Free Disks.
flashdancehostname06: 20210120093216: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk0 -g menu.
flashdancehostname06: 20210120093216: (mirror_utility.pl) Running cmd lspv -l hdisk0.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk1 -g menu.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Running cmd lspv -l hdisk1.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Retrieving lv stats for rootvg.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Determining rootvg status.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Retrieving the current boot disk.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Running command 'getconf -a | grep "^BOOT_DEVICE" | cut -d: -f2'.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Found boot disk is hdisk0.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Retrieving disk statistics for volume groups.
flashdancehostname06: 20210120093217: (mirror_utility.pl) Retrieving Internal Disks.
flashdancehostname06: 20210120093218: (mirror_utility.pl) Retrieving Free Disks.
flashdancehostname06: 20210120093218: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk0 -g menu.
flashdancehostname06: 20210120093218: (mirror_utility.pl) Running cmd lspv -l hdisk0.
flashdancehostname06: 20210120093218: (mirror_utility.pl) Running cmd /usr/lpp/bosinst/blrset -d /dev/hdisk1 -g menu.
flashdancehostname06: 20210120093218: (mirror_utility.pl) Running cmd lspv -l hdisk1.
flashdancehostname06: 20210120093218: (mirror_utility.pl) Retrieving lv stats for rootvg.
flashdancehostname06: 20210120093218: (mirror_utility.pl) Running command lsvg -l rootvg with paging filter.
flashdancehostname06: 20210120093218: (mirror_utility.pl) Determining rootvg status.
flashdancehostname06: 20210120_093218 (flashdancehostname06:mirror_utility.sh): Starting date: Wed Jan 20 06:34:41 IST 2021
Ending Date: Wed Jan 20 09:32:18 IST 2021.
flashdancehostname06: 20210120_093219 (flashdancehostname06:mirror_utility.sh): mirror_utility.sh completed with rc=0.
...
```

### 5. Command: Verify the status of rootvg on all the hosts.

## STAGE 8 - CORE NODES update in DOWNTIME window

```
dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/mirror_utility.sh -action query -statustype rootvg_mirrored | grep -i Value' | sort
```

### Example Output:

```
$ dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/mirror_utility.sh -action query -statustype rootvg_mirrored | grep -i Value' | sort
flashdancehostname01: 20210120233307: (mirror_utility.pl) Value: True.
flashdancehostname02: 20210120233307: (mirror_utility.pl) Value: True.
flashdancehostname03: 20210120233307: (mirror_utility.pl) Value: True.
flashdancehostname04: 20210120233307: (mirror_utility.pl) Value: True.
flashdancehostname05: 20210120233307: (mirror_utility.pl) Value: True.
flashdancehostname06: 20210120233307: (mirror_utility.pl) Value: True.
flashdancehostname07: 20210120233307: (mirror_utility.pl) Value: True.
```

6. Command: Checking stdout output is a challenge. Each host will have a separate set of stdout and stderr logfiles in /BCU\_share/support/FP8\_FP4/log.

```
ls -lrt /BCU_share/support/FP8_FP4/log | tail -14
```

### Example Output:

```
$ ls -lrt /BCU_share/support/FP8_FP4/log | tail -14
-rw-r--r-- 1 root system 3503 Jan 20 06:35 mirror_utility.sh_flashdancehostname01_20210120_063441.log
-rw-r--r-- 1 root system 3503 Jan 20 06:35 mirror_utility.sh_flashdancehostname05_20210120_063441.log
-rw-r--r-- 1 root system 3503 Jan 20 06:35 mirror_utility.sh_flashdancehostname06_20210120_063441.log
-rw-r--r-- 1 root system 3503 Jan 20 06:35 mirror_utility.sh_flashdancehostname02_20210120_063441.log
-rw-r--r-- 1 root system 11978 Jan 20 06:35 mirror_utility.sh_flashdancehostname03_20210120_063441.log.stderr
-rw-r--r-- 1 root system 11978 Jan 20 06:35 mirror_utility.sh_flashdancehostname04_20210120_063441.log.stderr
-rw-r--r-- 1 root system 11978 Jan 20 06:35 mirror_utility.sh_flashdancehostname02_20210120_063441.log.stderr
-rw-r--r-- 1 root system 11978 Jan 20 06:35 mirror_utility.sh_flashdancehostname01_20210120_063441.log.stderr
-rw-r--r-- 1 root system 11978 Jan 20 06:35 mirror_utility.sh_flashdancehostname06_20210120_063441.log.stderr
-rw-r--r-- 1 root system 11978 Jan 20 06:35 mirror_utility.sh_flashdancehostname05_20210120_063441.log.stderr
-rw-r--r-- 1 root system 12878 Jan 20 06:35 mirror_utility.sh_flashdancehostname07_20210120_063441.log.stderr
-rw-r--r-- 1 root system 3503 Jan 20 06:35 mirror_utility.sh_flashdancehostname03_20210120_063441.log
-rw-r--r-- 1 root system 3503 Jan 20 06:35 mirror_utility.sh_flashdancehostname04_20210120_063441.log
-rw-r--r-- 1 root system 3983 Jan 20 06:36 mirror_utility.sh_flashdancehostname07_20210120_063441.log
```

Using the timestamp `20210120_063441` as indicated look for success in the log files.

7. Command: Check the status of the Paging Space and System Dump logical volumes. The status depends on multiple factors and the outcome can vary based on those factors. The goal is to have two paging spaces (hd6 and paging00) that are mirrored, and two dump devices (hd7 and lg\_dumplv), one per rootvg hdisk member and both active. The output below shows 'flashdancehostname01' has two paging spaces that are both mirrored, 2 sysdump devices, one is mirrored and one is not, and only one is active. It also shows the other hosts have the same set of mirrored paging spaces, two unmirrored dump devices that are both active. What we can't see from this picture is whether the non-mirrored logical volumes are on separate disks. During re-mirror operations active sysdump devices are not mirrored so it is likely that both are on the same disk.

```
dsh -n ${ALL} 'lsvg -l rootvg | egrep -i "paging|sysdump"' | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} 'lsvg -l rootvg | egrep -i "paging|sysdump"' | dshbak -c
HOSTS -----
flashdancehostname01
-----
hd6          paging      64      128      2      open/syncd  N/A
lg_dumplv    sysdump      7        7        1      open/syncd  N/A
hd7          sysdump      3        6        2      closed/syncd N/A
paging00     paging      64      128      2      open/syncd  N/A

HOSTS -----
flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05, flashdancehostname06,
flashdancehostname07
-----
hd6          paging      64      128      2      open/syncd  N/A
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
paging00          paging      64      128      2      open/syncd      N/A
lg_dump1v         sysdump     7        7        1      open/syncd      N/A
hd7               sysdump     3        3        1      open/syncd      N/A

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/support/FP8_FP4/log
$ dsh -n ${ALL} ' sysdumpdev -l' | dshbak -c
HOSTS -----
flashdancehostname01
-----
primary           /dev/1g_dump1v
secondary         /dev/sysdumpnull
copy directory    /var/adm/ras
forced copy flag  TRUE
always allow dump FALSE
dump compression  ON
type of dump      fw-assisted
full memory dump  disallow

HOSTS -----
flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05, flashdancehostname06,
flashdancehostname07
-----
primary           /dev/1g_dump1v
secondary         /dev/hd7
copy directory    /var/adm/ras
forced copy flag  TRUE
always allow dump FALSE
dump compression  ON
type of dump      fw-assisted
full memory dump  disallow
```

### 8. Correct issues with the secondary dump devices.

- Command: Check the status of hd7 and lg\_dump1v. lg\_dump1v should be assigned to the first hdisk, normally hdisk0, and hd7 should be assigned to the second hdisk, normally hdisk1. After re-mirror the expectation is that both will be assigned to hdisk0. If a secondary disk is not specified, then hd7 will be mirrored.

```
dsh -n ${ALL} 'lslv -l lg_dump1v;lslv -l hd7' | dshbak -c
```

#### Example Output:

```
$ dsh -n ${ALL} 'lslv -l lg_dump1v;lslv -l hd7' | dshbak -c
HOSTS -----
flashdancehostname01
-----
lg_dump1v:N/A
PV          COPIES      IN BAND      DISTRIBUTION
hdisk0      007:000:000    100%         000:007:000:000:000
hd7:N/A
PV          COPIES      IN BAND      DISTRIBUTION
hdisk0      003:000:000    100%         000:003:000:000:000
hdisk1      003:000:000    100%         000:003:000:000:000

HOSTS -----
flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05, flashdancehostname06,
flashdancehostname07
-----
lg_dump1v:N/A
PV          COPIES      IN BAND      DISTRIBUTION
hdisk0      007:000:000    100%         000:007:000:000:000
hd7:N/A
PV          COPIES      IN BAND      DISTRIBUTION
hdisk0      003:000:000    100%         000:003:000:000:000
```

- Command: If a host has a mirrored hd7, then address that host first. In the above output, flashdancehostname has hd7 on hdisk0 and hdisk1. Since lg\_dump1v is already defined on hdisk0, the goal is to remove hdisk0 from hd7 on that host.

```
ssh flashdancehostname01 'time rmlvcopy hd7 1 hdisk0'
```

#### Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /
$ ssh flashdancehostname01 'time rmlvcopy hd7 1 hdisk0'
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
real    0m1.55s
user    0m0.08s
sys     0m0.05s
```

- ii. Command: If a host has hd7 on hdisk0 only, then move hd7 to the other hdisk in the rootvg mirror. The following command will determine the first and second hdisks for rootvg. It will then check to see if hd7 is located on the first disk in bootlist, and if so, will run the migratepv command to move hd7 to the second disk.

```
dsh -n ${ALL} 'm="" ; i=1 ; d1="" ; d2="" ; lvds=$(lslv -l hd7 | grep hdisk | while read a b ; do echo $a ; done) ; bootlist -m normal -o | while read hd rest ; do eval "d${i}=${hd}" ; ((i=i+1)) ; done ; echo "${lvds}" | grep ${d1} && migratepv -l hd7 ${d1} ${d2}'
```

Example Output:

```
$ dsh -n ${ALL} 'm="" ; i=1 ; d1="" ; d2="" ; lvds=$(lslv -l hd7 | grep hdisk | while read a b ; do echo $a ; done) ; bootlist -m normal -o | while read hd rest ; do eval "d${i}=${hd}" ; ((i=i+1)) ; done ; echo "${lvds}" | grep ${d1} && migratepv -l hd7 ${d1} ${d2}'
flashdancehostname06: hdisk0
flashdancehostname07: hdisk0
flashdancehostname02: hdisk0
flashdancehostname04: hdisk0
flashdancehostname05: hdisk0
flashdancehostname03: hdisk0
```

- iii. Command: Recheck the logical volume assignments.

```
dsh -n ${ALL} 'lslv -l lg_dump1v ; lslv -l hd7' | dshbak -c
```

Example Output:

```
$ dsh -n ${ALL} 'lslv -l lg_dump1v ; lslv -l hd7' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06
-----
lg_dump1v:N/A
PV          COPIES      IN BAND      DISTRIBUTION
hdisk0      007:000:000    100%         000:007:000:000:000
hd7:N/A
PV          COPIES      IN BAND      DISTRIBUTION
hdisk1      003:000:000    100%         000:003:000:000:000

HOSTS -----
flashdancehostname07
-----
lg_dump1v:N/A
PV          COPIES      IN BAND      DISTRIBUTION
hdisk0      007:000:000    100%         000:007:000:000:000
hd7:N/A
PV          COPIES      IN BAND      DISTRIBUTION
hdisk2      003:000:000    100%         000:003:000:000:000
```

## 9. Check the status of the dump devices.

- a. Command: Rerun sysdumpdev on all hosts. In the scenario only flashdancehostname01 does not have a secondary device.

```
dsh -n ${ALL} 'sysdumpdev -l' | dshbak -c
```

Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
$ dsh -n ${ALL} 'sysdumpdev -l' | dshbak -c
HOSTS -----
flashdancehostname01
-----
primary      /dev/lg_dump1v
secondary    /dev/sysdumpnull
copy directory /var/adm/ras
forced copy flag TRUE
always allow dump FALSE
dump compression ON
type of dump fw-assisted
```

## STAGE 8 - CORE NODES update in DOWNTIME window

```
full memory dump      disallow

HOSTS -----
flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05, flashdancehostname06,
flashdancehostname07
-----
primary                /dev/lg_dumplv
secondary              /dev/hd7
copy directory         /var/adm/ras
forced copy flag       TRUE
always allow dump      FALSE
dump compression       ON
type of dump           fw-assisted
full memory dump       disallow
```

- b. Command: Run the following command to update the secondary device on hosts where it is no longer set. On hosts where it is set it will show a 'secondary' line, if it is not yet set it will show the output of the sysdumpdev command.

```
dsh -n ${ALL} ' sysdumpdev -l | grep secondary | grep hd7 || sysdumpdev -Ps /dev/hd7' | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} ' sysdumpdev -l | grep secondary | grep hd7 || sysdumpdev -Ps /dev/hd7' | dshbak -c
HOSTS -----
flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05, flashdancehostname06,
flashdancehostname07
-----
secondary              /dev/hd7

HOSTS -----
flashdancehostname01
-----
primary                /dev/lg_dumplv
secondary              /dev/hd7
copy directory         /var/adm/ras
forced copy flag       TRUE
always allow dump      FALSE
dump compression       ON
type of dump           fw-assisted
full memory dump       disallow
```

- c. Command: Recheck the dump devices.

```
dsh -n ${ALL} ' sysdumpdev -l' | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} ' sysdumpdev -l' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
primary                /dev/lg_dumplv
secondary              /dev/hd7
copy directory         /var/adm/ras
forced copy flag       TRUE
always allow dump      FALSE
dump compression       ON
type of dump           fw-assisted
full memory dump       disallow
```

## STAGE 9: Completing the fixpack

### Steps/Phases

- Phase 1: Updating the appliance catalog.
- Phase 2: Remove Obsolete Java Levels
- Phase 3: Remove DPM
- Phase 4: Remove Db2 on the management hosts.
- Phase 5: Verifying the Fixpack
- Phase 6: Cleanup

### Outage Requirements

- There are no outage requirements for this stage.

### Time Per Step

- Phase 1: 10 Minutes
- Phase 2: 20 Minutes
- Phase 3: 20 Minutes
- Phase 4: 20 Minutes
- Phase 5: 20 Minutes
- Phase 6: 30 Minutes

### Risk Mitigation

- No risk mitigation needed.

### Backout Options

- No backout option available.

## Phase 1: Update the appliance catalog

While the appliance console is removed and the fixpack was not registered as in previous fixpacks, it is possible and necessary to update the appliance catalog. After the system is updated the following commands will show the compliance status of the fixpack.

1. Command: Verify the catalog command shows no updates.

```
appl_ls_cat
```

Example Output:

```
V1.1:
$ appl_ls_cat
NAME                                VERSION                STATUS                DESCRIPTION
bwr0                                4.0.4.0                Committed             Updates for
IBM_PureData_System_for_Operational_Analytics
bwr1                                4.0.5.0                Committed             Updates for
IBM_PureData_System_for_Operational_Analytics_DB2105
bwr2                                4.0.7.0                Committed             Updates for
IBM_PureData_System_for_Operational_Analytics
```

2. Command: Find the catalog directory.

```
cd /BCU_share/FP8_FP4/fixpack_tools/catalog
```

3. Command: Generate the FP7\_FP3\_odm.add file.

```
./apply_catalog.sh > apply_catalog.$(date +%s).out 2>&1
```

4. Command: Check that the odm records are generated.

```
egrep "_Record" FP8_FP4_odm.add | sort | uniq -c | sort -n
```

Example Output:

```
$ egrep "_Record" FP8_FP4_odm.add | sort | uniq -c | sort -n
  1 Solution_Record:
  8 Module_Record:
 16 Product_Record:
```

5. Command: Apply the records.

```
./odm_add.sh
```

6. Command: Check the catalog again. Version 4.0.8.0 should appear in the output.

```
appl_ls_cat
```

Example Output:

```
$ appl_ls_cat
NAME                                VERSION                STATUS                DESCRIPTION
bwr0                                4.0.4.0                Committed             Updates for IBM_PureData_System_for_Operational_Analytics
bwr1                                4.0.5.0                Committed             Updates for IBM_PureData_System_for_Operational_Analytics_DB2105
bwr2                                4.0.7.0                Committed             Updates for IBM_PureData_System_for_Operational_Analytics
bwr3                                4.0.8.0                Committed             Updates for IBM_PureData_System_for_Operational_Analytics
```

7. Command: Check the catalog for version 4.0.8.0.

```
appl_ls_cat -i | grep bwr | while read label rest;do echo "${label}:";appl_ls_cat -l $label;done
```

Example Output:

## STAGE 9: Completing the fixpack

```
$ appl_ls_cat -i | grep bwr | while read label rest;do echo "${label}:";appl_ls_cat -l $label;done
bwr4:
NAME                                VERSION                                STATUS                                OPERATION                            DESCRIPTION
pflayer4                            4.0.8.0                                Committed                            manage                               IBM_Smart_Analytics_Platform_Layer
db28                                10.5.0.11..2                            Committed                            manage                               DB2_Enterprise_Edition
db29                                11.1.4.5..4                            Committed                            manage                               DB2_Enterprise_Edition
tsa4                                4.1.0.6                                Committed                            manage
Tivoli_Systems_Automation_for_Multi-Platforms_Update_4.1.0.6
aix4                                7100-05-07-2038                            Committed                            manage                               AIX_Update
hmc5                                9.1.942                                Committed                            manage                               HMC_Update
pfl0                                SV860_226                                Committed                            manage                               PFW_Update
fcadapterfw4                        0325080271                            Committed                            install                             FCAdapterFW_EN0Y_Update
fcadapterfw5                        210313                                Committed                            install                             FCAdapterFW_5273_Update
netadapterfw7                      30100310                            Committed                            manage                               NetAdapterFW_EN0S_Update
gpfs4                              5.0.5.4                                Committed                            manage                               GPFS
storagefw8                        8.2.1.11                            Committed                            manage                               StorageFW_Update
storagefw9                        1.5.2.7                                Committed                            manage                               StorageFW_Update
sanfw4                             v7.4.2e                                Committed                            manage                               SANFW_Update
netfw5                             7.11.19.0                            Committed                            manage                               NetFW_Update
ha_db22                            2.0.8.1                                Committed                            manage                               IBM_Smart_Analytics_HA_toolkit
```

## Phase 2: Remove Obsolete Java Levels

1. Command: Determine if any java programs are currently running on the system using system installed java levels.

```
dsh -n ${ALL} 'ps -ef | grep "/usr/java" | grep -v grep'
```

2. Command: Determine if any third party components are using java. This step may require some investigation to determine if any additional tools require Java5 or Java6 levels.

Determine which java levels are defined in the environment as the default java version.

