Elastic Storage Server
Version 5.3.6

Command Reference

SC28-3154-00

Note

Before using this information and the product it supports, read the information in “Notices” on page 79.

This edition applies to version 5.3.6 of the Elastic Storage Server (ESS) for Power®, to version 5 release 0 modification 5 of the following product editions, and to all subsequent releases and modifications until otherwise indicated in new editions:

- IBM Spectrum® Scale Data Management Edition for IBM® ESS (product number 5765-DME)
- IBM Spectrum Scale Data Access Edition for IBM ESS (product number 5765-DAE)

Significant changes or additions to the text and illustrations are indicated by a vertical line (|) to the left of the change.

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About this information

This information guides you in planning for and deploying the Elastic Storage Server (ESS) Version 5.3.5.x for Power and all subsequent modifications of and fixes for this release.

Who should read this information

This information is intended for system operators and service technicians who have extensive knowledge of networking and Serial Attached SCSI (SAS) technology.

Related information

ESS information

The ESS 5.3.6.x library consists of following information units. You can access these publications on IBM Knowledge Center or IBM Publications Center.

- *Elastic Storage Server: Quick Deployment Guide*, SC28-3151
- *Elastic Storage Server: Protocol Nodes Quick Deployment Guide*, SC28-3152
- *Elastic Storage Server: Problem Determination Guide*, GC28-3153
- *Elastic Storage Server: Command Reference*, SC28-3154
- *IBM Spectrum Scale RAID: Administration*, SC28-3142
- *IBM ESS Expansion: Quick Installation Guide (Model 084)*, SC27-4627
- *IBM ESS Expansion: Installation and User Guide (Model 084)*, SC27-4628
- *IBM ESS Expansion: Hot Swap Side Card - Quick Installation Guide (Model 084)*, GC27-9210
- *IBM ESS Expansion: Hardware Installation and Maintenance Guide (Model 106)*, SC27-9211
- *IBM ESS Expansion: Overview of CMA and Rail Kit Hardware Fasteners (Model 106)*, SC27-9296
- *Installing the Model 024, ESLL, or ESLS storage enclosure*, GI11-9921
- *Removing and replacing parts in the 5147-024, ESLL, and ESLS storage enclosure*
- *Disk drives or solid-state drives for the 5147-024, ESLL, or ESLS storage enclosure*
- For information about the DCS3700 storage enclosure, see:
  - *System Storage® DCS3700 Quick Start Guide*, GA32-0960-04:

    https://www-01.ibm.com/support/docview.wss?uid=ssg1S7005178
  - *IBM System Storage DCS3700 Storage Subsystem and DCS3700 Storage Subsystem with Performance Module Controllers: Installation, User's, and Maintenance Guide*, GA32-0959-07:

    http://www.ibm.com/support/docview.wss?uid=ssg1S7004920
- For information about the IBM Power Systems EXP24S I/O Drawer (FC 5887), see IBM Knowledge Center :

  http://www.ibm.com/support/knowledgecenter/8247-22L/p8ham/p8ham_5887_kickoff.htm

For the latest support information about IBM Spectrum Scale RAID, see the IBM Spectrum Scale RAID FAQ in IBM Knowledge Center:

http://www.ibm.com/support/knowledgecenter/SSYSP8/gnrfaq.html

Other related information

For information about:

- IBM Spectrum Scale, see:

http://www.ibm.com/support/knowledgecenter/STXKQY/ibmspectrumscale_welcome.html

- IBM Spectrum Scale call home, see Understanding call home.
- Installing IBM Spectrum Scale and CES protocols with the installation toolkit, see Installing IBM Spectrum Scale on Linux® nodes with the installation toolkit.
- IBM POWER8® servers, see IBM Knowledge Center:

  http://www.ibm.com/support/knowledgecenter/POWER8/p8hdx/POWER8welcome.htm
- Extreme Cluster/Cloud Administration Toolkit (xCAT), go to the xCAT website :

  http://xcat.org/

  – xCAT 2.15.1 Release Notes®
- Mellanox OFED Release Notes (4.9), go to https://docs.mellanox.com/display/OFEDv490170/Release%20Notes
- IBM Electronic Service Agent (ESA) documentation, go to https://www-01.ibm.com/support/esa/.
- Drive call home, go to Drive call home in 5146 and 5148 systems.

Conventions used in this information

Table 1 on page viii describes the typographic conventions used in this information. UNIX file name conventions are used throughout this information.

Table 1. Conventions

Convention	Usage
bold	Bold words or characters represent system elements that you must use literally, such as commands, flags, values, and selected menu options. Depending on the context, **bold** typeface sometimes represents path names, directories, or file names.
bold underlined	bold underlined keywords are defaults. These take effect if you do not specify a different keyword.
constant width	Examples and information that the system displays appear in `constant-width` typeface. Depending on the context, `constant-width` typeface sometimes represents path names, directories, or file names.
italic	*Italic* words or characters represent variable values that you must supply. *Italics* are also used for information unit titles, for the first use of a glossary term, and for general emphasis in text.
<key>	Angle brackets (less-than and greater-than) enclose the name of a key on the keyboard. For example, <Enter> refers to the key on your terminal or workstation that is labeled with the word *Enter*.

****	In command examples, a backslash indicates that the command or coding example continues on the next line. For example:
	`mkcondition -r IBM.FileSystem -e "PercentTotUsed > 90" \`
	`-E "PercentTotUsed < 85" -m p "FileSystem space used"`

{item}	Braces enclose a list from which you must choose an item in format and syntax descriptions.
[item]	Brackets enclose optional items in format and syntax descriptions.

Table 1. Conventions (continued)

Convention	Usage
<Ctrl-*x*>	The notation <Ctrl-*x*> indicates a control character sequence. For example, <Ctrl-c> means that you hold down the control key while pressing <c>.
***item*...**	Ellipses indicate that you can repeat the preceding item one or more times.
|	In *synopsis* statements, vertical lines separate a list of choices. In other words, a vertical line means *Or*. In the left margin of the document, vertical lines indicate technical changes to the information.

How to submit your comments

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http://www.ibm.com/support/knowledgecenter/SSYSP8/sts_welcome.html

To contact the IBM Spectrum Scale development organization, send your comments to the following email address:

scale@us.ibm.com

Chapter 1. ESS commands

This topic includes descriptions of the ESS commands.

Descriptions of these ESS commands follow:

For information about ESS scripts, see Chapter 2, "ESS scripts," on page 63.

For information about these IBM Spectrum Scale RAID commands, see *IBM Spectrum Scale RAID: Administration*:

```
mmaddcomp
mmaddcompspec
mmaddpdisk
mmchcarrier
mmchcomp
mmchcomploc
mmchenclosure
mmchfirmware
mmchpdisk
mmchrecoverygroup
mmcrrecoverygroup
mmcrvdisk
mmdelcomp
mmdelcomploc
mmdelcompspec
mmdelpdisk
mmdelrecoverygroup
mmdelvdisk
mmdiscovercomp
mmgetpdisktopology
mmlscomp
mmlscomploc
```

```
mmlscompspec
mmlsenclosure
mmlsfirmware
mmlspdisk
mmlsrecoverygroup
mmlsrecoverygroupevents
mmsyncdisplayid
```

For information about these IBM Spectrum Scale RAID scripts, see *IBM Spectrum Scale RAID: Administration*:

```
chdrawer
gnrhealthcheck
mkrginput
topselect
topsummary
```

For information about other IBM Spectrum Scale commands, see *IBM Spectrum Scale: Command and Programming Reference*.

gssaddnode command

Adds a node (e.g. EMS) to a GPFS cluster.

Synopsis

```
gssaddnode -N ADD-NodeList { --cluster-node ClusterNode }
           [ --nodetype NodeType ] [ --prefix Prefix ] [ --suffix Suffix ]
           [ --accept-license] [--no-fw-update]
           [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The gssaddnode command adds nodes to a GPFS cluster. It can be used to add an EMS or I/O server node to the cluster. This command must run on the EMS node when the EMS node is being added to the cluster. The EMS node must be upgraded to the correct software levels (such as RHEL, xCAT and GPFS) before adding the node to the cluster. This command updates firmware levels in the SAS host adapter, firmware in the enclosure and drives.

Parameters

-N *ADD-NodeList*
Provides a comma-separated list of nodes to add to an existing GPFS cluster. In case of an EMS node, it must be the host name of the EMS (For example, ems1).

--cluster-node *ClusterNode*
Provides the name of a node that exists in a GPFS cluster where nodes will be added. This node must be able to run GPFS administrative commands. For example, --cluster-node gssio1 where gssio1 is an existing node in the cluster. Either --cluster-node or --cluster-group must be provided.

--nodetype *NodeType*
Indicates the type of the node being added. Supported node types include ems and gss. Default nodetype is ems.

--prefix *Prefix*
Provides the hostname prefix. PREFIX is used with the node names provided in the ADD-NODE-LIST to create the actual node names. Use = between --prefix and value if the value starts with -.

--suffix *Suffix*
Provides the hostname suffix. SUFFIX is used with the node names in the ADD-NODE-LIST to create the actual node names. For example, with an *ADD-NodeList* of gssio1,gssio2, and prefix A- and suffix -ib, node names A-gssio1-ib and A-gssio2-ib are used to form the actual node names. The node name must resolvable. Use = between --suffix and the value, if the value starts with -.

--accept-license
Provides the --accept-license indicating that the applicable licensing terms are accepted. If not provided user will be prompted for license acceptance after addition of the node.

--no-fw-update
This option skips SAS adapter, storage enclosure and drive firmware update after addition of the nodes into the cluster.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the gssaddnode command.

Examples

1. This example shows EMS node ems1 being added to the cluster. In this example, a node of the existing cluster is provided.

```
gssaddnode -N ems1 --cluster-node gssio1 --nodetype ems --accept-license
```

2. This example shows the new I/O server nodes gssio3 and gssio4 being added to the existing cluster. In this example, a node of the existing cluster is provided. While adding I/O server node, make sure to use --nodetype as gss. The gss node type indicates that the newly added node is an NSD server I/O server node.

```
gssaddnode -N gssio4 --cluster-node gssio1 --nodetype gss --accept-license
```

See also

See also the following *IBM Spectrum Scale: Command and Programming Reference* topics:

- mmaddnode
- mmchconfig
- mmchlicense
- mmcrnodeclass
- mmstartup

Location

/opt/ibm/gss/tools/bin

gsscallhomeconf script

Performs ESS HW call home configuration

Synopsis

```
gsscallhomeconf { [ -N NODE-LIST ] } [ --show ] [ --prefix  PREFIX]
                [ --suffix SUFFIX ] -E ESA-AGENT
                [ --register {node,all } ] [--no-swcallhome]
                [ --icn ICN][ --crvpd ]
                [ --serial SOLN-SERIAL ] [ --model SOLN-MODEL ]
                [ --esa-hostname-fqdn FQDN ] [--stop-auto-event-report]
                [ --verbose ] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

You can use the **gsscallhomeconf** script to configure ESS for call home event generation by using the Electronic Service Agent (ESA). The call home event is generated when a disk failure or a node failure event occurs and replacement is required.

gsscallhomeconf or **gsscallhomeevent** can communicate with ESA over a REST API and can generate events upload failure data when a disk replacement is required. I/O server nodes, EMS node, and attached enclosures are considered end point that can generate events.

gsscallhomeconf also configures software call home along with hardware call home unless `--no-swcallhome` is specified. If you do not want to use software call home along with hardware call home, use the `--no-swcallhome` option.