```
dsh -n ${ALL} 'grep java /etc/environment'
```

Example Output:

```
$ dsh -n ${ALL} 'grep java /etc/environment'
flashdancehostname01:
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/usr/java5/jre/bin:/usr/java5/bin:/usr/lpp/htx/etc/scripts:/test/tools:/usr/lpp/htx/test/tools:/home/monitor/test/tools:/nim/build_net/tools:/usr/lpp/htx/etc/scripts:/opt/ibm/director/bin
flashdancehostname02:
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/usr/java5/jre/bin:/usr/java5/bin:/usr/lpp/htx/etc/scripts:/test/tools:/usr/lpp/htx/test/tools:/home/monitor/test/tools:/nim/build_net/tools:/usr/lpp/htx/etc/scripts
flashdancehostname03:
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/usr/java5/jre/bin:/usr/java5/bin:/usr/lpp/htx/etc/scripts:/test/tools:/usr/lpp/htx/test/tools:/home/monitor/test/tools:/nim/build_net/tools:/usr/lpp/htx/etc/scripts
flashdancehostname05:
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/usr/java5/jre/bin:/usr/java5/bin:/usr/lpp/htx/etc/scripts:/test/tools:/usr/lpp/htx/test/tools:/home/monitor/test/tools:/nim/build_net/tools:/usr/lpp/htx/etc/scripts
flashdancehostname06:
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/usr/java5/jre/bin:/usr/java5/bin:/usr/lpp/htx/etc/scripts:/test/tools:/usr/lpp/htx/test/tools:/home/monitor/test/tools:/nim/build_net/tools:/usr/lpp/htx/etc/scripts
flashdancehostname07:
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/usr/java5/jre/bin:/usr/java5/bin:/usr/lpp/htx/etc/scripts:/test/tools:/usr/lpp/htx/test/tools:/home/monitor/test/tools:/nim/build_net/tools:/usr/lpp/htx/etc/scripts
flashdancehostname04:
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/usr/java5/jre/bin:/usr/java5/bin:/usr/lpp/htx/etc/scripts:/test/tools:/usr/lpp/htx/test/tools:/home/monitor/test/tools:/nim/build_net/tools:/usr/lpp/htx/etc/scripts
```

The above shows that /usr/java5/jre/bin and /usr/java5/bin are the default java levels for the system. Note that users may override this PATH statement.

Note the paths /usr/lpp/htx/etc/scripts, /test/tools, /home/monitor/test/tools and /nim/build\_net/tools were incorrectly included as part of the original PDOA build outs and are not needed.

3. Command: Determine the default java version for root. PDOA was shipped with java5 32 bit as the default system java.

```
dsh -n ${ALL} 'which java'
```

Example Output:

```
$ dsh -n ${ALL} 'which java'
flashdancehostname01: /usr/java5/jre/bin/java
flashdancehostname03: /usr/java5/jre/bin/java
flashdancehostname04: /usr/java5/jre/bin/java
flashdancehostname06: /usr/java5/jre/bin/java
flashdancehostname05: /usr/java5/jre/bin/java
flashdancehostname07: /usr/java5/jre/bin/java
flashdancehostname02: /usr/java5/jre/bin/java
```

## STAGE 9: Completing the fixpack

4. Command: Check user profiles for indication of java levels. This may or may not work in all scenarios and only checks well known shell init scripts.

```
dsh -n ${ALL} 'lsuser -a home ALL | sed "s|.*home=||" | sort | uniq | while read x;do for i in .profile .bashrc .cshrc;do [ -f ${x}/${i} ] && grep java /dev/null ${x}/${i};done;done'
```

### Example Output:

```
$ dsh -n ${ALL} 'lsuser -a home ALL | sed "s|.*home=||" | sort | uniq | while read x;do for i in .profile .bashrc .cshrc;do [ -f ${x}/${i} ] && grep java /dev/null ${x}/${i};done;done'
flashdancehostname01: //.profile:export JAVA_HOME=/usr/java6_64
flashdancehostname01: //.profile:#export JAVA_HOME=/usr/java8_64
```

5. Command: Check for the all system Java levels. There are 8 System level Java packages installed, 4 versions each with a 32 and 64 bit version.

```
dsh -n ${ALL} 'lsdp -l "Java*.sdk" | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} 'lsdp -l "Java*.sdk" | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----
Fileset          Level  State  Description
-----
Path: /usr/lib/objrepos
Java5.sdk        5.0.0.620 COMMITTED Java SDK 32-bit
Java5_64.sdk     5.0.0.620 COMMITTED Java SDK 64-bit
Java6.sdk        6.0.0.655 COMMITTED Java SDK 32-bit
Java6_64.sdk     6.0.0.655 COMMITTED Java SDK 64-bit
Java7.sdk        7.0.0.665 COMMITTED Java SDK 32-bit Development
Kit
Java7_64.sdk     7.0.0.665 COMMITTED Java SDK 64-bit Development
Kit
Java8.sdk        8.0.0.610 COMMITTED Java SDK 32-bit Development
Kit
Java8_64.sdk     8.0.0.610 COMMITTED Java SDK 64-bit Development
Kit

Path: /etc/objrepos
Java5.sdk        5.0.0.620 COMMITTED Java SDK 32-bit
Java5_64.sdk     5.0.0.620 COMMITTED Java SDK 64-bit
Java6.sdk        6.0.0.655 COMMITTED Java SDK 32-bit
Java6_64.sdk     6.0.0.655 COMMITTED Java SDK 64-bit
```

6. Command: Verify the dependent packages. There should be no dependent packages outside of the Java6\_64 packages.

```
dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/remove_java56.sh' | dshbak -c
```

### Example Output:

```
$ dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/remove_java56.sh' | dshbak -c
HOSTS -----
flashdancehostname06
-----
20210121_090235 (flashdancehostname06:remove_java56.sh): Starting date: Thu Jan 21 09:02:35 IST 2021.
SUCCESES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java5.sdk 5.0.0.570 # Java SDK 32-bit

Dependents
-----
Filesets listed in this section depend on one or more of the selected
filesets (listed above) and, therefore, must also be removed.
Java5.msg.Ja_JP 5.0.0.175 # Java SDK 32-bit Locale/Messa...
Java5.msg.ja_JP 5.0.0.175 # Java SDK 32-bit Locale/Messa...
```

## STAGE 9: Completing the fixpack

```
<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java6.sdk 6.0.0.445                                # Java SDK 32-bit

<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java5_64.sdk 5.0.0.570                             # Java SDK 64-bit

<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java6_64.sdk 6.0.0.445                             # Java SDK 64-bit

Dependents
-----
Filesets listed in this section depend on one or more of the selected
filesets (listed above) and, therefore, must also be removed.
Java6_64.msg.Ja_JP 6.0.0.1                         # Java SDK 64-bit Locale/Messa...
Java6_64.msg.ja_JP 6.0.0.1                         # Java SDK 64-bit Locale/Messa...
Java6_64.msg.ko_KR 6.0.0.1                         # Java SDK 64-bit Locale/Messa...
Java6_64.msg.zh_CN 6.0.0.1                         # Java SDK 64-bit Locale/Messa...
Java6_64.msg.zh_TW 6.0.0.1                         # Java SDK 64-bit Locale/Messa...

<< End of Success Section >>

20210121_090236 (flashdancehostname06:remove_java56.sh): Starting date: Thu Jan 21 09:02:35 IST 2021   Ending Date: Thu Jan 21
09:02:36 IST 2021.

(0) root @ flashdancehostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/application
```

The output above is truncated to show only one host. Java6\_64 has dependencies which are only from the same package.

7. Command: Uninstall Java5/Java6 32 and 64 bit versions. If there are no dependencies, then uninstall these 4 Java versions.

```
dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/remove_java56.sh remove' | dshbak
```

### Example Output:

```
$ dsh -n ${ALL} '/BCU_share/FP8_FP4/fixpack_tools/application/remove_java56.sh remove' | dshbak -c
HOSTS -----
flashdancehostname01
-----
20210121_090708 (flashdancehostname01:remove_java56.sh): Starting date: Thu Jan 21 09:07:08 IST 2021.
SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java5.sdk 5.0.0.570                                # Java SDK 32-bit

Dependents
-----
Filesets listed in this section depend on one or more of the selected
filesets (listed above) and, therefore, must also be removed.
Java5.msg.Ja_JP 5.0.0.175                          # Java SDK 32-bit Locale/Messa...
Java5.msg.ja_JP 5.0.0.175                          # Java SDK 32-bit Locale/Messa...
```

## STAGE 9: Completing the fixpack

```
<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java6.sdk 6.0.0.445                                # Java SDK 32-bit

<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java5_64.sdk 5.0.0.570                                # Java SDK 64-bit

<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java6_64.sdk 6.0.0.535                                # Java SDK 64-bit

Dependents
-----
Filesets listed in this section depend on one or more of the selected
filesets (listed above) and, therefore, must also be removed.
Java6_64.ext.commpi 6.0.0.1                            # Java SDK 64-bit Comm API Ext...
Java6_64.msg.Ja_JP 6.0.0.1                            # Java SDK 64-bit Locale/Messa...
Java6_64.msg.Zh_CN 6.0.0.1                            # Java SDK 64-bit Locale/Messa...
Java6_64.msg.Zh_TW 6.0.0.1                            # Java SDK 64-bit Locale/Messa...
Java6_64.msg.ja_JP 6.0.0.1                            # Java SDK 64-bit Locale/Messa...
Java6_64.msg.ko_KR 6.0.0.1                            # Java SDK 64-bit Locale/Messa...
Java6_64.msg.zh_CN 6.0.0.1                            # Java SDK 64-bit Locale/Messa...
Java6_64.msg.zh_TW 6.0.0.1                            # Java SDK 64-bit Locale/Messa...
Java6_64.samples.demo 6.0.0.535                       # Java SDK 64-bit Demo Samples
Java6_64.samples.jnlp 6.0.0.535                       # Java SDK 64-bit jnlp Samples
Java6_64.source 6.0.0.535                             # Java SDK 64-bit Source

<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java5.sdk 5.0.0.570                                # Java SDK 32-bit

Dependents
-----
Filesets listed in this section depend on one or more of the selected
filesets (listed above) and, therefore, must also be removed.
Java5.msg.Ja_JP 5.0.0.175                             # Java SDK 32-bit Locale/Messa...
Java5.msg.ja_JP 5.0.0.175                             # Java SDK 32-bit Locale/Messa...

<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java6.sdk 6.0.0.445                                # Java SDK 32-bit

<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java5_64.sdk 5.0.0.570                                # Java SDK 64-bit
```

## STAGE 9: Completing the fixpack

```
<< End of Success Section >>

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
Java6_64.sdk 6.0.0.535                # Java SDK 64-bit
Dependents
-----
Filesets listed in this section depend on one or more of the selected
filesets (listed above) and, therefore, must also be removed.
Java6_64.ext.commapi 6.0.0.1          # Java SDK 64-bit Comm API Ext...
Java6_64.msg.Ja_JP 6.0.0.1            # Java SDK 64-bit Locale/Messa...
Java6_64.msg.Zh_CN 6.0.0.1           # Java SDK 64-bit Locale/Messa...
Java6_64.msg.Zh_TW 6.0.0.1           # Java SDK 64-bit Locale/Messa...
Java6_64.msg.ja_JP 6.0.0.1           # Java SDK 64-bit Locale/Messa...
Java6_64.msg.ko_KR 6.0.0.1           # Java SDK 64-bit Locale/Messa...
Java6_64.msg.zh_CN 6.0.0.1           # Java SDK 64-bit Locale/Messa...
Java6_64.msg.zh_TW 6.0.0.1           # Java SDK 64-bit Locale/Messa...
Java6_64.samples.demo 6.0.0.535      # Java SDK 64-bit Demo Samples
Java6_64.samples.jnlp 6.0.0.535      # Java SDK 64-bit jnlp Samples
Java6_64.source 6.0.0.535            # Java SDK 64-bit Source

<< End of Success Section >>

20210121_090844 (flashdancehostname01:remove_java56.sh): Starting date: Thu Jan 21 09:07:08 IST 2021   Ending Date: Thu Jan 21
09:08:44 IST 2021.
```

### 8. Command: Recheck the list of packages. Only Java7 and Java8 should exit.

```
dsh -n ${ALL} 'lsipp -l "Java*.sdk"' | dshbak -c
```

#### Example Output:

```
$ dsh -n ${ALL} 'lsipp -l "Java*.sdk"' | dshbak -c
HOSTS -----
flashdancehostname01, flashdancehostname02, flashdancehostname03, flashdancehostname04, flashdancehostname05,
flashdancehostname06, flashdancehostname07
-----


| Fileset                 | Level     | State     | Description                     |
|-------------------------|-----------|-----------|---------------------------------|
| Path: /usr/lib/objrepos |           |           |                                 |
| Java7.sdk               | 7.0.0.665 | COMMITTED | Java SDK 32-bit Development Kit |
| Java7_64.sdk            | 7.0.0.665 | COMMITTED | Java SDK 64-bit Development Kit |
| Java8.sdk               | 8.0.0.610 | COMMITTED | Java SDK 32-bit Development Kit |
| Java8_64.sdk            | 8.0.0.610 | COMMITTED | Java SDK 64-bit Development Kit |


```

### 9. Update /etc/environment on all hosts to reflect a new path to a system level java if desired. Do this one host at a time. Note also cleanup unneeded PDOA deployment paths that do not exist on the system. Also note that any existing sessions (or applications launched from those sessions) will not reflect the new environment path (if used) until they are restarted.

```
$ cp /etc/environment /etc/environment.FP8_FP4_$(date +%Y%m%d_%H%M%S).bak
$ diff /etc/environment /etc/environment.FP8_FP4_20210121_091312.bak
56c56
< PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/usr/java8/jre/bin:/usr/java8/bin:
---
>
PATH=/usr/bin:/etc:/usr/sbin:/usr/ucb:/usr/bin/X11:/sbin:/usr/java5/jre/bin:/usr/java5/bin:/usr/lpp/htx/etc/scripts:/test/tools:/usr/lpp/htx/test/tools:/home/monitor/test/tools:/nim/build_net/tools:/usr/lpp/htx/etc/scripts:/opt/ibm/director/bin

$ ssh flashdancehostname01 which java
/usr/java8/jre/bin/java
```

## Phase 3 Remove DPM

DPM is no longer supported and has been deprecated since V1.1 FP1. Also Adobe Flash is no longer supported and will fail as of the start of 2021.

This section will help remove DPM. There is no official replacement that can be installed on the PDOA environment; however, you may wish to obtain the IBM Db2 Data Management Console (see <https://www.ibm.com/products/db2-data-management-console>) and install it on an outside server which provides similar functionality. This product cannot be installed on any server in PDOA as it does not support AIX 7.1.

DPM, as well as its database, and home directory is installed on the GPFS filesystem /opmfs and is not protected by mksysb or cloned rootvg. If there is any doubt about the need for DPM, please contact IBM Support for guidance.

These instructions are based on those found in the opm installation guide, page 40 in the English version readme, in this link: <https://www.ibm.com/support/pages/installation-guide-optim-performance-manager-version-41>

1. Ensure you are using a root session via vtmenu or screen on the management host.
2. Command: Verify whether DPM is running. If WAS and WASAPP appear in the hals output below stop and contact IBM for help to remove Warehouse Tools.

```
hals -mgmt
```

Example Output: if the domain is online and DPM and DB2DPM are running. Goto 5 to stop DPM.

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
=====+=====+=====+=====+=====+=====+=====+
```

Example Output: if the domain is online but DPM and DB2DPM is not running. Goto 4 to start DB2DPM.

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
=====+=====+=====+=====+=====+=====+=====+
| DPM       | kf5hostname01 | N/A | N/A | Offline | Offline | - |
| DB2DPM    | kf5hostname01 | N/A | N/A | Offline | Offline | - |
=====+=====+=====+=====+=====+=====+=====+
```

Example Output: if the management domain is not running. Goto 3 to start the domain.

```
$ hals -mgmt
none are available... returning
```

3. If 'none are available ... returning' then start the management domain and check the status. Then goto 4 to start DB2DPM.
  - a. Command: Start the management domain.

```
$ hadomain -mgmt start
```

## STAGE 9: Completing the fixpack

- b. Command: Verify the domain is online.

```
hals -mgmt
```

Example Output:

```
$ hals -mgmt
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| DPM       | kf5hostname01 | N/A | N/A | Offline | Offline | - |
| DB2DPM    | kf5hostname01 | N/A | N/A | Offline | Offline | - |
|-----+-----+-----+-----+-----+-----+-----+
```

4. Command: Start DB2DPM if it is not running. Goto 6.

```
hastartdpm -db2only
```

Example Output:

```
$ hastartdpm -db2only
Starting DB2 instance.....Resources online
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| DPM       | kf5hostname01 | N/A | N/A | Offline | Offline | - |
| DB2DPM    | kf5hostname01 | kf5hostname03 | kf5hostname01 | Online | Normal | - |
|-----+-----+-----+-----+-----+-----+-----+
```

5. Command: Stop DPM if it is running. This will only stop the DPM applications and will leave the db2opm instance running.

```
hastopdpm -dpmonly
```

Example Output:

```
$ hastopdpm -dpmonly
Stopping DPM.....Resources offline
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| DPM       | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
| DB2DPM    | flashdancehostname01 | flashdancehostname03 | flashdancehostname01 | Online | Normal | - |
|-----+-----+-----+-----+-----+-----+-----+
```

6. Change the current directory to /opmfs/IBM/OPM/uninstall

```
cd /opmfs/IBM/OPM/uninstall
```

7. Command: Remove the DPM application installation. This will leave the Db2 instance and database running. This is the last chance to keep DPM and its database. If there is any doubt, skip this step and contact IBM Support. This command is interactive. Hit <ENTER> to continue, 'Y' to unconfigure, and then '2' to proceed to the uninstall. This takes approximately 3 minutes.

```
./UninstallOptimPerformanceManager -i console
```

Example Output:

```
$ ./UninstallOptimPerformanceManager -i console
=====
IBM InfoSphere Optim Performance Manager          (created with InstallAnywhere)
=====
Preparing CONSOLE Mode Uninstallation...

=====
Uninstall IBM InfoSphere Optim Performance Manager
=====
```

## STAGE 9: Completing the fixpack

About to uninstall...

IBM InfoSphere Optim Performance Manager

This will remove features installed by InstallAnywhere. It will not remove files and directories created after the installation.

PRESS <ENTER> TO CONTINUE:

=====

Unconfigure IBM InfoSphere Optim Performance Manager

-----

Do you want to unconfigure InfoSphere Optim Performance Manager? If you unconfigure InfoSphere Optim Performance Manager, the repository database and all of the catalog entries for the monitored databases will be dropped.  
Unconfigure InfoSphere Optim Performance Manager (Y/N): Y

=====

IBM InfoSphere Optim Performance Manager

-----

Are you sure that you want to proceed with the uninstallation?

- >1- No
- 2- Yes

ENTER THE NUMBER OF THE DESIRED CHOICE, OR PRESS <ENTER> TO ACCEPT THE  
DEFAULT: 2

Unconfiguring IBM InfoSphere Optim Performance Manager...

=====|=====|=====|

=====

Uninstalling...

-----

...\*

\*

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...\*

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...\*

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=====

Uninstall Complete

-----

Some items could not be removed.

## STAGE 9: Completing the fixpack

```
(0) root @ flashdancehostname01: 7.1.0.0: /opmfs/IBM/OPM/uninstall
$
```

### 8. Verify the DPM Install directory is removed.