The **gsscallhomeconf** `--stop-auto-event-report` switch instructs ESA to not report automatic event and not create any PMR automatically for any hardware failure. The **callhomemon.sh** script must be configured as a part of `crontab` to report any event to ESA on periodic intervals. For more information, see `/opt/ibm/gss/tools/samples/callhomemon.sh` and *IBM Spectrum Scale Software call home documentation*.

Parameters

-N *NODE-LIST*
Provides a list of nodes to configure.

--prefix *PREFIX*
Provides the hostname prefix. Use = between --prefix and value if the value starts with -.

--suffix *SUFFIX*
Provides the hostname suffix. Use = between --suffix and value if the value starts with -.

-E *ESA-AGENT*
Provides the node name on which the ESA agent is installed and running.

--register *{node,all}*
Registers the endpoints (nodes, enclosure or all) with ESA.

--no-swcallhome
Specifies to not configure software call home while configuring hardware call home. The **gsscallhomeconf** command configures software call home with hardware call home by default unless this option is specified.

--icn *ICN*
Provides the IBM customer number for software call home.

--crvpd
Creates the solution vital product data (VPD) file.

--serial *SOLN-SERIAL*
Provides the ESS solution serial number in the VPD file.

--model *SOLN-MODEL*
Provides the ESS model.

--esa-hostname-fqdn *FQDN*
Provides the fully qualified domain name of ESA server for the certificate validation.

--stop-auto-event-report
Stops report of automatic event to ESA if any hardware call home event is reported to the system.

--verbose
Provides the verbose output.

-h | --help
Displays usage information about this script and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gsscallhomeconf` script.

Example

The following examples show configuring call home:

```
# ./gsscallhomeconf -N IONode1,IONode2 -E EMSNode --suffix=-ib --register node --esa-hostname-
fqdn ems1.gpfs.net --icn 123456

    2019-05-23T02:40:35.422902 Generating node list...
    2019-05-23T02:40:36.129896 nodelist:    gssio1 gssio2
    2019-05-23T02:40:36.129933 suffix used for endpoint hostname: -ib
    End point gssio1-ib registered successfully with systemid 3ecc9e664c8ce85d6bba3f6c7c3ae523
    End point gssio2-ib registered successfully with systemid da4b3bd9d127d9285a4f73a55c232ecd
    ESA configuration for ESS Call home is complete.
    Started configuring software callhome
    Checking for ESA is activated or not before continuing.
    Fetching customer detail from ESA.
    Customer detail has been successfully fetched from ESA.
    Setting software callhome customer detail.
    Successfully set the customer detail for software callhome.
    Enabled daily schedule for software callhome.
    Enabled weekly schedule for software callhome.
    Direct connection will be used for software calhome.
    Successfully set the direct connection settings for software callhome.
    Enabled software callhome capability.
    Creating callhome automatic group
    Created auto group for software call home and enabled it.
    Software callhome configuration completed.
```

```
# gsscallhomeconf -E ems3 -N ems3,IONode1,IONode2 --suffix=-te --register=all
--no-swcallhome --esa-hostname-fqdn ems1.gpfs.net --icn 123456


    2019-01-23T05:34:42.005215 Generating node list...
    2019-01-23T05:34:42.827295 nodelist:    ems3 essio31 essio32
    2019-01-23T05:34:42.827347 suffix used for endpoint hostname: -te
    End point ems3-te registered sucessfully with systemid 37e5c23f98090750226f400722645655
    End point essio31-te registered sucessfully with systemid 35ae41e0388e08fd01378ae5c9a6ffef
    End point essio32-te registered sucessfully with systemid 9ea632b549434d57baef7c999dbf9479
    End point enclosure SV50321280 registered sucessfully with systemid
```

```
600755dc0aa2014526fe5945981b0e08
    End point enclosure SV50918672 registered sucessfully with systemid
92aa6428102b44a4a1c9a293402b324c
    ESA configuration for ESS Callhome is complete.
```

Location

/opt/ibm/gss/tools/bin

gsscallhomeevent command

Use the **gsscallhomeeevent** command to send call home events to the Electronic Service Agent (ESA).