```
ls -la
```

#### Example Output:

```
$ ls -la
total 532
drwxr-xr-x  5 root    system    262144 Jan 22 01:45 .
drwxr-xr-x 53 root    system    8192 Jan 22 00:57 ..
drwxr-xr-x  2 root    system    4096 Jan 22 01:46 .flashdancehostname01
drwxr-xr-x  2 root    system    4096 Jan 22 01:46 .flashdancehostname03
-rw-r--r--  1 root    system      0 Jan 09 11:36 .mp_monitor
dr-xr-xr-x  2 root    system    8192 Jan 01 1970 .snapshots
drwxr-xr-x  4 root    system    4096 Jan 17 2020 home
```

### 9. Command: Verify that the DPM database still exists. This may show 'OPMDB' or 'PERFDB'.

```
su - db2opm -c 'db2 list database directory'
```

#### Example Output:

```
$ su - db2opm -c 'db2 list database directory'

System Database Directory

Number of entries in the directory = 1

Database 1 entry:

Database alias           = PERFDB
Database name            = PERFDB
Local database directory = /opmfs/home/db2opm
Database release level   = 10.00
Comment                  = IBM Optim Performance Manager
Directory entry type     = Indirect
Catalog database partition number = 0
Alternate server hostname =
Alternate server port number =
```

### 10. Drop the database. If you receive a SQL1035N error then deactivate the database and try again.

#### a. If the database name is PERFDB.

##### i. Command: Drop the database:

```
su - db2opm -c 'db2 drop database perfdb'
```

#### Example Output:

```
$ su - db2opm -c 'db2 drop database perfdb'
SQL1035N  The operation failed because the specified database cannot be
connected to in the mode requested.  SQLSTATE=57019
```

##### ii. Command: Deactivate the database.

```
su - db2opm -c 'db2 deactivate database perfdb'
```

#### Example Output:

```
$ su - db2opm -c 'db2 deactivate database perfdb'
DB20000I  The DEACTIVATE DATABASE command completed successfully.
```

##### iii. Command: Drop the database.

```
su - db2opm -c 'db2 drop database perfdb'
```

#### Example Output:

```
(0) root @ flashdancehostname01: 7.1.0.0: /opmfs
$ su - db2opm -c 'db2 drop database perfdb'
DB20000I  The DROP DATABASE command completed successfully.
```

## STAGE 9: Completing the fixpack

- b. If the database name is OPMDB.
  - i. Command: Drop the database:

```
su - db2opm -c 'db2 drop database opmdb'
```

Example Output:

```
$ su - db2opm -c 'db2 drop database opmdb'
```

SQL1035N The operation failed because the specified database cannot be connected to in the mode requested. SQLSTATE=57019

- ii. Command: Deactivate the database.

```
su - db2opm -c 'db2 deactivate database opmdb'
```

Example Output:

```
(4) root @ kf5hostname01: 7.1.0.0: /opmfs/IBM/OPM/uninstall
$ su - db2opm -c 'db2 deactivate database opmdb'
DB20000I The DEACTIVATE DATABASE command completed successfully.
```

- iii. Command: Drop the database.

```
su - db2opm -c 'db2 drop database opmdb'
```

Example Output:

```
(0) root @ kf5hostname01: 7.1.0.0: /opmfs/IBM/OPM/uninstall
$ su - db2opm -c 'db2 drop database opmdb'
DB20000I The DROP DATABASE command completed successfully.
```

11. Command: Stop the DPM Instance using hatools.

## hastopdpm

Example Output:

```

+-----+-----+-----+-----+-----+-----+-----+
| hastopdpm |
+-----+-----+-----+-----+-----+-----+-----+
| Stopping DPM and DB2 instance...Resources offline |
+-----+-----+-----+-----+-----+-----+-----+
| MANAGEMENT DOMAIN |
+-----+-----+-----+-----+-----+-----+-----+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
+-----+-----+-----+-----+-----+-----+-----+
| DPM | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
+-----+-----+-----+-----+-----+-----+-----+
| DB2DPM | flashdancehostname01 | N/A | N/A | Offline | Offline | - |
+-----+-----+-----+-----+-----+-----+-----+

```

12. Command: Drop the management domain.

```
rmrpdomain -f mgmtdomain
```

13. Command: Verify the domains are dropped. If domain appears Offline then repeat command until it no longer appears in the output.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} lsrpdomain
```

14. Command: Remove the db2opm instance.

```
/usr/IBM/dwe/mgmt_db2/V10.5/instance/db2idrop db2opm
```

Example Output:

```
$ /usr/IBM/dwe/mgmt_db2/V10.5/instance/db2idrop db2opm
DBI1446I The db2idrop command is running.
```

DB2 installation is being initialized.

```
Total number of tasks to be performed: 2
Total estimated time for all tasks to be performed: 305 second(s)
```

## STAGE 9: Completing the fixpack

```
Task #1 start
Description: Initializing instance list
Estimated time 5 second(s)
Task #1 end

Task #2 start
Description: Configuring DB2 instances
Estimated time 300 second(s)
Task #2 end

The execution completed successfully.

For more information see the DB2 installation log at
"/tmp/db2idrop.log.5702650".
DBI1070I  Program db2idrop completed successfully.
```

15. Command: Check the Db2 global registry on the management hosts. There will be one 'I' or Instance record on the management standby for db2opm.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/bin/db2greg -dump' | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/bin/db2greg -dump' | dshbak -c
HOSTS -----
flashdancehostname01
-----
S,DB2,9.7.0.4,/opt/ibm/director/db2,,,4,0,,1415885749,0
V,DB2GPRF,DB2SYSTEM,flashdancehostname01,/opt/ibm/director/db2,
V,DB2GPRF,DB2FCMCOMM,TCPIP4,/opt/ibm/director/db2,
V,DB2GPRF,DB2SYSTEM,flashdancehostname01,/usr/IBM/dwe/mgmt_db2/V10.5,
S,GPFS,4.2.3.19,/usr/lpp/mmfs,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608247634,0
S,TSA,4.1.0.5,/opt/IBM/tsamp,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608247634,0
S,RSCT,3.2.4.3,/usr/sbin/rsct,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608247634,0
S,DB2,10.5.0.11,/usr/IBM/dwe/mgmt_db2/V10.5,,,11,0,,1608247928,2

HOSTS -----
flashdancehostname03
-----
V,DB2GPRF,DB2SYSTEM,flashdancehostname03,/usr/IBM/dwe/mgmt_db2/V10.5,
V,DB2GPRF,DB2INSTDEF,dweadmin,/usr/IBM/dwe/db2/V11.1,
I,DB2,10.5.0.11,db2opm,/opmfs/home/db2opm/sqllib,1,0,/usr/IBM/dwe/mgmt_db2/V10.5,,
V,DB2GPRF,DB2INSTDEF,db2opm,/usr/IBM/dwe/mgmt_db2/V10.5,
S,GPFS,4.2.3.19,/usr/lpp/mmfs,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608243969,0
S,TSA,4.1.0.5,/opt/IBM/tsamp,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608243969,0
S,RSCT,3.2.4.3,/usr/sbin/rsct,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608243969,0
S,DB2,10.5.0.11,/usr/IBM/dwe/mgmt_db2/V10.5,,,11,0,,1608244324,2
```

16. Command: Remove the 'I' record for db2opm on the management standby host. This command will return an error on the management host and will remove the record on the management standby host. If re-run it will return an error on both hosts.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/instance/db2iset -d db2opm'
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/instance/db2iset -d db2opm'
flashdancehostname01: db2set MsgRC=1306, P1='', P2=''
```

17. Command: Verify that all 'I' records are removed.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/bin/db2greg -dump' | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/bin/db2greg -dump' | dshbak -c
HOSTS -----
flashdancehostname01
-----
S,DB2,9.7.0.4,/opt/ibm/director/db2,,,4,0,,1415885749,0
V,DB2GPRF,DB2SYSTEM,flashdancehostname01,/opt/ibm/director/db2,
V,DB2GPRF,DB2FCMCOMM,TCPIP4,/opt/ibm/director/db2,
V,DB2GPRF,DB2SYSTEM,flashdancehostname01,/usr/IBM/dwe/mgmt_db2/V10.5,
S,GPFS,4.2.3.19,/usr/lpp/mmfs,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608247634,0
S,TSA,4.1.0.5,/opt/IBM/tsamp,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608247634,0
S,RSCT,3.2.4.3,/usr/sbin/rsct,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608247634,0
S,DB2,10.5.0.11,/usr/IBM/dwe/mgmt_db2/V10.5,,,11,0,,1608247928,2
```

## STAGE 9: Completing the fixpack

```
HOSTS -----
flashdancehostname03
-----
V,DB2GPRF,DB2SYSTEM,flashdancehostname03,/usr/IBM/dwe/mgmt_db2/V10.5,
V,DB2GPRF,DB2INSTDEF,dweadmin,/usr/IBM/dwe/db2/V11.1,
S,GPFS,4.2.3.19,/usr/lpp/mmfs,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608243969,0
S,TSA,4.1.0.5,/opt/IBM/tsamp,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608243969,0
S,RSCT,3.2.4.3,/usr/sbin/rsct,DG_NOT_ALLOWED,DB2_INSTALLED,0,0,-,1608243969,0
S,DB2,10.5.0.11,/usr/IBM/dwe/mgmt_db2/V10.5,,,11,0,,1608244324,2
```

## Phase 4 Remove Db2 on the management hosts.

Db2 is no longer needed for PDOA services on the management host. All instances (db2opm, dweadmin, db2psc) have been removed. If in the future a database is required, the installation and configuration details will be provided. It is important to remove obsolete and unused software as it can lead to additional security vectors and more management.

1. Verify that there are no instance records on the management and management standby hosts. During testing the *dweadmin* instance may appear on the standby management host where it is easy to skip its removal as part of the V1.1 FP2 readme instructions.

- a. Command: The following command will show only the instance records in the db2 global registries on the admin and admin standby nodes.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/bin/db2greg -dump | grep "^I" | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/bin/db2greg -dump | grep "^I" | dshbak -c
HOSTS -----
kf5hostname03
-----
I,DB2,10.5.0.10,dweadmin,/usr/IBM/dwe/appserver_001/home/dweadmin/sqlllib,,1,0,/usr/IBM/dwe/mgmt_db2/V10.5,,
```

- b. Command: If the *dweadmin* instance exists remove it using the following command. The command should return no output.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/instance/db2iset -dr -i dweadmin' | dshbak -c
```

- c. Command: Verify there are no instance records. The command should return no output.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/bin/db2greg -dump | grep "^I" | dshbak -c
```

2. Command: Uninstall Db2 10.5 on the management hosts. Run as root on management in a screen or vtmenu session. This will take approximately 5 minutes.

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/install/db2_deinstall -a' | dshbak -c
```

Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} '/usr/IBM/dwe/mgmt_db2/V10.5/install/db2_deinstall -a' | dshbak -c
HOSTS -----
flashdancehostname01
-----
DBI1016I Program db2_deinstall is performing uninstallation. Please
wait.

The execution completed successfully.

For more information see the DB2 uninstallation log at
"/tmp/db2_deinstall.log.7406076".

HOSTS -----
flashdancehostname03
-----
DBI1016I Program db2_deinstall is performing uninstallation. Please
wait.

The execution completed successfully.

For more information see the DB2 uninstallation log at
"/tmp/db2_deinstall.log.3933100".
```

3. Command: Verify Db2 is uninstalled.

## STAGE 9: Completing the fixpack

```
dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'ls -la /usr/IBM/dwe/mgmt_db2/' | dshbak -c
```

### Example Output:

```
$ dsh -n ${BCUMGMT},${BCUMGMTSTDBY} 'ls -la /usr/IBM/dwe/mgmt_db2/' | dshbak -c
HOSTS -----
flashdancehostname01
-----
total 0
drwxr-xr-x  2 root    system    256 Jan 22 02:16 .
drwxr-xr-x  5 bin     bin       256 Oct 19 2016 ..

HOSTS -----
flashdancehostname03
-----
total 0
drwxr-xr-x  2 root    system    256 Jan 22 02:16 .
drwxr-xr-x  5 root    system    256 Oct 19 2016 ..

(0) root @ flashdancehostname01: 7.1.0.0: /opmfs
```

## Phase 5 Verifying the Fixpack

1. Command: Run the version display tool. Compare the versions.

```
/BCU_share/FP8_FP4/fixpack_tools/status/getVersionStatus.sh
```

### Example Output

```
$ /BCU_share/FP8_FP4/fixpack_tools/status/getVersionStatus.sh
```

| Stages | Name          | IP           | Hostname      | Type | Model            | Level           |
|--------|---------------|--------------|---------------|------|------------------|-----------------|
| 3      | hmc0          | 172.23.1.245 | kf5-hmc1      | 7042 | CR9              | 9.1.942         |
| 3      | hmc1          | 172.23.1.246 | kf5-hmc2      | 7042 | CR9              | 9.1.942         |
| 4      | storage0      | 172.23.1.204 | V7_00         | 2076 | 524              | 8.2.1.11        |
| 4      | storage1      | 172.23.1.205 | Flash_00      | 9840 | AE2              | 1.5.2.7         |
| 4      | storage2      | 172.23.1.206 | V7_01         | 2076 | 524              | 8.2.1.11        |
| 4      | storage3      | 172.23.1.207 | Flash_01      | 9840 | AE2              | 1.5.2.7         |
| 4      | storage4      | 172.23.1.208 | V7_02         | 2076 | 524              | 8.2.1.11        |
| 4      | storage5      | 172.23.1.209 | Flash_02      | 9840 | AE2              | 1.5.2.7         |
| 5      | san0          | 172.23.1.161 | san_switch1   |      | 40-1000569-13    | v7.4.2e         |
| 5      | san1          | 172.23.1.162 | san_switch2   |      | 40-1000569-13    | v7.4.2e         |
| 5      | san2          | 172.23.1.163 | san_switch3   |      | 40-1000569-13    | v7.4.2e         |
| 5      | san3          | 172.23.1.164 | san_switch4   |      | 40-1000569-13    | v7.4.2e         |
| 6,7    | server6       | 172.23.1.1   | kf5hostname01 | 8286 | 42A              | server_fsp0     |
| 6,7    | aix           |              |               |      |                  | 7100-05-07-2038 |
| 6,7    | gpfs          |              |               |      |                  | 5.0.5.4         |
| 6,7    | rsct          |              |               |      |                  | 3.2.5.2         |
| 6,7    | tsa           |              |               |      |                  | 4.1.0.6         |
| 6,7    | sisas0        |              |               |      | 53495351         | 19512b00        |
| 6,7    | net_adapter12 |              |               |      | e4148a1614109304 | 30100310        |
| 6,7    | net_adapter13 |              |               |      | e4148a1614109304 | 30100310        |
| 6,7    | fc_adapter22  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | fc_adapter23  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | server3       | 172.23.1.2   | kf5hostname02 | 8286 | 42A              | server_fsp0     |
| 6,7    | aix           |              |               |      |                  | 7100-05-07-2038 |
| 6,7    | gpfs          |              |               |      |                  | 5.0.5.4         |
| 6,7    | rsct          |              |               |      |                  | 3.2.5.2         |
| 6,7    | tsa           |              |               |      |                  | 4.1.0.6         |
| 6,7    | sisas0        |              |               |      | 53495351         | 19512b00        |
| 6,7    | db2           |              |               |      |                  | 10.5.0.10..0    |
| 6,7    | db2           |              |               |      |                  | 11.1.3.3.b.0    |
| 6,7    | db2           |              |               |      |                  | 11.1.4.4.a.2    |
| 6,7    | db2           |              |               |      | bcuaix           | 11.1.4.5..4     |
| 6,7    | net_adapter6  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7    | net_adapter7  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7    | fc_adapter10  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | fc_adapter11  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | fc_adapter12  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | fc_adapter13  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | server1       | 172.23.1.3   | kf5hostname03 | 8286 | 42A              | server_fsp1     |
| 6,7    | aix           |              |               |      |                  | 7100-05-07-2038 |
| 6,7    | gpfs          |              |               |      |                  | 5.0.5.4         |
| 6,7    | rsct          |              |               |      |                  | 3.2.5.2         |
| 6,7    | tsa           |              |               |      |                  | 4.1.0.6         |
| 6,7    | sisas0        |              |               |      | 53495351         | 19512b00        |
| 6,7    | net_adapter2  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7    | net_adapter3  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7    | fc_adapter4   |              |               |      | df1000f114100104 | 210313          |
| 6,7    | fc_adapter5   |              |               |      | df1000f114100104 | 210313          |
| 6,7    | server4       | 172.23.1.4   | kf5hostname04 | 8286 | 42A              | server_fsp1     |
| 6,7    | aix           |              |               |      |                  | 7100-05-07-2038 |
| 6,7    | gpfs          |              |               |      |                  | 5.0.5.4         |
| 6,7    | rsct          |              |               |      |                  | 3.2.5.2         |
| 6,7    | tsa           |              |               |      |                  | 4.1.0.6         |
| 6,7    | sisas0        |              |               |      | 53495351         | 19512b00        |
| 6,7    | db2           |              |               |      |                  | 10.5.0.10..0    |
| 6,7    | db2           |              |               |      |                  | 11.1.3.3.b.0    |
| 6,7    | db2           |              |               |      |                  | 11.1.4.4.a.2    |
| 6,7    | db2           |              |               |      | bcuaix           | 11.1.4.5..4     |
| 6,7    | net_adapter8  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7    | net_adapter9  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7    | fc_adapter14  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | fc_adapter15  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | fc_adapter16  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | fc_adapter17  |              |               |      | df1000f114100104 | 210313          |
| 6,7    | server0       | 172.23.1.5   | kf5hostname05 | 8284 | 22A              | server_fsp2     |
| 6,7    | aix           |              |               |      |                  | 7100-05-07-2038 |
| 6,7    | gpfs          |              |               |      |                  | 5.0.5.4         |
| 6,7    | rsct          |              |               |      |                  | 3.2.5.2         |

## STAGE 9: Completing the fixpack

|       |               |              |               |      |                  |                 |
|-------|---------------|--------------|---------------|------|------------------|-----------------|
| 6,7   | tsa           |              |               |      |                  | 4.1.0.6         |
| 6,7   | sisssas0      |              |               |      | 53495351         | 19512b00        |
| 6,7   | db2           |              |               |      |                  | 10.5.0.10..0    |
| 6,7   | db2           |              |               |      |                  | 11.1.3.3.b.0    |
| 6,7   | db2           |              |               |      |                  | 11.1.4.4.a.2    |
| 6,7   | db2           |              |               |      | bcuaix           | 11.1.4.5..4     |
| 6,7   | net_adapter0  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7   | net_adapter1  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7   | fc_adapter0   |              |               |      | 7710322514101e04 | 0325080271      |
| 6,7   | fc_adapter1   |              |               |      | 7710322514101e04 | 0325080271      |
| 6,7   | fc_adapter2   |              |               |      | 7710322514101e04 | 0325080271      |
| 6,7   | fc_adapter3   |              |               |      | 7710322514101e04 | 0325080271      |
| ----- |               |              |               |      |                  |                 |
| 6,7   | server5       | 172.23.1.6   | kf5hostname06 | 8284 | 22A              | server_fsp3     |
| 6,7   | aix           |              |               |      |                  | 7100-05-07-2038 |
| 6,7   | gpfs          |              |               |      |                  | 5.0.5.4         |
| 6,7   | rsct          |              |               |      |                  | 3.2.5.2         |
| 6,7   | tsa           |              |               |      |                  | 4.1.0.6         |
| 6,7   | sisssas0      |              |               |      | 53495351         | 19512b00        |
| 6,7   | db2           |              |               |      |                  | 10.5.0.10..0    |
| 6,7   | db2           |              |               |      |                  | 11.1.3.3.b.0    |
| 6,7   | db2           |              |               |      |                  | 11.1.4.4.a.2    |
| 6,7   | db2           |              |               |      | bcuaix           | 11.1.4.5..4     |
| 6,7   | net_adapter10 |              |               |      | e4148a1614109304 | 30100310        |
| 6,7   | net_adapter11 |              |               |      | e4148a1614109304 | 30100310        |
| 6,7   | fc_adapter18  |              |               |      | 7710322514101e04 | 0325080271      |
| 6,7   | fc_adapter19  |              |               |      | 7710322514101e04 | 0325080271      |
| 6,7   | fc_adapter20  |              |               |      | 7710322514101e04 | 0325080271      |
| 6,7   | fc_adapter21  |              |               |      | 7710322514101e04 | 0325080271      |
| ----- |               |              |               |      |                  |                 |
| 6,7   | server2       | 172.23.1.7   | kf5hostname07 | 8284 | 22A              | server_fsp4     |
| 6,7   | aix           |              |               |      |                  | 7100-05-07-2038 |
| 6,7   | gpfs          |              |               |      |                  | 5.0.5.4         |
| 6,7   | rsct          |              |               |      |                  | 3.2.5.2         |
| 6,7   | tsa           |              |               |      |                  | 4.1.0.6         |
| 6,7   | sisssas0      |              |               |      | 53495351         | 19512b00        |
| 6,7   | db2           |              |               |      |                  | 10.5.0.10..0    |
| 6,7   | db2           |              |               |      |                  | 11.1.3.3.b.0    |
| 6,7   | db2           |              |               |      |                  | 11.1.4.4.a.2    |
| 6,7   | db2           |              |               |      | bcuaix           | 11.1.4.5..4     |
| 6,7   | net_adapter4  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7   | net_adapter5  |              |               |      | e4148a1614109304 | 30100310        |
| 6,7   | fc_adapter6   |              |               |      | 7710322514101e04 | 0325080271      |
| 6,7   | fc_adapter7   |              |               |      | 7710322514101e04 | 0325080271      |
| 6,7   | fc_adapter8   |              |               |      | 7710322514101e04 | 0325080271      |
| 6,7   | fc_adapter9   |              |               |      | 7710322514101e04 | 0325080271      |
| ----- |               |              |               |      |                  |                 |
| 7     | server_fsp0   | Unsupported  | Unsupported   | 8286 | 42A              | SV860_226       |
| ----- |               |              |               |      |                  |                 |
| 7     | server_fsp1   | Unsupported  | Unsupported   | 8286 | 42A              | SV860_226       |
| ----- |               |              |               |      |                  |                 |
| 7     | server_fsp2   | Unsupported  | Unsupported   | 8284 | 22A              | SV860_226       |
| ----- |               |              |               |      |                  |                 |
| 7     | server_fsp3   | Unsupported  | Unsupported   | 8284 | 22A              | SV860_226       |
| ----- |               |              |               |      |                  |                 |
| 7     | server_fsp4   | Unsupported  | Unsupported   | 8284 | 22A              | SV860_226       |
| ----- |               |              |               |      |                  |                 |
| 8     | net3          | 172.23.1.251 | fcm_switch2   |      | G8264            | 7.11.19.0       |
| ----- |               |              |               |      |                  |                 |
| 8     | net2          | 172.23.1.252 | fcm_switch1   |      | G8264            | 7.11.19.0       |
| ----- |               |              |               |      |                  |                 |
| 8     | net1          | 172.23.1.253 | mgt_switch2   |      | G8052            | 7.11.19.0       |
| ----- |               |              |               |      |                  |                 |
| 8     | net0          | 172.23.1.254 | mgt_switch1   |      | G8052            | 7.11.19.0       |
| ----- |               |              |               |      |                  |                 |

2. Command: Create an html fixpack report. This can be copied to a client and viewed with a browser or easily viewed via a vi, more or pg.

```
cd /BCU_share/FP8_FP4/fixpack_tools/fp_report
./makerpt.sh
```

### Example Output:

```
$ cd /BCU_share/FP8_FP4/fixpack_tools/fp_report
$ ./makerpt.sh
Creating report /BCU_share/support/html/pdoa_fixpack_report_kf5hostname01_20210223233102.html.
Running 'Appliance Catalog Summary' report.
Running 'Appliance Catalog Latest Level' report.
Running 'Appliance Catalog Detail' report.
Running 'Appliance Version Status' report.
Running 'Appliance Servers' report.
Running 'HMC Commands' report.
Running 'DB2 License Report' report.
Running 'Disk Space and Inode Status Histogram using df.' report.
Running 'Fiber Channel Path Status Histogram.' report.
Running 'ENT Adapters.' report.
Running 'Storage Enclosure Events' report.
Running 'OS errpt counts' report.
Running 'OS errpt as of today.' report.
Running 'OS errpt YTD.' report.
Running 'SAN SwitchShow.' report.
Running 'BNT Config.' report.
```

## STAGE 9: Completing the fixpack

```
Running 'AIX Installed Software' report.  
Running 'HDISK Settings' report.  
Running 'FSCSI Interface Settings' report.  
Running 'FSCSI Adapter Settings' report.  
Completed.  
  
(0) root @ kf5hostname01: 7.1.0.0: /BCU_share/FP8_FP4/fixpack_tools/fp_report
```

## Phase 6: Cleanup

PDOA fixpacks are large and consume a lot of space on the /BCU\_share filesystem. This document describes what can be removed after the fixpack is complete. For the most part the /BCU\_share filesystem should be able to accommodate PDOA fixpacks through the end of support dates and should only be used for PDOA appliance files. However, it may be necessary to free up space and this is to provide some guidance on what can be cleaned up.

1. The PDOA Fixpack files from IBM Fixcentral. These files do not need to reside on the system after they are unpacked. They should also be retrievable from IBM FixCentral if entitlement is kept up to date and V1.1 is still within its support timeframe. This should be true of all fixpack packages.

- 1.1.0.4-IM-PureData\_System\_for\_OpAnalytics-fp004.tgz
- 1.1.0.4-IM-PureData\_System\_for\_OpAnalytics-fp004.tgz.cksum
- 1.1.0.4-IM-PureData\_System\_for\_OpAnalytics-fp004.files.cksum

2. /BCU\_share/FP8\_FP4

- a. While it is possible to remove the entire unpacked directory to free up space, there are reasons to keep this around for future use. See the next items for more information.

3. Firmware Directory.

- a. /BCU\_share/FP8\_FP4/firmware

- i. It is not recommended to remove the firmware directories from any of the fixpack unpack sites as they may be needed as part of a hardware repair action to update replacement hardware.

4. Software Unpacked Directories. The software directory increases in size after Db2, Spectrum Scale and TSA components are unpacked. Space can be reclaimed by removing the unpacked images.

- a. Db2 unpack directories can be listed with ls.

```
$ ls -ld /BCU_share/FP8_FP4/software/DB2/*_unpack
drwxr-xr-x  3 root  system      256 Feb 08 12:19
/BCU_share/FP8_FP4/software/DB2/special_40478_aix64_universal_fixpack.tar.gz_unpack
drwxr-xr-x  3 root  system      256 Feb 08 12:19
/BCU_share/FP8_FP4/software/DB2/special_40479_aix64_universal_fixpack.tar.gz_unpack
drwxr-xr-x  3 root  system      256 Feb 08 12:20
/BCU_share/FP8_FP4/software/DB2/v10.5fp11_aix64_nlpack.tar.gz_unpack
```

- b. GPFS unpack directories.

```
$ ls -ld /BCU_share/FP8_FP4/software/Spectrum_Scale/*extract
drwxr-xr-x  2 root  system      4096 Feb 07 18:02 /BCU_share/FP8_FP4/software/Spectrum_Scale/Scale_std_install-
5.0.5.0_pwraix.tar.gz_extract
drwxr-xr-x  2 root  system      4096 Feb 07 18:05
/BCU_share/FP8_FP4/software/Spectrum_Scale/Spectrum_Scale_Standard-5.0.5.4-ppc64-AIX-update.tgz_extract
```

- c. TSA unpack directories.

```
$ ls -ld /BCU_share/FP8_FP4/software/TSA/4.1.0.0006
drwxr-xr-x  3 root  system      256 Feb 08 11:43 /BCU_share/FP8_FP4/software/TSA/4.1.0.0006
```

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5. Software Directores. This contains the software components of the update. Generally these are only used during the fixpack, but in some cases it may be useful to keep them around. Also, some customers may want to continue to use some of the fixpack tooling after the fixpack process is over and some directories are needed for that tooling.
  - a. /BCU\_share/FP8\_FP4/software
    - i. Useful directories to keep.
      1. /BCU\_share/FP8\_FP4/software/DB2/
        - a. The following directories include some logging info during the fixpack run and also are used by fixpack status tooling.
          - i. log
          - ii. logs
        - b. The following links are used by some of the fixpack status tooling to retrieve Db2 levels.
          - i. rspfiles-> link to /BCU\_share/FP8\_FP4/fixpack\_tools/
          - ii. scripts -> link to /BCU\_share/FP8\_FP4/fixpack\_tools/
      - ii. Useful directories that can be re-extracted from the fixpack tgz file.
        1. /BCU\_share/FP8\_FP4/software/AIX/NIM
          - a. This directory includes the base images needed to install a NIM server. While PDOA does not formally setup the management standby as a NIM server, it can be used for that purpose.
        2. /BCU\_share/FP8\_FP4/software/activationCDs
          - a. This directory includes PDOA Db2 activation CDs. Possibility useful if there are issues with Db2 installs in the future where Db2 on PDOA licenses are lost.
  6. Fixpack Tooling. Fixpack tooling is provided as an aid to apply the fixpack. Some of the tools may have value beyond that process. Note that some functions of the fixpack\_tools directory require the directories and links listed above in the software/DB2 directory.
    - a. /BCU\_share/FP8\_FP4/fixpack\_tools.
  7. Fixpack logging.
    - a. V1.1 FP4 is the first fixpack to extensive log activity to /BCU\_share/support/FP8\_FP4. It is recommended to keep this around as it is small and contains a lot of useful information generated during the fixpack.
    - b. V1.1 FP3 and V1.1 FP2 logged directly to their /BCU\_share/FP\*\_FP\* directory structure when logging was used, but was not as extensive as the script based logging in FP4.

## Appendix – I’m Lost

This fixpack is long and it is easy to lose track of where you are. If you ever get lost you can contact IBM Support for help. You can also review the following status commands which can help determine where you are.

1. First step is to login to the management host as the root user.
2. Check to see if there are screen sessions running with screen -ls.

```
$ screen -ls
There are screens on:
 1901400.fppackaging      (Detached)
 2949274.fprun           (Detached)
 3670250.fplg            (Detached)
3 Sockets in /tmp/screens/S-root.
```

3. Access the screen session fprun or whatever you were using to run the fixpack. If using a vtmenu over the console check the console to see if there are clues.
4. Check the screen sessions to see what commands were run. You can engage the scrollback buffer using `<ctrl>-a` [ or `<ctrl>-a <esc>`.
5. Check the fplog or whatever you are using to track the log files. See if you were tailing a log or the last log that was checked.
6. Also look at the log directory. You may be able to match the commands listed in the log with the commands in the readme. You can certainly look at more of the logs to see what was done and where you’ve been. The `-lrt` option to `ls` will sort from the earliest to the latest.

```
$ ls -lrt /BCU_share/support/FP8_FP4/log | tail -10
-rw-r--r-- 1 root system 412 Mar 03 20:04 unquiesce_node.sh_kf5hostname06_20210303_200151.log
-rw-r--r-- 1 root system 323 Mar 03 20:04 check_server_state.sh_kf5hostname06_20210303_200455.log
-rw-r--r-- 1 root system 0 Mar 03 20:05 check_server_state.sh_kf5hostname07_20210303_200526.log.stderr
-rw-r--r-- 1 root system 323 Mar 03 20:05 check_server_state.sh_kf5hostname07_20210303_200526.log
-rw-r--r-- 1 root system 0 Mar 03 20:05 check_server_state.sh_kf5hostname07_20210303_200556.log.stderr
-rw-r--r-- 1 root system 17809 Mar 03 20:05 unquiesce_node.sh_kf5hostname07_20210303_200152.log.stderr
-rw-r--r-- 1 root system 412 Mar 03 20:05 unquiesce_node.sh_kf5hostname07_20210303_200152.log
-rw-r--r-- 1 root system 323 Mar 03 20:05 check_server_state.sh_kf5hostname07_20210303_200556.log
-rw-r--r-- 1 root system 0 Mar 04 12:36 check_pflayer_registry.sh_kf5hostname01_20210304_123617.log.stderr
-rw-r--r-- 1 root system 225 Mar 04 12:36 check_pflayer_registry.sh_kf5hostname01_20210304_123617.log
```

7. Check the status of the system with ‘hals’.
8. Check the version status of the system with the following command. Compare the versions with the validated stack to see what is not yet updated.

```
/BCU_share/FP8_FP4/fixpack_tools/status/getVersionStatus.sh
```

9. Check the Stage 7 status. This is a good place to get lost. Stage 7, Phase 6 details how to determine what to do next.

## Appendix – Quiescing PDOA

In PDOA V1.1 FP1 IF01 the concept of quiescing hosts in PDOA was introduced. This was the pre-cursor to the new fixpack model and enables a customer to create plans to help reduce the amount of downtime in outage windows by utilizing the HA and redundant features of the appliance. It is important to understand these concepts and where they are used in this fixpack.

PDOA is an appliance which has many components. One way to view this appliance is through a hierarchical structure.

- Services
  - Db2 DPF Database
    - TSA Domains
    - Spectrum Scale Clusters
    - AIX Hosts (LPARs)
  - OPM Application
    - TSA Domain
    - Spectrum Scale Clusters
    - AIX Hosts (LPARs)

During the update, there may be a need to quiesce a component. This is usually one of the following levels:

- A single AIX Host (LPAR)
- Management Hosts
- Core Hosts
- All Hosts

This fixpack provides two scripts, `quiesce.sh` and `unquiesce.sh` to help manage hosts at the host level by bringing them out of and into service as needed. These are used to prepare a standby host for an update or to restore a standby host to service. These tools are used in Stage 6 and Stage 7.

Quiescing a host.

When a host is requested to quiesce the tool will check to see if it is a current host of any services. Here is the progression of steps.

- Hosting a service.
  - Yes. Quiesce fails. User will need to stop or failover the service.
  - No. Continue to removing the node from a domain.
- Active in a TSA Domain.
  - Yes. Forces the node down using `stopprnode -f`.
  - No. Continues to Spectrum Scale quiesce.
- Active in Spectrum Scale Cluster.
  - Has mounted Spectrum Scale filesystems.
    - Yes. Attempts to unmount filesystems. If unsuccessful quiesce fails. If successful, proceeds to remove host from Cluster.

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- No. Proceed to remove host from Cluster.
- Removes node from cluster.
  - Spectrum Scale will reassign cluster cfg duties, NSD service and filesystem management to another node.

When these steps are completed the host is considered quiesced and ready for updates.

### Unquiescing a host.

When a host is unquiesced, the process is reversed.

- Is it part of a spectrum scale cluster?
  - Yes. Continue to filesystem mounts.
  - No. Start with mmstartup. If starts successfully proceed to filesystems mounts.
- Verify all filesystems defined are mounted.
  - Yes. Proceed to domain unquiesce steps.
  - No. Issue mmmount all. Check until all expected filesystems are mounted. If not, then fail else proceed to domain unquiesce.
- Is online in domain?
  - Yes. Return success.
  - No. Contact another online node in the domain and attempt to start. If no other nodes are online the fail. If start succeeds, return success.

Quiescing an appliance or management or core nodes. See Stage 8 Phase 1 for details.

When the appliance is quiesced, the steps are like the host level steps, however they are done at the appliance level. This is typically done as part of Stage 8 or a part of a full system outage.

- Stop all services, hastopapp (V1.1 FP1), hastopdpm, hastopdb2.
- Stop all domains at the scope (appliance, management or core). 'hdomain -core stop', 'hdomain -mgmt stop'
- Unmount all filesystems on all hosts within the scope.
  - Note that /stage, /db2home and /dwhome are hosted bcudomain01 and shared with all other domains including the management domain. Therefore the management domain is normally quiesced along with the core domains. It is possible to just unmount /stage, /db2home and /dwhome on the management hosts before quiescing the core domain, however this is usually not necessary as the management domains are only useful when the core domains are online.
- Shutdown GPFS on all hosts.

At this the point the appliance is quiesced. All hosts are accessible but updates or appliance wide service can be engaged. The only host at this point access the SANs and the Foundation V7000 is the management host. This is to access '/BCU\_share, /BCU\_share/securefs, and /pscfs'.

### Unquiescing the appliance.

When unquiescing the appliance it is important to follow the steps.

- Start GPFS on all hosts.
  - If a host is rebooted, GPFS is started automatically on that host and will either start the cluster if it is a configuration host and the cluster is not started or attempt to join a cluster.
- Mount GPFS filesystems on all hosts. Ensure all filesystems are mounted before starting the TSA domains.
- Start the TSA domains.
  - If a node is shutdown and the TSA domain was online at the time, then TSA will start when the node starts. This can create churn with GPFS if all hosts in a domain are rebooted at the same time in this state. This churn can lead to long delays to mount all the storage or even lead to failures that may not be resolved without intervention.
- Start the services.

## Appendix – Backup rootvg volume group

### Backup steps for OS root volume group using alt\_disk\_install mechanism

This fixpack includes a script to help manage rootvg in PDOA environments. However, if there is a need to manually clone rootvg these instructions were used in previous fixpacks to do the cloning and are provided here for reference

This procedure creates a copy of the rootvg volume group prior to the OS update. The primary purpose of this procedure is to provide a quick way to recover the host if there are issues or failures during the AIX update. Please note that this step will remove the redundancy protection for rootvg so it is highly encouraged to take a mksysb prior to this step.

Backup activities can be performed without any disruption to the Datawarehouse activities. It can be performed on all the servers in parallel too.