Synopsis

```
gsscallhomeevent [ --systemid EVENTSID ]
                 [ --event { postRGTakeover | postRGRelinquish | rgOpenFailed |
                 rgPanic | pdFailed | pdRecovered | pdReplacePdisk | pdPathDown |
                 daRebuildFailed } ]
                 [ --eventName EVENTNAME ] [ --eventId EVENTID ] [ --myNode MYNODE ]
                 [ --rgName RGNAME ] [ --rgErr RGERR ]
                 [ --rgReason RGREASON ] [ --daName DANAME ]
                 [ --pdName PDNAME ] [ --pdLocation PDLOCATION ]
                 [ --pdFru PDFRU ] [ pdWwn PDWWN ][ --pdState PdState ]
                 [ --daRemainingRedundancy DAREMAININGDEDUNDANCY ] [ --eventDesc EVENTDESC
                 [ --compName COMPNAME] [--compId COMPID] [--compSerial COMPSERIAL]
                 [ --verbose ] [ --show ] [ --upload UPLOADFILES ]
                 [ --collector COLLECTOR ]
                 [ --heartbeatnode HEARTBEATNODE ] [ --esa-hostname-fqdn FQDN]
                 [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

You can use the **gsscallhomeevent** command to send call home events to the ESA agent.

A call home event can be disk call home or node call home. The **callhomemon.sh** script must be configured as a part of `crontab` to report any event to ESA in periodic intervals. For more information, see `/opt/ibm/gss/tools/samples/callhomemon.sh` and `IBM Spectrum Scale call home documentation`.

Parameters

-h | --help
Specifies the help message and exit.

-systemid ***EVENTSID***
Specifies the system ID for the event.

--event
{postRGTakeover,postRGRelinquish,rgOpenFailed,rgPanic,pdFailed,pdRecovered,
pdReplacePdisk,pdPathDown,daRebuildFailed}
Specifies the call home event.

--eventName ***EVENTNAME***
Specifies the event name.

--eventId ***EVENTID***
Specifies the unique event ID. Applicable for hardware call home only.

--myNode ***MYNODE***
Specifies the node that generates the event.

--rgName ***RGNAME***
Specifies the recovery group (RG) name.

--rgErr ***RGERR***
Specifies the RG error information.

--rgReason ***RGREASOn***
Specifies the RG reason.

--daName *DANAME*
Specifies the declustered array (DA) name that is associated with the event.

--pdName *PDNAME*
Specifies the physical disk (pdisk) name.

--pdLocation *PDLOCATION*
Specifies the pdisk location.

--pdFru *PDFRU*
Specifies the pdisk field replaceable unit (FRU).

--pdWwn *PDWWN*
Specifies the pdisk unique worldwide name (WWN).

--pdState *PDSTATE*
Specifies the physical disk pdisk state.

--deRemainingRedundancy *DAREMAININGREDUNDANCY*
Specifies the remaining redundancy of the associated DA.

--compName *COMPNAME*
Specifies the component name.

--compId *COMPID*
Specifies the component ID.

--compSerial *COMPSERIAL*
Specifies the component serial number.

--eventDesc *EVENTDESC*
Provides event description.

--verbose
Specifies the verbose output.

--show
Specifies the endpoint and event details.

--upload *UPLOADFILES*
Specifies the list of upload files and their location for the event.

--collector *COLLECTOR*
Specifies the command or script to generate the upload file. There is no default value.

--heartbeatnode *HEARTBEATNODE*
Specifies the heartbeat that is sent from the heartbeat node to ESA agent.

--esa-hostname-fqdn *FQDN*
Provides the fully qualified domain name of ESA server for the certificate validation.

Security

You must have root authority to run the `gsscallhomeevent` command.

Exit status

0
Successful completion.

nonzero
A failure occurs.

Example

This examples shows how to send call home events to the ESA agent.

```
gsscallhomeevent --eventName ReplaceDisk --event
pdReplacePdisk --systemid 37a6259cc0c1dae299a7866489dff0bd
```

Location

/opt/ibm/gss/tools/bin

gsscheckdisks command

Checks attached disks for errors under various I/O operations.

Synopsis

```
gsscheckdisks { --enclosure-list Enclosure-List  | --disk-list DiskList | --show-enclosure-
list }
                    [ --iotest Io-Test ] [ --ioengine Io-Engine ]
                       [ --batch-size Batch-Size ] [ --duration Test-Duration]
                          [ --write-enable] [ --iopath Io-Path ] [--confirm]
                       [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The `gsscheckdisks` command checks the attached drives for disk errors under various I/O operations before configuring (part of recovery group) them. At the end of the test, the number of errors (and net performance) per device is reported. This test is typically run on the EMS node. It can also be run on the I/O server node with the `--local` option. If any disk shows error (non-zero error count), it needs to be addressed before adding the drive in the recovery group. This is not a performance tool and performance statistics shown are approximate and relative to other disks in the same batch of the run. When run from the EMS node, summary results are saved in the **/temp/checkdisk** directory of the EMS node.

Parameters

--enclosure-list { *EnclosureList* }
Specifies a list of enclosures to be tested. Specify `all` to test all attached enclosures.

--disk-list *DiskList*
Specifies a list of disks to be tested, for example: `sdh`, `sdx`, `sdm`.

Disks are not checked for potential write to local disks such as sda when `--write-enable` option is provided. `--enclosure-list` and `--disk-list` are mutually exclusive.

--show-enclosure-list
Displays a list of enclosures attached to I/O server nodes.

This list, or a subset of it can be used to provide input to `--enclosure-list`. Program exits after displaying the list.

--iotest *IoTest*
Specifies a comma-separated list of I/O operations for testing. Valid values are `r` (sequential read), `w` (sequential write), R (random read), `W` (random write), and a (all). The default is `r` (sequential read).

I/O tests are run in the sequence they are provided. For example, r,w,W,R,w,r. If a is provided alone or as a part of a sequence, the given sequence is replaced with `r,w,R,W`.

--ioengine *Io-Engine*
Specifies the I/O engine to use.

Valid values are g for gpfsperf, d for dd, or s for shred.

--batch-size *Batch-Size*
Specifies the batch size (number of disks tested at a time) of the test. Specify 0 for all attached drive in a single batch. Default batch size is 60. Maximum batch size must be limited to 120.