Ideal case hdisk0 and hdisk1 will be part of the root volume group. Please note that it is possible that the hdisk numbering may not match what is seen in the example nor the hdisk roles, therefore it is important to check this for every host in the environment. In case hdisk0 is the boot device then rootvg mirroring would have been done on hdisk1. Backup mechanism involves unmirroring the rootvg volume group, removing the secondary disk from rootvg volume group and then cloning the existing rootvg on the secondary disk. Steps involved are below.

a. Identify the boot device and secondary disk

```
$ getconf -a |grep BOOT_DEVICE
BOOT_DEVICE: hdisk0
```

```
$ lspv|grep rootvg
hdisk0 00fa574d3debf33a rootvg active
hdisk1 00fa574d471862e3 rootvg active
```

Here in the above case bootdevice is hdisk0 and secondary disk is hdisk1

b. Unmirror the rootvg volume group. Unmirrorvg would take around 30 seconds for completion.

```
$ unmirrorvg rootvg hdisk1
0516-1246 rmlvcopy: If hd5 is the boot logical volume, please run 'chpv -c <diskname>'
as root user to clear the boot record and avoid a potential boot
off an old boot image that may reside on the disk from which this
logical volume is moved/removed.
0516-1804 chvg: The quorum change takes effect immediately.
0516-1144 unmirrorvg: rootvg successfully unmirrored, user should perform
bosboot of system to reinitialize boot records. Then, user must modify
bootlist to just include: hdisk0.
```

Use the chpv command to ensure that there is no data from rootvg on the secondary disk. In this example the secondary disk identified in step 1 is hdisk1.

```
$ chpv -c hdisk1
```

Use the lspv command to verify that both the primary and secondary disks are still part of rootvg.

Migrate any other volumes that are present on the alternate disk to the boot disk using migratepv command. It takes some time if there are volumes to be moved otherwise comes out fast.

```
$ /usr/sbin/migratepv hdisk1 hdisk0
```

## Appendix – Backup rootvg volume group

**\$ lspv**

```
hdisk0 00f9803f1ea37916 rootvg active
hdisk1 00f9803f20ae9999 rootvg active
hdisk2 00f9803f14f2c194 vgpscfs active
hdisk3 none nsdappsvr
hdisk4 00f9803f13519838 vgbcushare active
hdisk5 none gpfs
hdisk6 none gpfs
hdisk7 none nsdopm
hdisk8 none gpfs
```

c. Verify with lsvg that there are no duplicate partitions, unmirroring is completed.

**\$ lsvg -M rootvg|grep hdisk1**

```
hdisk1:1-532
```

d. Remove the secondary disk from rootvg volume group using reducevg

**\$ reducevg rootvg hdisk1**

**\$ lspv**

```
hdisk0 00f9803f1ea37916 rootvg active
hdisk1 00f9803f20ae9999 None
hdisk2 00f9803f14f2c194 vgpscfs active
hdisk3 none nsdappsvr
hdisk4 00f9803f13519838 vgbcushare active
hdisk5 none gpfs
hdisk6 none gpfs
hdisk7 none nsdopm
hdisk8 none gpfs
```

e. Clone the rootvg disk on the secondary disk.

Alt\_disk\_install command is a long running command so budget up to three hours for each host, once that is successful we can check altinst\_rootvg on the secondary disk using lspv command. It takes around 30 mins for the management node, 10 mins for the management standby node.

**\$ alt\_disk\_install -C -D hdisk1**

**\$ lspv**

```
hdisk0 00f9803f1ea37916 rootvg active
hdisk1 00f9803f20ae9999 altinst_rootvg
hdisk2 00f9803f14f2c194 vgpscfs active
hdisk3 none nsdappsvr
hdisk4 00f9803f13519838 vgbcushare active
hdisk5 none gpfs
hdisk6 none gpfs
hdisk7 none nsdopm
hdisk8 none gpfs
```

f. Append the hdisk1 to current bootlist (hdisk0 is bootdisk and hdisk1 is alternate disk) using bootlist command

**\$ bootlist -m normal hdisk0 hdisk1**

**\$ bootlist -m normal -o**

```
hdisk0 blv=hd5 pathid=0
hdisk1 blv=hd5 pathid=0
```



## Appendix – Restoring rootvg mirrors

This fixpack provides a tool to manage the rootvg mirrors. However, in case it is needed, the following steps were used in V1.1 FP3 and FP2 readmes to remirror rootvg. This is provided for reference and may not be used as part of the fixpack process.

1. Check lspv to verify the disk with altinst\_rootvg:

```
$ lspv
hdisk0 00f9803f1ea37916 rootvg active
hdisk1 00f9803f20aeee99 altinst_rootvg
hdisk2 00f9803f14f2c194 vgpscfs active
hdisk3 none nsdappsvr
hdisk4 00f9803f13519838 vgbcushare active
hdisk5 none gpfs
hdisk6 none gpfs
hdisk7 none nsdopm
hdisk8 none gpfs
```

2. Execute alt\_disk\_install -X to remove the clone volume group (altinst\_rootvg):

```
$ alt_disk_install -X altinst_rootvg
+-----+
ATTENTION: calling new module /usr/sbin/alt_rootvg_op. Please see the alt_rootvg_op man page
and documentation for more details.
Executing command: {/usr/sbin/alt_rootvg_op -X altinst_rootvg}
+-----+
Bootlist is set to the boot disk: hdisk0 blv=hd5
```

3. Verify lspv to check the disk is freed which was earlier allocated:

```
$ lspv
hdisk0 009803f1ea37916 rootvg active
hdisk1 00f9803f20aeee99 None
hdisk2 00f9803f14f2c194 vgpscfs active
hdisk3 none nsdappsvr
hdisk4 00f9803f13519838 vgbcushare active
hdisk5 none gpfs
hdisk6 none gpfs
hdisk7 none nsdopm
hdisk8 none gpfs
(0) root @ kf5hostname01: 7.1.0.0: /
```

4. Allocate the hdisk that was assigned to altinst\_rootvg in (a) to rootvg. In this example the disk is hdisk1.

```
$ extendvg -f rootvg hdisk1
```

```
$ lspv
hdisk0 00f9803f1ea37916 rootvg active
hdisk1 00f9803f20aeee99 rootvg active
hdisk2 00f9803f14f2c194 vgpscfs active
hdisk3 none nsdappsvr
hdisk4 00f9803f13519838 vgbcushare active
hdisk5 none gpfs
hdisk6 none gpfs
hdisk7 none nsdopm
hdisk8 none gpfs
root @ kf5hostname01: 7.1.0.0: /
```

## Appendix – Restoring rootvg mirrors

5. Mirror the rootvg volume group on the new disk: This command will take on average a few hours to run for standard PDOA systems. For systems that have allocated additional space in rootvg expect longer remirroring times. Use nohup to allow your session to close without interrupting the command

```
$ nohup mirrorvg rootvg hdisk1 &
0516-1804 chvg: The quorum change takes effect immediately
0516-1126 mirrorvg: rootvg successfully mirrored, user should perform
bosboot of system to initialize boot records. Then, user must modify
bootlist to include: hdisk1 hdisk0.
#
```

To check if mirrorvg is still running there are two commands to see the process and impact of the process. Assuming it does take one to three hours we can estimate the time by looking at column 6 in the ps output. Once the mirrorvg processes are complete, continue to the next step. These commands are run as root from any host. The second command assumes hdisk0 and hdisk1 are the internal disks for which there are edge cases where this may not be so.

```
$ dsh -n $(ALL) 'ps -ef | grep mirrorvg | grep -v grep' | sort
stgkf301: root 12779726 3998130 0 17:15:55 pts/0 0:00 /bin/ksh /usr/sbin/mirrorvg rootvg hdisk1
stgkf302: root 5308760 1 0 17:22:47 - 0:00 /bin/ksh /usr/sbin/mirrorvg rootvg hdisk1
stgkf303: root 7995436 1 0 17:30:52 - 0:00 /bin/ksh /usr/sbin/mirrorvg rootvg hdisk1
stgkf304: root 6160434 1 0 17:35:45 - 0:00 /bin/ksh /usr/sbin/mirrorvg rootvg hdisk1
stgkf305: root 5308462 1 0 17:34:25 - 0:00 /bin/ksh /usr/sbin/mirrorvg rootvg hdisk1
stgkf308: root 9306484 1 0 17:37:23 - 0:00 /bin/ksh /usr/sbin/mirrorvg rootvg hdisk1

$ dsh -n $(ALL) 'for disk in hdisk0 hdisk1;do iostat -d ${disk} 1 1 | tail -1;done'
stgkf301: hdisk0 95.0 75776.0 74.0 75776 0
stgkf301: hdisk1 95.0 79872.0 78.0 0 79872
stgkf305: hdisk0 95.0 79872.0 78.0 79872 0
stgkf305: hdisk1 88.0 76804.0 76.0 0 76804
stgkf308: hdisk0 100.0 77824.0 76.0 77824 0
stgkf308: hdisk1 100.0 77824.0 76.0 0 77824
stgkf302: hdisk0 90.0 72704.0 71.0 72704 0
stgkf302: hdisk1 80.0 76800.0 75.0 0 76800
stgkf304: hdisk0 100.0 79872.0 78.0 79872 0
stgkf304: hdisk1 100.0 79872.0 78.0 0 79872
stgkf303: hdisk0 97.0 66568.0 67.0 66560 8
stgkf303: hdisk1 85.0 77824.0 76.0 0 77824
```

6. Execute bosboot command and add to the bootlist

```
$ bosboot -a
bosboot: Boot image is 53276 512 byte blocks.
```

```
$ bootlist -m normal hdisk0 hdisk1
```

```
$ bootlist -m normal -o
hdisk0 blv=hd5 pathid=0
hdisk1blv=hd5 pathid=0
```

7. Validate that the disks are in fact remirrored. Verify that the remirror is complete. In addition to the mirrorvg command completing and the iostat showing minimal activity for hdisk0 and hdisk1, all LVs on rootvg should have two PVs except for system dump..

```
$ lsvg -l rootvg
rootvg:
LV NAME          TYPE      LPs      PPs      PVs  LV STATE      MOUNT POINT
hd5              boot      1         2         2    closed/syncd  N/A
hd6              paging    64        128        2    open/syncd    N/A
hd8              jfs2log   1          2          2    open/syncd    N/A
hd4              jfs2      5         10         2    open/syncd    /
hd2              jfs2     20         40         2    open/syncd    /usr
```

## Appendix – Restoring rootvg mirrors

|             |         |     |     |   |            |                       |
|-------------|---------|-----|-----|---|------------|-----------------------|
| hd9var      | jfs2    | 13  | 26  | 2 | open/syncd | /var                  |
| hd3         | jfs2    | 5   | 10  | 2 | open/syncd | /tmp                  |
| hd1         | jfs2    | 13  | 26  | 2 | open/syncd | /home                 |
| hd10opt     | jfs2    | 23  | 46  | 2 | open/syncd | /opt                  |
| hd11admin   | jfs2    | 1   | 2   | 2 | open/syncd | /admin                |
| lg_dumplv   | sysdump | 7   | 7   | 1 | open/syncd | N/A                   |
| livedump    | jfs2    | 1   | 2   | 2 | open/syncd | /var/adm/ras/livedump |
| fslv00      | jfs2    | 20  | 40  | 2 | open/syncd | /BCU_fs               |
| fslv01      | jfs2    | 40  | 80  | 2 | open/syncd | /BCU_share_stage2a    |
| paging00    | paging  | 64  | 128 | 2 | open/syncd | N/A                   |
| nim_restore | jfs2    | 120 | 240 | 2 | open/syncd | /nim_restore          |

## Appendix – Lost rootvg.

If rootvg has been lost, it will need to be recovered. Depending on how it is lost the recovery will be different. This will provide the high level procedures while working with IBM support.

1. If rootvg is lost due to hdisk0 (current disk) failure.
  - a. hdisk 1, or the rootvg cloned disk is available.
    - i. Boot off of hdisk1.
    - ii. Replace hdisk0.
    - iii. Option a: if mksysb not available after the update.
      1. Once hdisk is added, rebuild the mirror.
      2. Boot off of hdisk0.
      3. Clone rootvg again so the hdisk1 is again the cloned rootvg image.
      4. Redo the updates since the last clone.
    - iv. Option b: if mksysb available after the update. This can save having to redo updates to that lpar.
      1. Once hdisk is added, attempt to restore the mksysb using alt\_disk\_mksysb from hdisk1 to hdisk0 using the latest backed up image.
      2. Boot off hdisk 0.
      3. Redo any updates done after the mksysb image was taken.
  - b. hdisk 1 is not available. This is a double failure.
    - i. Replace both hdisk0 and hdisk1.
    - ii. If the management host it may be necessary to setup the management standby host as NIM server. The NIM server images are supplied in this Fixpack.
    - iii. Work with support to configure the nim server as appropriate for the host to be restored.
    - iv. Restore the host.
    - v. Redo the updates since the last clone.

## Appendix - ISD and CAS Uninstall

The following instructions were taken from the developer works article found at the link below and were provided in the V1.1 FP2 Readme. This link is no longer available.

[https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/W3e8d1c956c32\\_416f\\_a604\\_4633cd375569/page/Uninstall+IBM+Systems+Director+on+AIX](https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/W3e8d1c956c32_416f_a604_4633cd375569/page/Uninstall+IBM+Systems+Director+on+AIX)

### 1) ISD uninstall - Regular uninstall (applicable only on management node)

To permanently uninstall the Director agent or server components and leave the filesets that might be used by other applications, run the following command:

```
/opt/ibm/director/bin/diruninstall
```

It will uninstall the following filesets:

- DirectorServer (if Director server was installed)
- DirectorCommonAgent
- DirectorPlatformAgent

Uninstall command generally takes around 30 mins for full uninstallation. If it comes out in few mins we need to treat it as a uninstall failure and proceed with below steps.

If uninstallation failed or If there is no diruninstall script, you need to manually uninstall the Director filesets using the following commands:

```
installp -C                                # Clean up possible unfinished install
installp -u DirectorServer                  # Uninstall Director server
```

Uninstall of DirectorServer is long running and it takes around 15 minutes

```
installp -u DirectorCommonAgent            # Uninstall Director subagents (aka Common Agent)
installp -u DirectorPlatformAgent          # Uninstall Director Platform agent
```

After all Director filesets are uninstalled, /opt/ibm/director and /opt/ibm/icc should be empty except of the following 3 files on AIX 6.1 which are installed with the sysmgmt.pconsole.rte fileset:

```
/opt/ibm/director/classes/pConsoleLaunch.jar
/opt/ibm/director/classes/extensions/pConsole.TWGExt
/opt/ibm/director/classes/extensions/pConsole.TWGSubagent
```

When cleaning up an unsuccessful install, there might be files left over in /opt/ibm/director and /opt/ibm/icc. They can be removed.

### 2) To uninstall the cas agent filesets from all the servers run the following command:

```
installp -u DirectorCommonAgent (its already performed on the management node)
installp -u DirectorPlatformAgent (its already performed on the management node)
```

## Appendix - ISD and CAS Uninstall

```
installp -u cas.agent # Uninstall common agent services (1)
```

Uninstall of cas.agent takes around 12-13 minutes on management node and other nodes it might take around 1 to 2 minute

```
installp -u tivoli.tivguid # Uninstall Tivoli Guid
```

Uninstall of Tivoli.tivguid takes around 2 minutes

```
installp -u sysmgt.cim.*providers* # Uninstall all CIM providers
```

Uninstall of sysmgt.cim.\*providers\* fileset takes around 4 minutes

```
installp -u sysmgt.cimserver.pegasus.rte # Uninstall Pegasus CIM server (2)
```

The following subagents have a dependency on cas.agent and need to be uninstalled before cas.agent can be uninstalled:

- artex.base.agent - AIX Profile Manager subagent (If you need to reinstall this fileset, you can get it from your AIX media)

To uninstall the cas.agent fileset, these dependent filesets need to be uninstalled first, or use the -g flag to uninstall cas.agent which will remove the dependent filesets together with the cas.agent fileset.

## Appendix - Warehouse Tools Removal

### Description:

These instructions were copied and modified from the V1.1 FP2 readme. As DPM is being removed as is the management domain there is no longer a need to remove the Warehouse Tools TSA object definitions.

The instructions below require root privileges on the management host.

The Tivoli System Automation domain 'mgmtdomain' must be online and must be healthy on the management and management standby nodes.

- a. Check the status of Warehouse Tools on the management server.

Run 'hals' as the root user on the management node.

```
$ hals
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| WASAPP    | reverseflash01 | reverseflash03 | reverseflash01 | Online | Normal | - |
| DB2APP    | reverseflash01 | reverseflash03 | reverseflash01 | Online | Normal | - |
| DPM       | reverseflash01 | reverseflash03 | reverseflash01 | Online | Normal | - |
| DB2DPM    | reverseflash01 | reverseflash03 | reverseflash01 | Online | Normal | - |
|-----+-----+-----+-----+-----+-----+-----+

```

- Proceed to b) if the OPSTATE of WASAPP and DB2APP are Online
- Proceed to c) if the OPSTATE of WASAPP and DB2APP are Offline
- For any other OPSTATE values or if 'hals' returns an error, please contact IBM Support for further guidance.

- b. Stop the Warehouse Tools WAS.

```
$ hastopapp -apponly
Stopping APP and APP instance.....APP resources offline
MANAGEMENT DOMAIN
=====+=====+=====+=====+=====+=====+=====+
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |
|-----+-----+-----+-----+-----+-----+-----+
| WASAPP    | reverseflash01 | N/A | N/A | Offline | Offline | - |
| DB2APP    | reverseflash01 | reverseflash03 | reverseflash01 | Online | Normal | - |
| DPM       | reverseflash01 | reverseflash03 | reverseflash01 | Online | Normal | - |
| DB2DPM    | reverseflash01 | reverseflash03 | reverseflash01 | Online | Normal | - |
|-----+-----+-----+-----+-----+-----+-----+

```

- Proceed to the next step if the OPSTATE for WASAPP is successfully 'Offline'.
- Otherwise contact IBM Support for further guidance.

- c. Check for one of the following installation paths.

The installation directory for the Warehouse Tools directory is located on the management server. There are two possible installation paths.

Which directory you have depends on the DB2 (V10.1, V10.5 or V11.1) installed on the environment.

```
V10.1: /usr/IBM/dwe/appserver_001/iswapp_10
```

## Appendix - Warehouse Tools Removal

V10.5 or V11.1                      /usr/IBM/dwe/appserver\_001/iswapp\_10.5

- d. Run the InfoSphere Warehouse uninstall utility.

V10.1:

```
$ cd /usr/IBM/dwe/appserver_001/iswapp_10/uninstall
$ ./uninstall
```

V10.5 or V11.1

```
$ cd /usr/IBM/dwe/appserver_001/iswapp_10.5/uninstall
$ ./uninstall
```

This should run to completion. It takes around 4 mins for completion

- e. Find the installation directory for WebSphere Application Server.

The installation directory for the Warehouse Tools application server directory is located on the management server. There are two possible installation paths.

Which directory you have depends on the DB2 (V10.1, V10.5 or V11.1) installed on the environment.

V10.1:                                      /usr/IBM/dwe/appserver\_001/appServer\_10

V10.5 or V11.1:                          /usr/IBM/dwe/appserver\_001/appServer\_10.5

- f. Use IBM Installation Manager to uninstall WebSphere Application Server.

- i. List the installed packaged.

DB2 V10.1 Example:

```
$ /opt/IBM/InstallationManager/eclipse/tools/imcl listInstalledPackages
```

```
com.ibm.cic.agent_1.6.3001.20130528_1750
com.ibm.websphere.BASE.v80_8.0.7.20130725_2248
```

DB2 V10.5 or V11.1 Example:

```
$ /opt/IBM/InstallationManager/eclipse/tools/imcl listInstalledPackages
```

```
com.ibm.cic.agent_1.8.5000.20160506_1125
com.ibm.websphere.BASE.v85_8.5.5010.20160721_0036
```

- ii. Identify the package 'com.ibm.websphere.BASE.\*'. This is the Warehouse Tools application server install package.
- iii. Use the Installation Manager to remove the package. These are one line commands.

DB2 V10.1 Example:

## Appendix - Warehouse Tools Removal

```
$ /opt/IBM/InstallationManager/eclipse/tools/imcl uninstall  
com.ibm.websphere.BASE.v80_8.0.7.20130725_2248
```

DB2 V10.5 or V11.1 Example:

```
$ /opt/IBM/InstallationManager/eclipse/tools/imcl uninstall  
com.ibm.websphere.BASE.v85_8.5.5010.20160721_0036
```

### g. Remove the Warehouse Tools database.

- i. On the management host as the root user become or login to the dweadmin user.

```
$ su - dweadmin
```

- ii. The database should be stopped. Verify that the db2nodes.cfg file lists the management server as the assigned host for partition 0.

```
$ grep $(hostname) ~/sqllib/db2nodes.cfg  
0 stgkf101 0
```

**Note:** If the command returns no value. Edit the ~/sqllib/db2nodes.cfg so that the second (and fourth if listed) column contain the management hostname.

- iii. Drop the ISWMETA database.

```
$ db2 drop database ISWMETA
```

- iv. Stop the dweadmin instance.

```
$ hastopapp  
Stopping APP and APP instance.....APP resources offline  
MANAGEMENT DOMAIN  
+=====+=====+=====+=====+=====+=====+=====+  
| COMPONENT | PRIMARY | STANDBY | CURRENT | OPSTATE | HA STATUS | RG REQUESTS |  
+=====+=====+=====+=====+=====+=====+=====+  
| WASAPP | reverseflash01 | N/A | N/A | Offline | Offline | - |  
| DB2APP | reverseflash01 | N/A | N/A | Offline | Offline | - |  
| DPM | reverseflash01 | reverseflash03 | reverseflash01 | Online | Normal | - |  
| DB2DPM | reverseflash01 | reverseflash03 | reverseflash01 | Online | Normal | - |  
+=====+=====+=====+=====+=====+=====+=====+
```

- v. Identify the DB2 copy that owns the dweadmin instance.

V10.1 Example

```
$ db2greg -dump | grep dweadmin  
I, DB2, 10.1.0.3, dweadmin, /db2home/dweadmin/sqllib,,1,0, /usr/IBM/dwe/mgmt_db2/V10.1,,
```

V10.5 or V11.1 Example

```
$ db2greg -dump | grep dweadmin  
I, DB2, 10.5.0.8, dweadmin, /usr/IBM/dwe/appserver_001/home/dweadmin/sqllib,,1,0, /usr/IBM/dwe/  
/mgmt_db2/V10.5,,
```

### h. Remove the dweadmin instance.

The previous step identified the path (9th column) of the DB2 copy that owns the dweadmin instance. Use that path to remove the instance.

V10.1 Example:

## Appendix - Warehouse Tools Removal

```
/usr/IBM/dwe/mgmt_db2/V10.1/instance/db2idrop dweadmin
```

### V10.5 or V11.1 Example:

```
/usr/IBM/dwe/mgmt_db2/V10.5/instance/db2idrop dweadmin
```

#### i. Cleaning up.

##### i. Directories to clean up.

Almost all Warehouse Tools files are located in the following GPFS filesystem '/usr/IBM/dwe/appserver\_001'. It may be necessary to verify that this filesystem was not used for temporary storage of customer files.

##### ii. Users that are no longer needed in the environment. It may be necessary to verify that these users were not used for non appliance purposes.

- dweadmin
- wasadmin

##### iii. Groups that are no longer needed in the environment. It may be necessary to verify that these groups were not used for non appliance purposes.

- dweogrp
- dwemgrp
- dweagrp
- wasagrp

#### j. IBM Installation Manager.

IBM Installation Manager was installed on the appliance management host as it was a pre-requisite component for the Warehouse Tools application server (WebSphere Application Server). Since IBM Installation Manager is a standard installation tool that is shared by other IBM components it may be necessary to verify that no other third party products were installed that still may require IBM Installation Manager.

To verify run the following check. If 'com.ibm.cic.agent\*' is the only component left then it is safe to uninstall Installation Manager.

```
$ /opt/IBM/InstallationManager/eclipse/tools/imcl listInstalledPackages  
com.ibm.cic.agent_1.8.5000.20160506_1125
```

Otherwise it may be necessary to continue to maintain IBM Installation Manager.

#### k. Remove the Warehouse Tools Intelligent Miner artifacts from the database. This step requires the core warehouse to be up and running.

- Login as the instance owner on the core admin host.
- Verify the idmdisable db is in the path. If it is not in the path stop.

```
$ which idmdisabledb  
/db2home/bcuaix/sqllib/bin/idmdisabledb  
$ which idmcheckdb  
/db2home/bcuaix/sqllib/bin/idmcheckdb
```

- iii. Run `idmcheckdb` to see if Warehouse Tools intelligent miner feature is configured. (The appliance ships this feature as enabled, however over time this component is not used and may be unconfigured).

### DB2 V10.1 Example

```
$ idmcheckdb bcudb
```

```
IDM8969W: The current value of the database configuration parameter
"JAVA_HEAP_SZ" is "2048".
The recommended value is "65536".
Run the following command to correct the problem:
db2 UPDATE DB CFG FOR bcudb USING JAVA_HEAP_SZ 65536
```

The database "bcudb" is enabled for  
Intelligent Miner Version 9.7.3 in "fenced" mode.

The following tables contain one or more columns with mining objects:

```
IDMMX.CLASSETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLASSIFMODELS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLASTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLASTESTRESULTS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLASTESTTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLUSSETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLUSTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLUSTERMODELS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.LOGICALDATASPECS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.MININGDATA (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGRESSIONMODELS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGSETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGTESTRESULTS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGTESTTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.RULEFILTERS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.RULEMODELS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.RULESETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.RULETASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.TIMESERIESMODELS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.TSSETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.TSTASKS (TABLESPACE DWEDEFAULTCONTROL)
```

### DB2 V10.5 Example:

```
$ idmcheckdb bcudb
```

```
IDM8969W: The current value of the database configuration parameter
"JAVA_HEAP_SZ" is "2048".
The recommended value is "65536".
Run the following command to correct the problem:
db2 UPDATE DB CFG FOR bcudb USING JAVA_HEAP_SZ 65536
```

The database "bcudb" is enabled for  
Intelligent Miner Version 9.7.3 in "fenced" mode.

The following tables contain one or more columns with mining objects:

```
IDMMX.CLASSETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLASSIFMODELS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLASTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLASTESTRESULTS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLASTESTTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLUSSETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLUSTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.CLUSTERMODELS (TABLESPACE DWEDEFAULTCONTROL),
```

## Appendix - Warehouse Tools Removal

```
IDMMX.LOGICALDATASPECS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.MININGDATA (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGRESSIONMODELS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGSETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGTESTRESULTS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.REGTESTTASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.RULEFILTERS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.RULEMODELS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.RULESETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.RULETASKS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.TIMESERIESMODELS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.TSSETTINGS (TABLESPACE DWEDEFAULTCONTROL),
IDMMX.TSTASKS (TABLESPACE DWEDEFAULTCONTROL)
```

DB2 V11.1 Example where warehouse tools was not migrated to the new DB2 copy from DB2 10.5.

```
$ idmcheckdb BCUDB
ksh: idmcheckdb: not found.
```

**Note:** *It is not recommended to attempt to remedy warehouse tools on the core hosts if this scenario is encountered.*

- iv. To unconfigure Warehouse Tools where idmcheckdb was successful.

```
idmdisabledb BCUDB
```

- v. To unconfigure Warehouse Tools where idmcheckdb was not successful.

All objects with IDMMX schema can be removed by hand or can be left in the database.

- vi. DWEDEFAULTCONTROL tablespace.

This is the default tablespace for use with Warehouse Tools. However, it is possible that DB2 users may have used (on purpose or by accident) this tablespace. From an appliance standpoint with Warehouse Tools removed this tablespace is no longer needed, however the DBA responsible for the core warehouse should review the use of this tablespace before it is modified or removed.

- I. Removing the Warehouse Tools component from the appliance core hosts.

Warehouse Tools includes a mining component that is installed as a companion to the DB2 copies installed on the core hosts.

- i. Identify the core host DB2 installation directory.

V10.1 Example:

```
$ dsh -n ${BCUDB2ALL} '/usr/local/bin/db2ls -c | cut -d: -f 1' | dshbak -c
HOSTS -----
```

## Appendix - Warehouse Tools Removal

```
stgkf102, stgkf104, stgkf105, stgkf106, stgkf108
```

```
-----  
#PATH  
/usr/IBM/dwe/db2/V10.1.0.3..1
```

### V10.5 Example:

```
$ dsh -n ${BCUDB2ALL} '/usr/local/bin/db2ls -c | cut -d: -f 1' | dshbak -c  
HOSTS -----  
kf5hostname02, kf5hostname04, kf5hostname05, kf5hostname06, kf5hostname07  
-----  
#PATH  
/usr/IBM/dwe/db2/V10.5.0.8..0
```

### V11.1 Example:

```
$ dsh -n ${BCUDB2ALL} '/usr/local/bin/db2ls -c | cut -d: -f 1' | dshbak -c  
HOSTS -----  
b30i02,b30i04, b30i05, b30i06, b30i07  
-----  
#PATH  
/usr/IBM/dwe/db2/V11.1
```

**Note:** In some cases customers may have multiple db2 copies installed. This is ok, but adds more work to remove the warehouse tools copies.

- ii. Identify the locations of all Warehouse Tools copies in the environment.

### V10.1 Example:

```
$ dsh -n ${BCUDB2ALL} '/usr/local/bin/db2ls -c | cut -d: -f 1 | grep -v "^#" | while read  
p;do cat ${p}/warehouse.ast;done' | dshbak -c  
HOSTS -----  
stgkf102, stgkf104, stgkf105, stgkf106, stgkf108  
-----  
# This is a key file for InfoSphere Warehouse copy  
warehouse.installLocation=/usr/IBM/dwe/warehouse_10.1.0.3..1
```

### V10.5 Example:

```
$ dsh -n ${BCUDB2ALL} '/usr/local/bin/db2ls -c | cut -d: -f 1 | grep -v "^#" | while read  
p;do cat ${p}/warehouse.ast;done' | dshbak -c  
HOSTS -----  
kf5hostname02, kf5hostname04, kf5hostname05, kf5hostname06, kf5hostname07  
-----  
# This is a key file for DB2 for LUW - Warehouse copy  
warehouse.installLocation=/usr/IBM/dwe/warehouse_DB2V10.5.0.8..0
```

### V11.1 Example with Extra DB2 Copies.:

```
$ dsh -n ${BCUDB2ALL} '/usr/local/bin/db2ls -c | cut -d: -f 1 | grep -v "^#" | while read  
p;do cat ${p}/warehouse.ast;done' | dshbak -c  
b30i04: cat: 0652-050 Cannot open /usr/IBM/dwe/db2/V11.1/warehouse.ast.  
b30i05: cat: 0652-050 Cannot open /usr/IBM/dwe/db2/V11.1/warehouse.ast.  
b30i07: cat: 0652-050 Cannot open /usr/IBM/dwe/db2/V11.1/warehouse.ast.  
b30i02: cat: 0652-050 Cannot open /usr/IBM/dwe/db2/V11.1/warehouse.ast.  
b30i02: cat: 0652-050 Cannot open /opt/IBM/db2/V10.5/warehouse.ast.  
b30i02: cat: 0652-050 Cannot open /opt/IBM/db2/V10.5/SB37081/warehouse.ast.  
b30i06: cat: 0652-050 Cannot open /usr/IBM/dwe/db2/V11.1/warehouse.ast.  
HOSTS -----  
b30i02, b30i04, b30i05, b30i06, b30i07  
-----  
# This is a key file for DB2 for LUW - Warehouse copy
```

## Appendix - Warehouse Tools Removal

```
warehouse.installLocation=/usr/IBM/dwe/warehouse_10.5.0.5..1
```

**Note:** We see that the 'warehouse.ast' file is a way that Warehouse Tools identifies a corresponding copy of DB2. In the DB2 V11.1 example there are copies of DB2 that do not have corresponding Warehouse Tools copies.

Another way to find Warehouse copies is to follow the Warehouse Tools installation pattern.

### V10.1 Example:

```
$ dsh -n ${BCUDB2ALL} 'ls -lad /usr/IBM/dwe/warehouse*' | dshbak -c
HOSTS -----
stgkf102, stgkf104, stgkf105, stgkf106, stgkf108
-----
drwxrwxr-x  13 root      system      4096 Jul 19 11:56
/usr/IBM/dwe/warehouse_10.1.0.3..1
```

### V10.5 Example:

```
$ dsh -n ${BCUDB2ALL} 'ls -lad /usr/IBM/dwe/warehouse*' | dshbak -c
HOSTS -----
kf5hostname02, kf5hostname04, kf5hostname05, kf5hostname06, kf5hostname07
-----
drwxrwxr-x  13 root      system      4096 Mar 12 05:31
/usr/IBM/dwe/warehouse_DB2V10.5.0.8..0
```

### V11.1 Example:

```
$ dsh -n ${BCUDB2ALL} 'ls -lad /usr/IBM/dwe/warehouse*' | dshbak -c
HOSTS -----
b30i02, b30i04, b30i05, b30i06, b30i07
-----
drwxrwxr-x  13 root      system      4096 Jul 24 2015
/usr/IBM/dwe/warehouse_10.5.0.5..1
```

**Note:** The above examples show a potentially unfinished DB2 11.1 upgrade as the Warehouse Tools directory is associated with the DB2 10.5 copy left on the system. This is of no consequence as long as the V1.1.0.1 (FP1) has been applied.

- iii. Using the directory found above, use 'dsh' to run the Warehouse Tools uninstaller.

### V10.5 Example

```
$ dsh -n ${BCUDB2ALL} '/usr/IBM/dwe/warehouse_10.5.0.5..1/uninstall/uninstall'
```

**Note:** If the uninstall fails, it is sufficient to simply remove the installation directory using `rm -rf` for warehouse tools on the core hosts.

This completes the removal of Warehouse Tools. The rest of the domain removal will be done as part of Stage 9 Phase 3 when the management domain is removed.

## Appendix – Removing the PDOA Console

These instructions were provided in V1.1 FP2. While there should not be necessary, they are provided again for reference.

a. Uninstal console.

a. Stop console:

```
$ mistop
CDTFS000059I The system console is already stopped.
```

Check if mi console is stopped:

```
$ mistatus
CDTFS000064I The system console is stopped.
```

Check if any process left to stop, if not kill the process:

```
$ ps -ef | grep isas | grep -v grep
```

b. deactivate the database.

```
$ su - db2psc -c 'db2 deactivate database PSCDB'
DB20000I The DEACTIVATE DATABASE command completed successfully.
```

c. Drop the database.

```
$ su - db2psc -c 'db2 drop database PSCDB'
DB20000I The DROP DATABASE command completed successfully.
```

d. Stop the instance:

```
$ su - db2psc -c 'db2stop'
08/31/2018 14:28:19 0 0 SQL1064N DB2STOP processing was successful.
SQL1064N DB2STOP processing was successful.
```

e. Drop the instance:

```
$ /usr/local/bin/db2ls
```

| Install Path                | Level     | Fix Pack | Special | Install Number | Install Date                 |
|-----------------------------|-----------|----------|---------|----------------|------------------------------|
| /usr/IBM/dwe/mgmt_db2/V10.5 | 10.5.0.10 | 10       |         |                | Tue Aug 28 20:08:52 2018 BRT |

Take the path from above command and run below command:

```
$ /usr/IBM/dwe/mgmt_db2/V10.5/instance/db2idrop db2psc
DBI1446I The db2idrop command is running.
```

```
DB2 installation is being initialized.
```

## Appendix – Removing the PDOA Console

```
Total number of tasks to be performed: 2
Total estimated time for all tasks to be performed: 305 second(s)

Task #1 start
Description: Initializing instance list
Estimated time 5 second(s)
Task #1 end

Task #2 start
Description: Configuring DB2 instances
Estimated time 300 second(s)
Task #2 end

The execution completed successfully.

For more information see the DB2 installation log at
"/tmp/db2idrop.log.6750942".
DBI1070I  Program db2idrop completed successfully.
```

### f. Uninstall mi.

```
installp -u miControlConsole.rte
```

```
+-----+
+-----+ Pre-deinstall Verification... +-----+
+-----+
Verifying selections...done
Verifying requisites...done
Results...

SUCSESSES
-----
Filesets listed in this section passed pre-deinstall verification
and will be removed.

Selected Filesets
-----
miControlConsole.rte 3.0.5.0          # IBM PureData System for Oper...

<< End of Success Section >>

FILESET STATISTICS
-----
1  Selected to be deinstalled, of which:
    1  Passed pre-deinstall verification
----
1  Total to be deinstalled

+-----+
+-----+ Deinstalling Software... +-----+
+-----+

installp:  DEINSTALLING software for:
          miControlConsole.rte 3.0.5.0

Running UnPost install
Finished processing all filesets.  (Total time:  1 mins 48 secs).

+-----+
+-----+ Summaries: +-----+
+-----+

Installation Summary
```

## Appendix – Removing the PDOA Console

| -----                |         |      |           |         |
|----------------------|---------|------|-----------|---------|
| Name                 | Level   | Part | Event     | Result  |
| -----                |         |      |           |         |
| miControlConsole.rte | 3.0.5.0 | USR  | DEINSTALL | SUCCESS |

### g. Remove the mi related files from Platform Layer.

```
cd /opt/ibm/aixappl/pflayer/bin/  
rm mistart miresolve mistatus mistop
```

## Appendix – Updating Power Firmware in Parallel using the HMC GUI

The platform layer provides an excellent command line option to update the power firmware. However, as of V1.1 FP3 the HMC command line option used by the platform layer no longer allows for parallel execution and will result in failures when attempted. This is documented in KIG00058 in the Known Issues technote. This was not recognized until after V1.1 FP3 was released. For larger PDOA environments this can severely extend the time needed to update the power firmware on the Power 8 servers, about 30 minutes to an hour per server. This is especially costly if an organization is doing the update in a full outage scenario. These instructions can help apply the power firmware in parallel.

To follow this process you will need to know your HMC id and passwords as well as how to access the HMCs using a browser. The default HMC id is hscroot and the password is customer managed using the pl\_conf tool.

It is also important to determine the update strategy. If not doing a full outage, then it is important to pay attention to the starting levels and which server is associated with which LPAR. If doing a full outage, then it is important to quiesce the appliance before starting this update. Doing a full outage is easier as you can do all the updates at the same time.