--duration *Test-Duration*
Specifies the duration of the test in seconds. Default is 30 seconds. Specify 0 to start and exit **gsscheckdisks** while the I/O engine is running. It can be used to sequentially write to the end of the disk.

--write-enable
Enables read-write I/O operations to the drive. Default is read-only. For any test sequence that involves write operation, `--write-enable` must be specified.

--io-path *io-path*
Specifies the comma separated list of I/O paths for test. The default is 0,1 indicating both paths.

--confirm
Runs disk checks without prompting even if recovery group descriptor exists.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Restrictions

This command must be run on a system where there is no GPFS cluster configured.

This command must not be run on a system that has GPFS recovery groups.

Security

You must have root authority to run the `gsscheckdisks` command.

Examples

This example shows `gsscheckdisks` command running on node `gssio1` and performing all tests (including write) in drives in all enclosures. Run:

```
gsscheckdisks --encl all --iotest a --write-enable --confirm
```

The system displays output similar to this:

```
2014-12-04T21:28:32.577341 Start running check disks
2014-12-04T21:28:33.801643 nodelist:    gssio1 gssio2
2014-12-04T21:28:34.104659 Running checkdisk on node  gssio1
gssio1: 2014-12-04T21:28:35.121970 Start running check disks
gssio1: List of Enclosures found
gssio1: SV32300072
gssio1: SV24819545
gssio1: Taking inventory of disks in enclosure SV32300072.
gssio1: Taking inventory of disks in enclosure SV24819545.
gssio1: 2014-12-04T21:32:37.637318 Starting r test for 118 of 118 disks. Path: 0, duration 30
secs
gssio1: 2014-12-04T21:33:14.678887 Check disk analysis for r test Complete
gssio1: 2014-12-04T21:33:14.680854 Starting w test for 118 of 118 disks. Path: 0, duration 30
secs
gssio1: 2014-12-04T21:33:51.743056 Check disk analysis for w test Complete
gssio1: 2014-12-04T21:33:51.745072 Starting R test for 118 of 118 disks. Path: 0, duration 30
secs
gssio1: 2014-12-04T21:34:28.903142 Check disk analysis for R test Complete
gssio1: 2014-12-04T21:34:28.905101 Starting W test for 118 of 118 disks. Path: 0, duration 30
secs
gssio1: 2014-12-04T21:35:06.042941 Check disk analysis for W test Complete
gssio1: 2014-12-04T21:35:06.044872 Starting r test for 118 of 118 disks. Path: 1, duration 30
secs
gssio1: 2014-12-04T21:35:43.109214 Check disk analysis for r test Complete
gssio1: 2014-12-04T21:35:43.111221 Starting w test for 118 of 118 disks. Path: 1, duration 30
```

```
secs
gssio1: 2014-12-04T21:36:20.174434 Check disk analysis for w test Complete
gssio1: 2014-12-04T21:36:20.176328 Starting R test for 118 of 118 disks. Path: 1, duration 30
secs
gssio1: 2014-12-04T21:36:57.343535 Check disk analysis for R test Complete
gssio1: 2014-12-04T21:36:57.345505 Starting W test for 118 of 118 disks. Path: 1, duration 30
secs
gssio1: 2014-12-04T21:37:34.498058 Check disk analysis for W test Complete
```

When `gsscheckdisks` command runs, it collects information about the tests including disk performance and error counters. Error information collected during the test identifies a failing disk or path(s) to a disk. Test results are summarized and stored in the `checkdisk` directory of the EMS node. A directory with timestamps is created for each run. For each test run two files are created. They are *<node>diskana0.csv* and *<node>diskana1.csv* , and they contain summary results of disk IO throughout of each device every second as well one line summary of each device showing throughput and error count. Name of the *node <node>* where the test is running is prefixed to the output files. Each Disk summary line looks similar to this.

```
2015-01-03T19:38:05.783338 Disk: sdbx loc SV12616682:2-4 ST32000444SS path 0(sg61) Op w elapsed
time: 30
total sector read 0  read-tput  0.00 MB/sec, elapsed time 30 total sector write 2021376 write-
tput 32.90 MB/sec
devname sdbx  ioreq 1016 iodone 1017 ioerr 0
2015-01-03T19:38:05.788092 Disk: sdcb loc SV12616682:2-8 ST32000444SS path 0(sg61) Op w elapsed
time: 30
total sector read 0  read-tput  0.00 MB/sec, elapsed time 30 total sector write 1996800 write-
tput
32.50 MB/sec devname sdcb  ioreq 1090 iodone 1091 ioerr 0
2015-01-03T19:38:05.792839 Disk: sdbi loc SV12616682:1-1 ST32000444SS path 0(sg61) Op w elapsed
time: 30
total sector read 0  read-tput  0.00 MB/sec, elapsed time 30 total sector write 1984512 write-
tput
32.30 MB/sec devname sdbi  ioreq 998 iodone 999 ioerr 0
```

Here *loc* is the location of the disk in the enclosure,drawer-slot format. sgxx device shown in the path (within parenthesis), *rep* represents ESM accessing a disk. The **topsummary** program (For example, **mmgetpdisktopology**|**topsummary**) output shows sg address of ESM in the storage enclosure. Number of *ioreq, iodone* and *ioerr* are sampled from the `/sys/block/<Disk>/device directory`. They are sampled at the beginning and at the end of the test. They are otherwise not correlated and number of *ioreq* and *iodone* may not match. The key objective of this test is to determine if error free IO operations can be done on a disk. In addition to the performance and error summary following files are created in the `/tmp` directory of each IO server node.

diskiostat.csv: It stores samples of the `/proc/iostat` for every second during the test run and with following format:

- **col1:** time epoch,
- **col2:** node where test is run
- **col3:** device

The rest of the 11 columns are dumps of `/proc/iostat.` *deviceerr.csv*: It sores number of drive error count and sampled once every second.