A similar procedure was tested on a V1.1 FP2 -> V1.1 FP3 scenario so the HMC, the source power firmware levels and the target power firmware levels are different. The behavior of that update was also to reboot the CEC (both LPARs for 8286-42A servers). If using a V1.1 FP3->V1.1 FP4 scenario the update is not performed as part of these steps, however in Stage 7 it is recommended to go ahead and reboot the LPARs and will be handled through those instructions. These instructions require the use the FTP server on the management host and use the root user to access. This access occurs on the internal network and not the corporate network. See Stage 05 for instructions on how to enable and disable the FTP server on the management node.

The following procedure has not yet been tested past the last visible screen at the time of this documentation.

## Appendix – Updating Power Firmware in Parallel using the HMC GUI

1. Login to the management host as the root user.
2. Command: Use the platform layer `appl_ls_hw` command to list the HMCs. This will list the IAN or the PDOA internal network ip addresses for the two HMCs. The ip addresses are the default internal IP addresses and likely be the same for all V1.1 customers.

```
appl_ls_hw -r hmc -A M_IP_address | sed 's|'|g'
```

Example Output:

```
$ appl_ls_hw -r hmc -A M_IP_address | sed 's|'|g'
172.23.1.245
172.23.1.246
```

3. Command: Augment the above command to query each of the HMCs to determine the customer facing network ip addresses. The ip addresses will vary by customer.

```
appl_ls_hw -r hmc -A M_IP_address < /dev/null | sed 's|'|g' | while read ip;do ssh -n hscroot@${ip} lshmc -n -F
ip4addr_eth2;done
```

Example Output:

```
$ appl_ls_hw -r hmc -A M_IP_address < /dev/null | sed 's|'|g' | while read ip;do ssh -n hscroot@${ip} lshmc -n -F
ip4addr_eth2;done
9.42.109.139
9.42.109.140
```

4. Command: Update the Power On Policies for the all of the servers.

```
ssh hscroot@172.23.1.245 'lssyscfg -r sys -F name | while read m;do chsyscfg -r sys -m ${m} -i
"power_on_lpar_start_policy=autostart";done'
```

5. Command: Verify the power on policy for the servers.

```
ssh hscroot@172.23.1.245 'lssyscfg -r sys -F name,power_on_lpar_start_policy'
```

Example Output:

```
$ ssh hscroot@172.23.1.245 'lssyscfg -r sys -F name,power_on_lpar_start_policy'
Server-8286-42A-SN21F357V,autostart
Server-8286-42A-SN21F356V,autostart
Server-8284-22A-SN21F354V,autostart
Server-8284-22A-SN21F355V,autostart
Server-8284-22A-SN21F353V,autostart
```

6. Command: In your root session, determine the levels associated with each server. Take note of servers that are not at SV860\_226 which are already updated and SV860\_205 which start at V1.1 FP3s validated stack. V1.1 FP2s level is SV860\_138. The reason this is important is that if starting at V1.1 FP2s level or lower the process will automatically reboot the CEC. If starting from V1.1 FP3 the process will not automatically reboot the CEC.

```
appl_ls_hw -r server_fsp -A Logical_name,Machine_type,Model,Serial_number,FW_level | sort
```

Example Output:

```
$ appl_ls_hw -r server_fsp -A Logical_name,Machine_type,Model,Serial_number,FW_level | sort
"server_fsp0","8286","42A","21F356V","SV860_205"
"server_fsp1","8286","42A","21F357V","SV860_205"
"server_fsp2","8284","22A","21F354V","SV860_205"
"server_fsp3","8284","22A","21F353V","SV860_205"
"server_fsp4","8284","22A","21F355V","SV860_205"
```

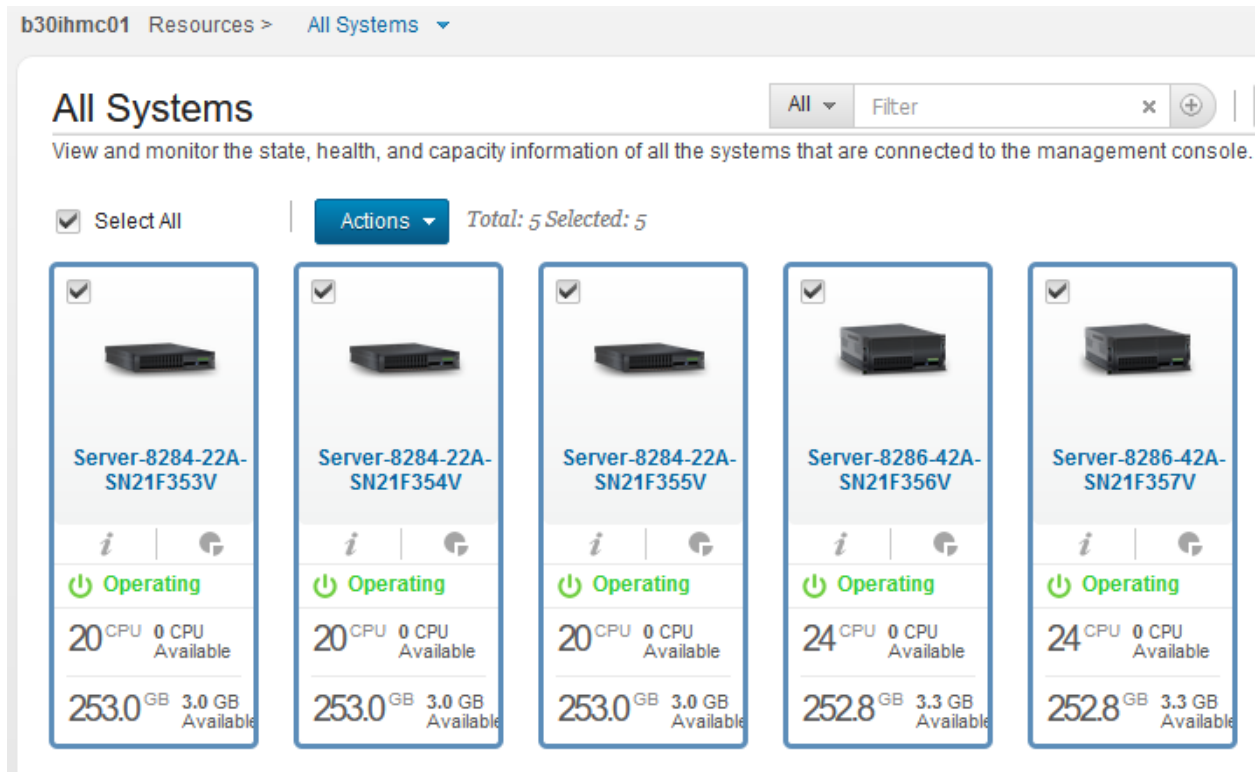
7. HMC GUI: Attempt to login to the first HMC coreporate ip using the https pattern “https://<ip>”.
8. HMC GUI: You should navigate to Resources->All Systems to see all the servers.

## Appendix – Updating Power Firmware in Parallel using the HMC GUI

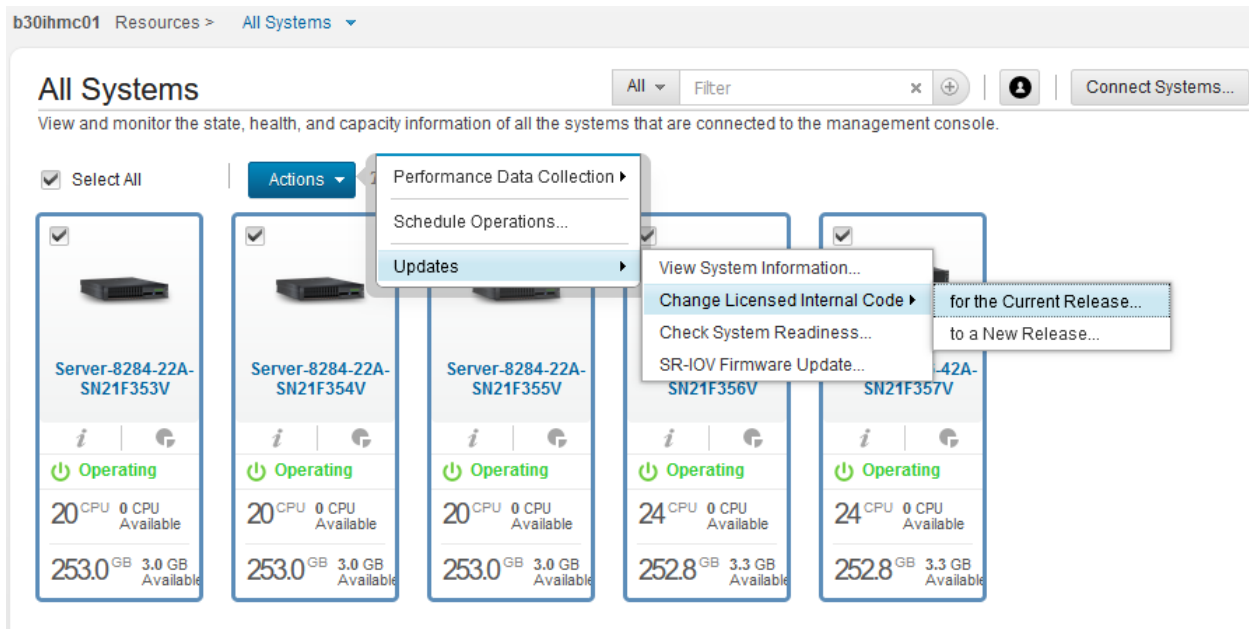
- Note the naming convention: Server-<MT>-<Model>-<SN>. Where MTM is 8286-42A or 8284-22A.
- 8286-42A are the foundation servers. Management and Admin LPARs and Manageme Standby and Admin Standby LPARs.
- 8284-22A exist on 1.5 DN and higher environments.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Server-8284-22A-SN21F353V</b><br> <br> <b>Operating</b><br>20 CPU 0 CPU Available<br>256.0 GB 0.0 GB Available | <br><b>Server-8284-22A-SN21F354V</b><br> <br> <b>Operating</b><br>20 CPU 0 CPU Available<br>256.0 GB 0.0 GB Available | <br><b>Server-8284-22A-SN21F355V</b><br> <br> <b>Operating</b><br>20 CPU 0 CPU Available<br>253.0 GB 3.0 GB Available | <br><b>Server-8286-42A-SN21F356V</b><br> <br> <b>Operating</b><br>24 CPU 0 CPU Available<br>252.8 GB 3.3 GB Available | <br><b>Server-8286-42A-SN21F357V</b><br> <br> <b>Operating</b><br>24 CPU 0 CPU Available<br>252.8 GB 3.3 GB Available |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

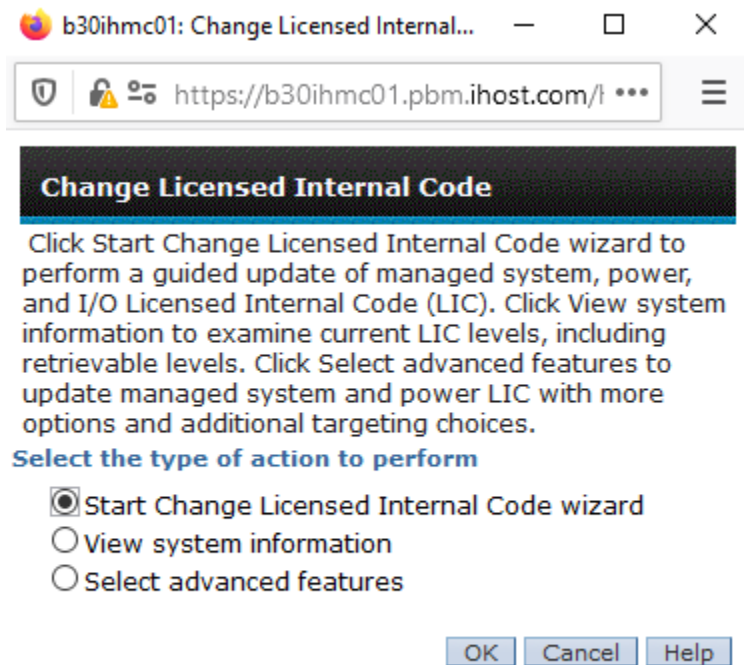
9. HMC GUI: In the HMC GUI click the check boxes for all the servers that need to be updated this pass. Then click the Actions->Updates->Check System Readiness... option.



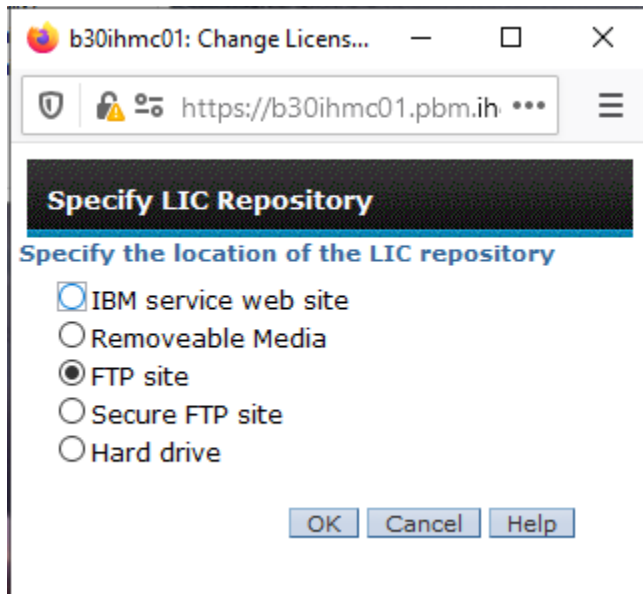
10. HMC GUI: Click the Action-Updates->Change Licensed Internal Code->to Current Release option. If updated from V1.1 FP2 these instructions may not work.



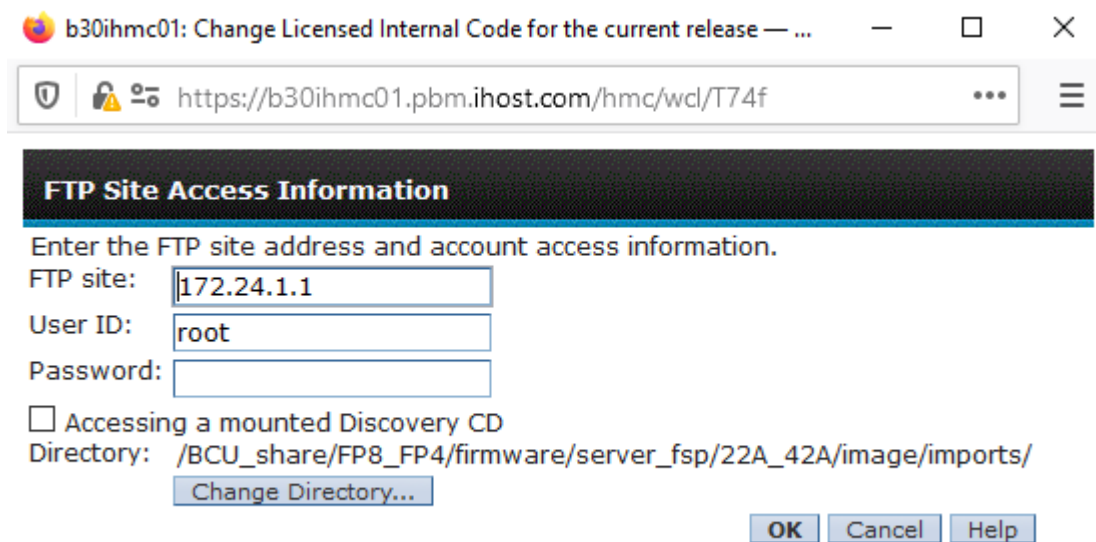
11. HMC GUI: Click Start Change Licensed Internal Code wizard.

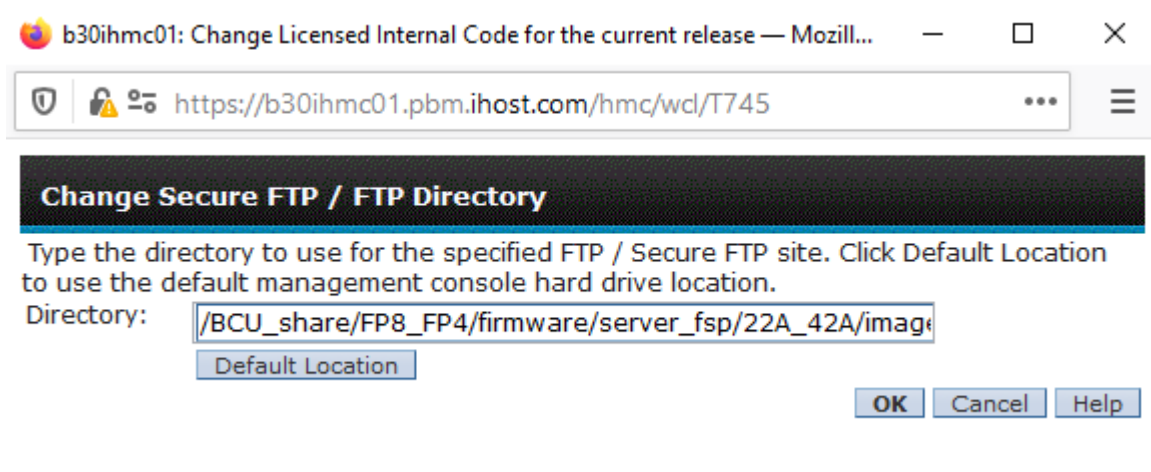


12. HMC GUI: Choose FTP site.



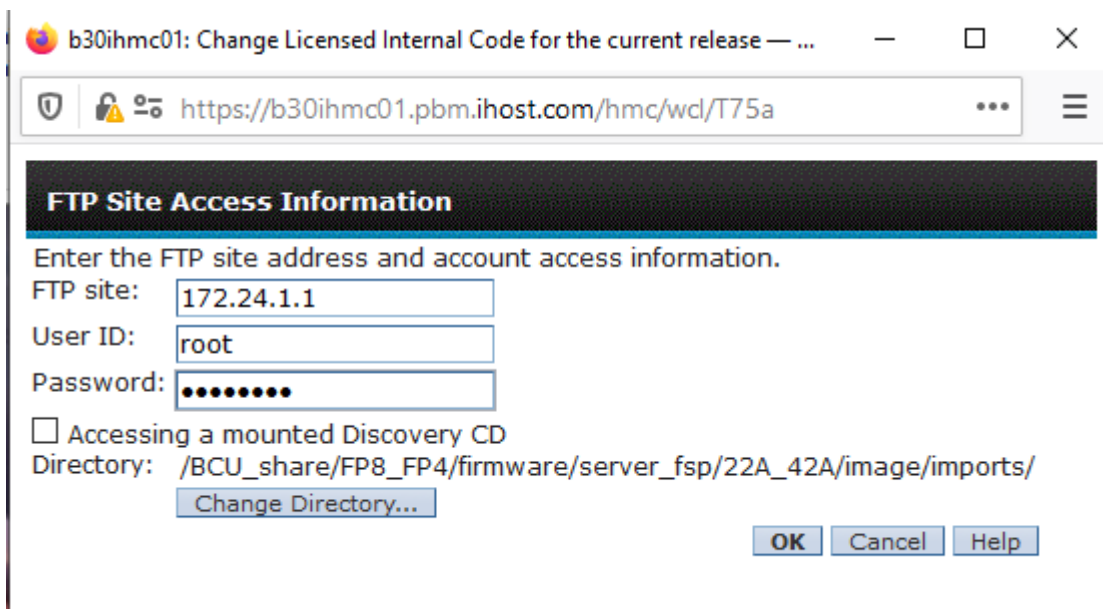
13. Enter the details for the FTP site. The likely internal ip address is 172.23.1.1 and not what is shown on below. If needed click the change directory button and set the directory to /BCU\_share/FP8\_FP4/firmware/server\_fsp/22A\_42A/image/imports/. Click Ok on the change directory dialog.