- **col1:** time epoch
- **col2:** node where run
- **col3:** device
- **col4:** io issued

Location

`/opt/ibm/gss/tools/bin`

gsschenv command

Modifies the Elastic Storage Server (ESS) environment settings.

Synopsis

```
gsschenv  [ -m | --modify ] --show [-r | --reboot]
          [-V | --version] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

Use the **gsschenv** command to modify the ESS environment settings. You can modify the system environment settings, including:

- IP address
- Host name
- Subnet name
- Domain name

By default, the system ships with default IP address, host name and domain, etc. In the case of a customer environment, the customer might want to change the ESS IP address, host name, etc. This utility can be used to achieve this.

The **gsschenv** command can be used as part of the Fusion mode for ESS deployment.

Remember: Contact your system administrator before you select a new IP address, host name, subnet name, and domain name. Any invalid values cause **gsschenv** the command to hang and the nodes become unreachable.

In order to use this utility, you must modify environment settings in the `gsschenv.cfg` file, which can be found in the `/opt/ibm/gss/tools/conf` folder. You must modify the settings in this file before you specify the **gsschenv** command. The contents of `gsschenv.cfg` are similar to this example:

```
# ------------------------------------
# /opt/ibm/gss/tools/conf/gsschenv.cfg
# ------------------------------------
# Modify the following
# HOSTNAME_ORIG =  Original hostnames in your xCAT ESS environment.
# IP_ADDR_ORIG = Original IPs in your xCAT ESS environment  want (1 to 1 with HOSTNAME_ORIG)
# HOSTNAME_NEW = The new hostnames (1 to 1 with the HOSTNAME_ORIG)
# IP_ADDR_NEW = The new IPs you want (1 to 1 with HOSTNAME_NEW/ORIG)
# NETMASK = The new netmask associated with the IPs
# DOMAIN = The new domain associated with the IPs

HOSTNAME_ORIG=(ems1 gssio1 gssio2)
IP_ADDR_ORIG=(192.168.202.20 192.168.202.21 192.168.202.22)
HOSTNAME_NEW=(modems1 modgssio1 modgssio2)
IP_ADDR_NEW=(192.168.202.20 192.168.202.21 192.168.202.22)
NETMASK="255.255.255.0"
DOMAIN="gpfs.net"
```

Parameters

-h | --help
Specifies the help message and exit.

-m | --modify
Specifies that the following values be changed:

- IP address
- Host name
- Subnet name
- Domain name

-r | --reboot
Specifies an I/O node reboot after you modify the environment.

-V | --version
Specifies the version number and exit.

Security

You must have root authority to run the `gsschenv` script.

Exit status

0
Successful completion.

nonzero
A failure occurs.

Example

This example shows how to change the ESS environment to newer values specified in the `gsschenv.cfg` file after you have set the correct configuration in `gsschenv.cfg` file.

```
gsschenv --modify /opt/ibm/gss/tools/conf/gsschenv.cfg --reboot
```

After running this command, the system reboots automatically. After the reboot and in order to log in and use the system, you must use the new:

- IP address
- Host name
- Subnet name
- Domain name

Location

`/opt/ibm/gss/tools/bin`

gsscrchxml command

Creates an XML file for call home.

Synopsis

```
gsscrchxml [ -N NODE-LIST  | -GNODE-GROUP ]
           [ --prefix PREFIX ] [ --suffix SUFFIX ]
           [ --callhomexml  CALLHOME-XML ] [ --crvpd  ]
           [ --serial  SOLN-SERIAL ] [ --model  SOLN-MODEL ]
           [ -h | --help ] ]
```

Availability

Available with the Elastic Storage Server.

Description

You can use the **gsscrchxml** command to create an XML file for call home.

Parameters

-h | --help
Specifies the help message and exit.

-N *NODE-LIST*
Specifies the list of nodes on which to run tests.

-G *NODE-GROUP*
Specifies the node group name.

--prefix *PREFIX*
Specifies the host name prefix.

Note: Use an equal sign (=) between **--prefix** and *PREFIX* if *PREFIX* starts with a hyphen (-).

--suffix *SUFFIX*
Specifies the host name suffix.

Note: Use an equal sign (=) between **--suffix** and *SUFFIX* if *PREFIX* starts with a hyphen (-).

--callhomexml *CALLHOME-XML*
Specifies the Elastic Storage Server (ESS) call home XML file name and location. The default value is `/tmp/essch<serial>.xml`, where `<serial>` is the ESS solution serial number (see *SolnModel*).

--crvpd
Creates the vital product data (VPD) file.

--serial *SOLN-SERIAL*
Specifies the ESS solution serial number.

--model *SOLN-MODEL*
Specifies the ESS model.

--onscreen
Shows the XML file on `stdout`.

Security

You must have root authority to run the `gsscrchxml` script.

Exit status

0
Successful completion.

nonzero
A failure occurs.

Example
This example shows how to generate a call home XML file:

```
gsscrchxml -N ems1,gss_ppc64
```

Location

/opt/ibm/gss/tools/bin

gssfindmissingdisks command

Checks the disk paths and cabling connectivity.

Synopsis

```
gssfindmissingdisks { -N NodeList }
                    [ --prefix Prefix ] [ --suffix Suffix ] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The `gssfindmissingdisks` command checks for incorrect and missing cable connections between I/O server nodes and storage enclosures. The command checks for:

- Paths to disks
- Proper cable connections

Parameters

-N *NodeList*
Specifies a comma-separated list of nodes to run the check.

--prefix *Prefix*
Specifies the hostname prefix. Use *Prefix* with *NodeList* to generate node names when you run the check. Use = between --suffix and value if the value starts with -.

--suffix *Suffix*
Specifies the hostname suffix. Use *Suffix* with *NodeList* to generate node names when you run the check. For example:

- Node list `gssio1,gssio2`
- Prefix `A-`
- Suffix `-ib`
- Node names `A-gssio1-ib` and `A-gssio2-ib`

The newly formed node name must be resolvable to corresponding IP address. Use = between --suffix and value if the value starts with -.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssfindmissingdisks` command.

Examples

Following example shows **gssfindmissingdisks** running on node gssio1

```
gssfindmissingdisks -N gssio1,gssio2
```

A sample output is as follows:

```
2015-06-10T19:17:28.058805 Start find missing disk paths
2015-06-10T19:17:29.905278 nodelist:    gssio1 gssio2
2015-06-10T19:17:29.905351 May take long time to complete search of all drive paths
2015-06-10T19:17:29.905384 Checking missing disk paths from node  gssio1
gssio1 Enclosure SV45221140 (number 1):
gssio1 Enclosure SV45222733 (number 2):
gssio1: GSS configuration: 2 enclosures, 2 SSDs, 2 empty slots, 118 disks total, 6 NVRAM
partitions
2015-06-10T19:17:48.272489 Checking missing disk paths from node  gssio2
gssio2 Enclosure SV45221140 (number 1):
gssio2 Enclosure SV45222733 (number 2):
gssio2: GSS configuration: 2 enclosures, 2 SSDs, 2 empty slots, 118 disks total, 6 NVRAM
partitions
2015-06-10T19:18:04.740198 Finish search for missing disk paths. Number of missing disk paths: 0
```

Location

/opt/ibm/gss/tools/bin

gssgencluster command

Creates an ESS cluster from a node-list or node-group

Synopsis

```
gssgencluster -C ClusterName { -N NodeList | -G NodeGroup }
              [ --subnet SubnetList ] [ --cluster-type ClusterType ]
              [ --prefix Prefix ] [ --suffix Suffix ]
              [ --accept-license] [--no-fw-update] [ --change-configuration ChangeConfig ]
              [ --delete-cluster] [ --add-ems-in-cluster ]
              [ --use-sudo-wrapper] [ --sudo-user SUDO_USER]
              [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

Use the `gssgencluster` to create a GSS cluster containing the servers listed in NODE-LIST or NODE-GROUP. This command creates the cluster, apply applicable license acceptance, apply configuration changes for GSS application, create a node-class with the group name (xCAT group) of the nodes, update host-adapter, storage enclosure and disk firmware. At the successful completion the member nodes are also started.

The ESS cluster is configured (by default) with a callback script for any GNR events. This command is specifies when any of the following events occurs:

- postRGTakeover
- postRGRelinquish
- rgOpenFailed
- rgPanic
- pdFailed
- pdRecovered
- pdReplacePdisk
- pdPathDown
- daRebuildFailed

See the **mmaddcallback** command for more details on callback events. A brief description of callback events are recorded in the `/var/log/messages` file. The `gnrcallback350.sh` file located in the `/opt/ibm/gss/tools/samples` directory can be customized for additional actions (such as sending an email). The callback information can be deleted by using the **mmdelcallback** command.

Parameters

-C *ClusterName*
Specifies the name of the cluster. You must specify this parameter.

-N *NodeList*
Specifies a comma-separated list of nodes for the disk path check.

You must specify the `-N` or `-G` parameter.

-G *NodeGroup*
Specifies an xCAT node group.

You must specify the `-N` or `-G` parameter.

--subnet *SubnetList*
Specifies one or more subnet names in a comma-separated list. This parameter is used to populate the GPFS subnet parameter.

--cluster-type *ClusterType*
Specifies the cluster type. Valid values are ess3k, ess5k, and ess5x.

--prefix *Prefix*
Specifies the hostname prefix. This prefix value is applied to the node names that are provided in *NodeList* or *NodeGroup*. The combined node name is used as the host name for any GPFS cluster creation. Use an equal sign (=) between `--prefix` and *Prefix* if the prefix begins with a hyphen (-).

--suffix *Suffix*
Specifies the hostname suffix. This suffix value is applied to the node names that are provided in *NodeList* or *NodeGroup*. The combined node name is used as the host name for any GPFS cluster creation. For example, a *NodeList* value of `gssio1,gssio2`, with a prefix value of `A-` and a suffix value of `-ib`, and with host names `A-gssio1-ib` and `A-gssio2-ib` can be used to create the GPFS cluster. The newly formed node name must re resolvable. Use an equal sign (=) between `--suffix` and *Suffix* if the suffix begins with a hyphen (-).

--accept-license
Indicates that you accept the applicable licensing terms. The license acceptance prompt is suppressed. If this option is not provided you must accept the license after you create the cluster.

--no-fw-update
Indicates that you do not want to apply firmware updates for the host adapter, storage enclosures, and drives. This option skips the SAS adapter, the storage enclosure, and the drive FW update that occurs after the GPFS cluster creation.

--add-gss-callback
Specifies the addition of a GSS callback with the identifier `gnrcallback`. The `gnrcallback.sh` script is supplied in `/usr/lpp/mmfs/samples/vdisk` directory. This script is invoked when any of the following events occurs:

- `postRGTakeover`
- `postRGRelinquish`
- `rgOpenFailed`
- `rgPanic`
- `pdFailed`
- `pdRecovered`
- `pdReplacePdisk`
- `pdPathDown`
- `daRebuildFailed`

(See the **`mmaddcallback`** command for further details on callback events. A brief description of any callback events is recorded in the `gnrcallback.log` file located in the `/var/mmfs/tmp/gnrcallback.log`. The `gnrcallback.sh` file can be customized for additional actions (such as sending an email). The callback information can be deleted by using the **`mmdelcallback`** command.

--change-configuration *ChangeConfig*
Provides additional change cluster configuration options. The default is None. Enclose with quotation marks (' or ") if there are spaces within the configuration options. See the `mmchconfig` command for available configuration options.

--delete-cluster
Specifies the deletion of one node at a time from the cluster starting with the last node that is listed in the node list and node group. If the nodes are part of a GPFS cluster when this command is executed the nodes are deleted from the existing cluster before the new cluster is created.

Note: This option might not be able to delete nodes in all situations.

If the command fails, the nodes can be manually deleted using the **`mmdelnode`** command.

--add-ems-in-cluster
Adds EMS into the cluster as a part of the cluster creation. Use this option when you are in `adminMode=central` and the EMS node is an Admin node. Without this option, in `adminMode=central`, cluster creation will fail.

--use-sudo-wrapper
Specifies to use the sudo wrapper while creating the GPFS cluster. Creates cluster after login using the SUDO user.

Note: Do not use user root for cluster creation.

--sudo-user *SUDO_USER*
Specifies the SUDO user name while creating the GPFS cluster.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssgencluster` command.

Examples

This example shows generation of cluster test01 using node group gss_ppc64. Here the node list for the cluster creation is obtained from the xCAT group gss_ppc64. If the gss_ppc64 contains nodes gssio1 and gssio2 then cluster will be formed using these nodes.