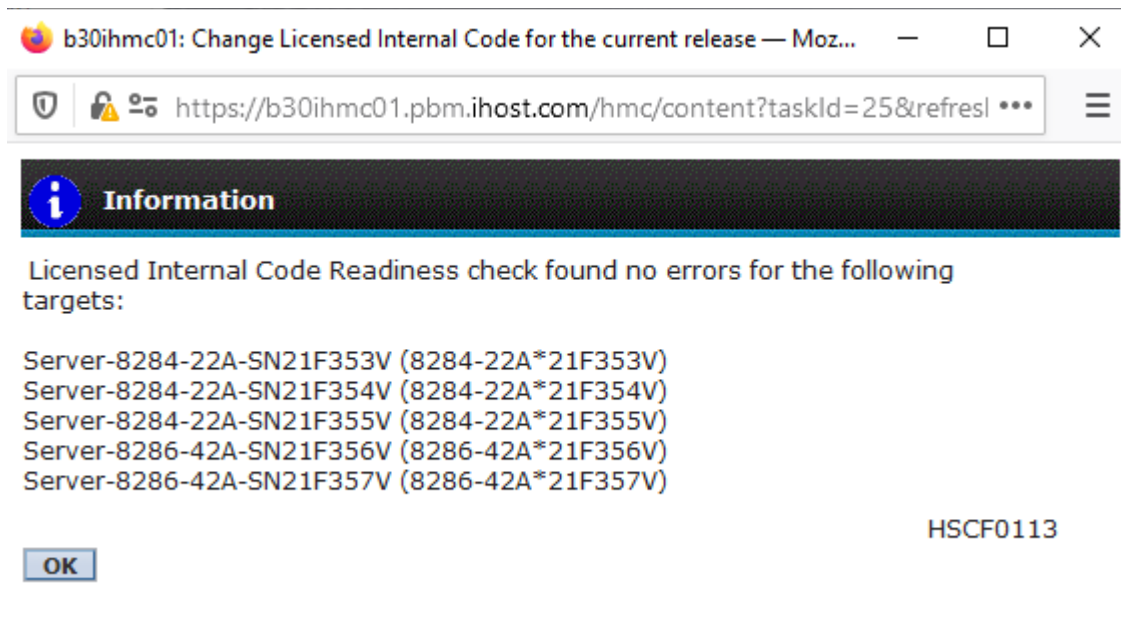
The screenshot shows a web browser window titled "b30ihmc01: Change Licensed Internal Code for the current release — Mozill...". The address bar displays "https://b30ihmc01.pbm.ihost.com/hmc/wcl/T745". The main content area has a dark header with the title "Change Secure FTP / FTP Directory". Below the header, the text reads: "Type the directory to use for the specified FTP / Secure FTP site. Click Default Location to use the default management console hard drive location." There is a text input field labeled "Directory:" containing the path "/BCU\_share/FP8\_FP4/firmware/server\_fsp/22A\_42A/image". Below this field is a button labeled "Default Location". At the bottom right, there are three buttons: "OK", "Cancel", and "Help".

14. Enter the root password in the dialog box. It should be possible to use a non-root user to access the update directory. Click Ok.

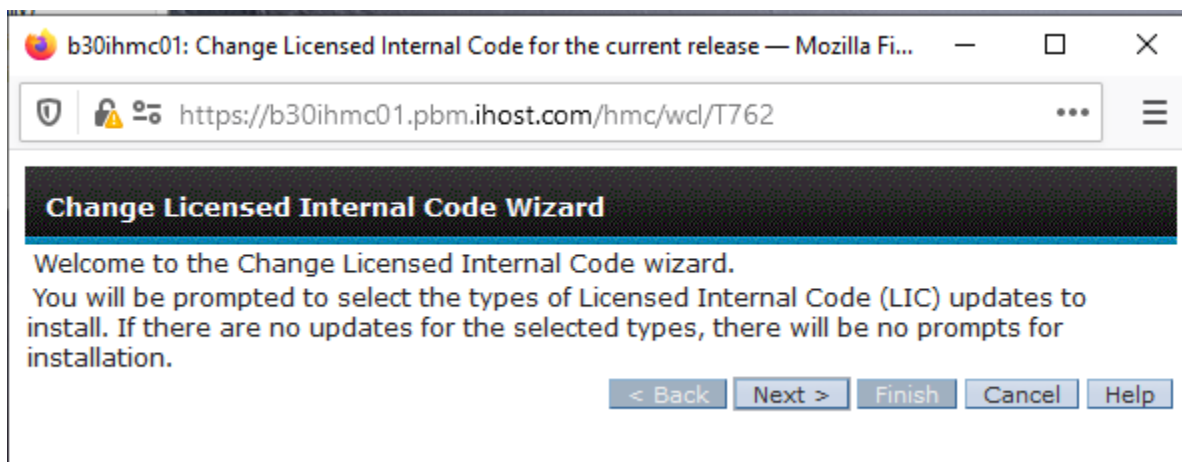


The screenshot shows a web browser window titled "b30ihmc01: Change Licensed Internal Code for the current release — ...". The address bar displays "https://b30ihmc01.pbm.ihost.com/hmc/wcl/T75a". The main content area has a dark header with the title "FTP Site Access Information". Below the header, the text reads: "Enter the FTP site address and account access information." There are three text input fields: "FTP site:" containing "172.24.1.1", "User ID:" containing "root", and "Password:" containing nine dots. Below these fields is a checkbox labeled "Accessing a mounted Discovery CD". Below the checkbox is a text input field labeled "Directory:" containing the path "/BCU\_share/FP8\_FP4/firmware/server\_fsp/22A\_42A/image/imports/". Below this field is a button labeled "Change Directory...". At the bottom right, there are three buttons: "OK", "Cancel", and "Help".

15. HMC GUI: The wizard runs the check readiness against the selected servers. Click Ok.



16. Continue with with Wizard and click Next.



17. The managed and System and Power LIC should be checked. Click Advanced Options to see the Advanced Options screen.

**Change Licensed Internal Code Wizard**

Select Managed System and Power LIC to install updates. Click Advanced to view the concurrency status of the targets, to change the selected targets, or to select a different installation type.

Current LIC repository location: FTP site

☒ Managed System and Power LIC

Concurrency status: All updates are concurrent.

Current installation type selection: Concurrent install and activate.

[Advanced Options...](#)

[< Back](#) [Next >](#) [Finish](#) [Cancel](#) [Help](#)

18. All selected servers should have All can be concurrent activated.

**Managed System and Power Licensed Internal Code (LIC) Concurrency**

Click a table row and click View Information to see the activated and retrievable LIC levels for that target.

Current LIC repository location: FTP site

| Select                | Target                              | Target Name               | Concurrency Status                 |
|-----------------------|-------------------------------------|---------------------------|------------------------------------|
| <input type="radio"/> | <input checked="" type="checkbox"/> | Server-8284-22A-SN21F353V | All can be concurrently activated. |
| <input type="radio"/> | <input checked="" type="checkbox"/> | Server-8284-22A-SN21F354V | All can be concurrently activated. |
| <input type="radio"/> | <input checked="" type="checkbox"/> | Server-8284-22A-SN21F355V | All can be concurrently activated. |
| <input type="radio"/> | <input checked="" type="checkbox"/> | Server-8286-42A-SN21F356V | All can be concurrently activated. |
| <input type="radio"/> | <input checked="" type="checkbox"/> | Server-8286-42A-SN21F357V | All can be concurrently activated. |

[View Information...](#)

**Select the type of installation to perform**

☒ Concurrent install and activate

☐ Concurrent install only, with deferred disruptive activate

☐ Disruptive install and activate - Power off automatically, if necessary. (Shortest overall update time)

☐ Disruptive install and activate - Delay power off with confirmation. (Shortest system down time)

[OK](#) [Cancel](#) [Help](#)

19. Select a server and select 'View Information'. You should see the current levels are 205 and the retrievable levels is 226. Click close and then click OK on the previous screen.

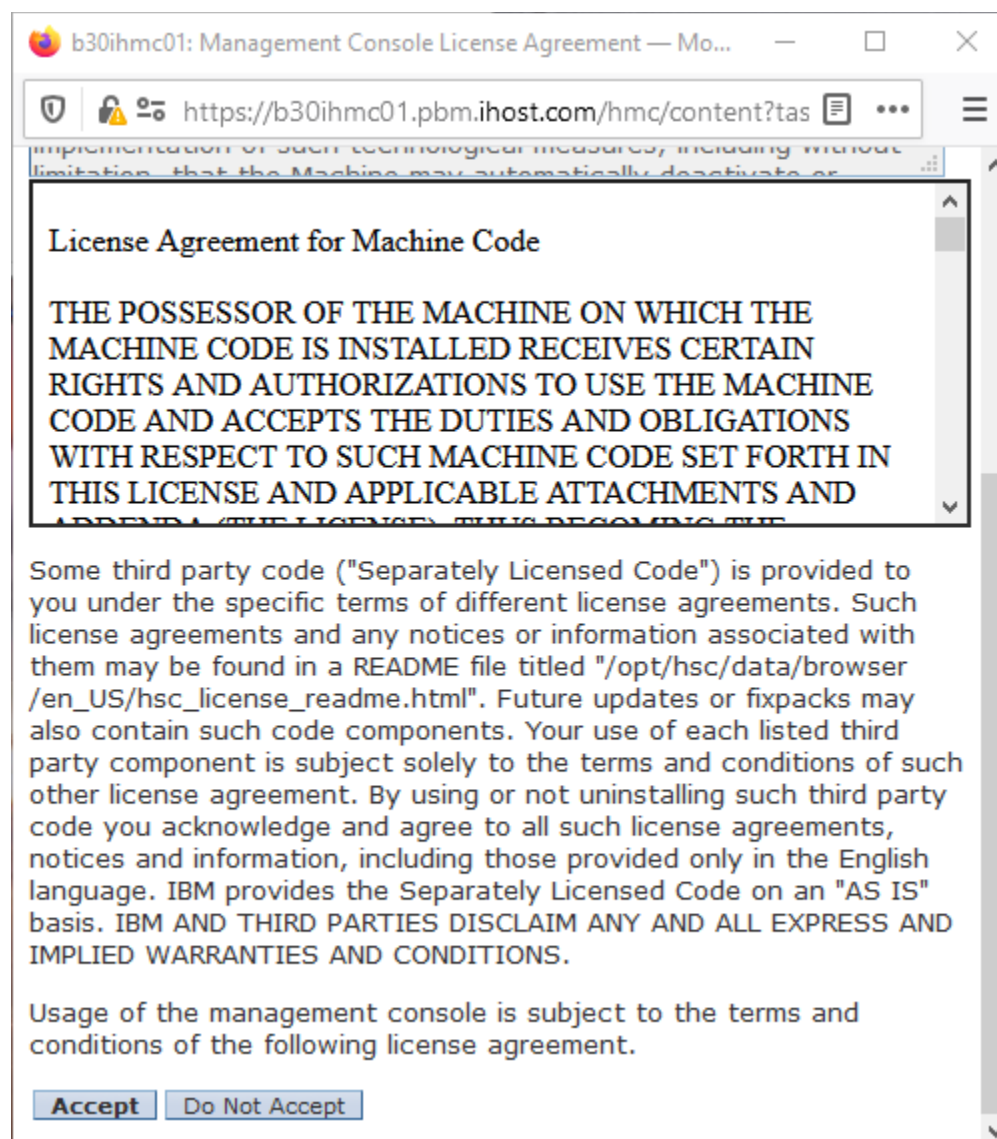
The screenshot shows a web browser window titled "b30ihmc01: Change Licensed Internal Code for the current release — Mozilla Firefox". The address bar shows the URL "https://b30ihmc01.pbm.ihost.com/hmc/wd/T7a3". The main content area has a header "Managed System and Power Licensed Internal Code (LIC) Level Details". Below the header, there is a text block: "Click a table row and click View Details to see additional information about the LIC levels based on the current type of installation." followed by "Target name: Server-8284-22A-SN21F353V", "Current LIC repository location: FTP site", and "Type of installation: Concurrent install and activate." Below this is a table with 7 columns: "Select", "EC Number", "LIC Type", "Machine Type/ Model/ Serial Number", "Activated Level", "Retrievable Concurrent Activate Level", and "Retrievable Disruptive Activate Level". The table contains one row with the following data: "O" in the Select column, "01SV860" in the EC Number column, "Managed System Primary" in the LIC Type column, "8284-22A\*21F353V" in the Machine Type/ Model/ Serial Number column, "FW860.70 (205)" in the Activated Level column, "FW860.90 (226)" in the Retrievable Concurrent Activate Level column, and "FW860.90 (226)" in the Retrievable Disruptive Activate Level column. Below the table is a "View Details..." button. At the bottom right are "Close" and "Help" buttons.

| Select                | EC Number | LIC Type               | Machine Type/ Model/ Serial Number | Activated Level | Retrievable Concurrent Activate Level | Retrievable Disruptive Activate Level |
|-----------------------|-----------|------------------------|------------------------------------|-----------------|---------------------------------------|---------------------------------------|
| <input type="radio"/> | 01SV860   | Managed System Primary | 8284-22A*21F353V                   | FW860.70 (205)  | FW860.90 (226)                        | FW860.90 (226)                        |

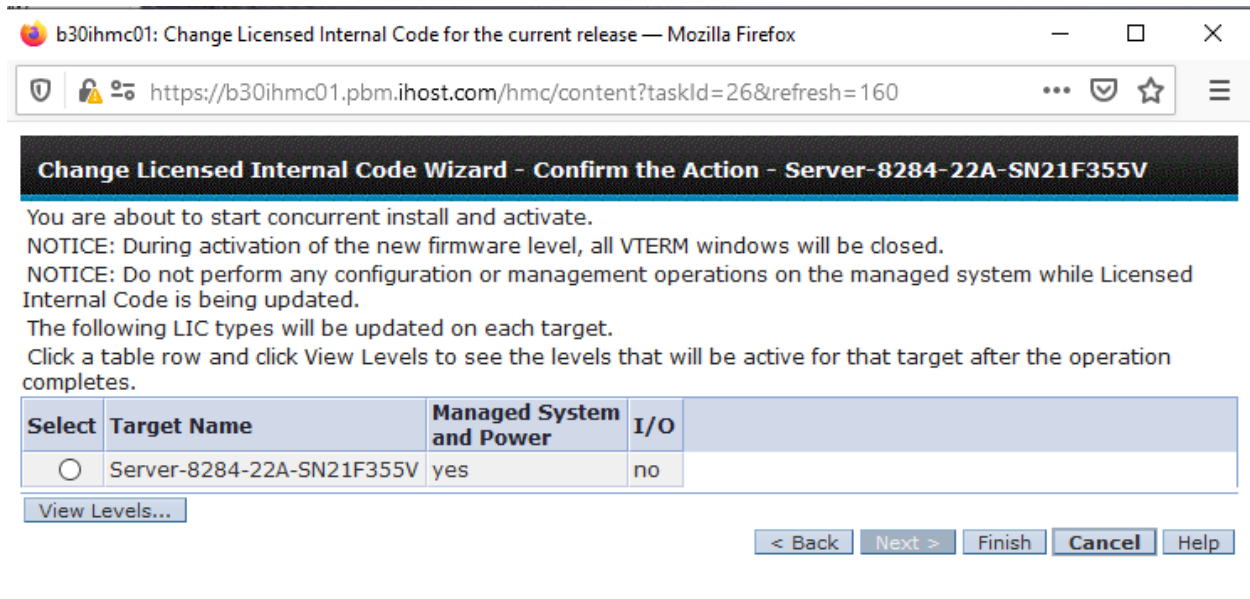
20. Click next to start the final wizard.

The screenshot shows a web browser window titled "b30ihmc01: Change Licensed Internal Code for the current release — Mozilla Firefox". The address bar shows the URL "https://b30ihmc01.pbm.ihost.com/hmc/content?taskId=25&refresh=152". The main content area has a header "Change Licensed Internal Code Wizard". Below the header, there is a text block: "Select Managed System and Power LIC to install updates. Click Advanced to view the concurrency status of the targets, to change the selected targets, or to select a different installation type." followed by "Current LIC repository location: FTP site". Below this is a checkbox labeled "Managed System and Power LIC" which is checked. Below the checkbox is a text block: "Concurrency status: All updates are concurrent." followed by "Current installation type selection: Concurrent install and activate." Below this is an "Advanced Options..." button. At the bottom right are buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

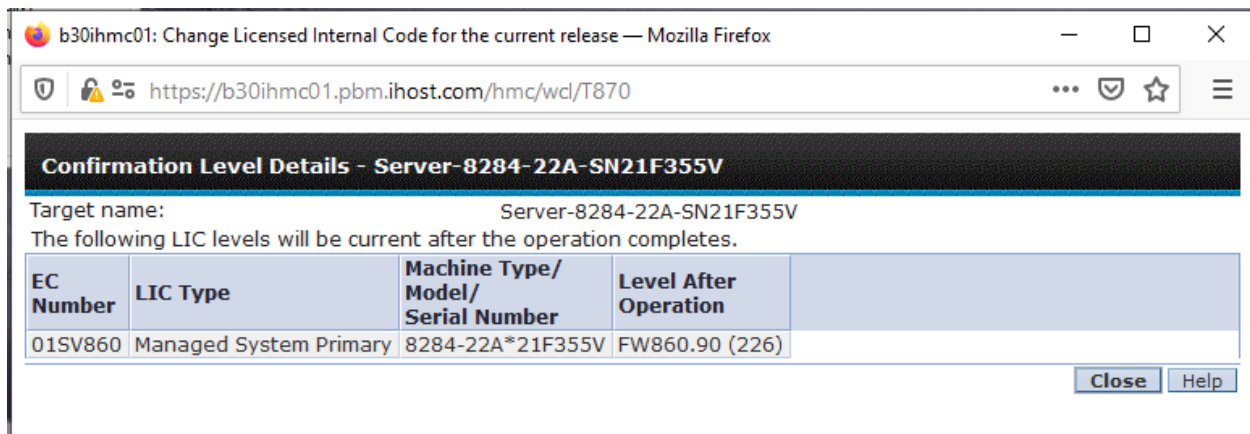
21. Accept the license agreement.



22. The confirm action page should show all servers to be updated. The picture shows just one. Click View Levels.



23. Verify the target level again and click Close.



Click 'Finish' on the previous window. Note this process has not been tested on PDOA systems, however it should apply the update in parallel.