```
gssgencluster -C test01 -G gss_ppc64
```

The node names in the NODE-GROUP gss_ppc64 are typically used for management tasks. High speed network such an Infiniband or 10Gbit Ethernet is used for the data/clustering network. In such a case you can create the cluster as follows:

```
gssgencluster -C test01 -G gss_ppc64 --suffix=-10g
```

Here node names gssio1-10g and gssio2-10g is used for the cluster creation. Where gssio1-10g and gssio2-10g must be resolvable into a valid IP addresses in the high speed network.

```
gssgencluster -C test01 -G gss_ppc64 --suffix=-10g  --accept-license --change-configuration
verbsRdmaSend=no

Here license is accepted and verbsRdmaSend is disabled.
```

See also

See also the following *IBM Spectrum Scale: Command and Programming Reference* topics:

- `mmchconfig`

Location

`/opt/ibm/gss/tools/bin`

gssgenclusterrgs command

Creates recovery groups, NSDs, and file systems.

Synopsis

```
gssgenclusterrgs { -N NodeList | -G NodeGroup }
                 [--prefix Prefix ] [ --suffix Suffix ] [ --verify Verify ]
                 [--convert] [--resize] [--verbose] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The `gssgenclusterrgs` command can be used to create:

- Recovery groups
- Declustered arrays (DAs)
- Associated log vdisks for logtip, logbackup and loghome

Use this command to create data and metadata vdisks, NSDs, and file systems.

In case of hybrid enclosures, two DAs are created. One DA for HDDs and the other one for SSDs.

Note: By default, **gssgenclusterrgs** uses mmvdisk-controlled vdisks.

gssgenclusterrgs also supports conversion of legacy RGs to mmvdisk-controlled RGs.

Restriction: As of now, **gssgenclusterrgs** does not allow custom recovery group names.

Recovery group names are generated by this command using the following logic:

Adds "rg_" at the beginning of the recovery group name followed by the prefix if provided, followed by the I/O server host name, followed by the suffix if provided. For example:

```
$ gssgenclusterrgs -N gssio1,gssio2 --prefix=su_ --suffix=-10g
```

The recovery group names generated for this command are:

- rg_su_gssio1_10g
- rg_su_gssio2_10g

If you are using "-" in a string, it is replaced by "_".

Parameters

-N *NodeList*
Specifies a list of nodes for recovery group creation.

You must specify the `-N` or `-G` parameter.

-G *NodeGroup*
Specifies the name of the node group for recovery group creation.

You must specify the `-N` or `-G` parameter.

--prefix *Prefix*
Specifies the host name prefix. Use an equal sign (=) between `--prefix` and *Prefix* if the prefix begins with a hyphen (`-`).

--suffix *Suffix*
Specifies the host name suffix. Use an equal sign (=) between `--suffix` and *Suffix* if the suffix begins with a hyphen (-).

--verify *Verify*
Verifies whether the pdisk was formatted previously. Valid values are: yes, no. The default is yes.

--convert
Convert legacy RGs to mmvdisk-controlled RGs. Once converted to mmvdisk-controlled, an RG cannot be reverted back to a legacy RG.

--resize
Support for MES deployment. Convert your GL2->GL4->GL6 etc. See mmvdisk MES documentation for more information.

--verbose
Provides more details.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssgenclusterrgs` command.

Examples

- This example shows how to create recovery groups and log vdisks.

```
gssgenclusterrgs -G gss_ppc64 --suffix=-10g --verify no
```

The system displays output similar to this:

```
2019-05-31T11:15:59.582667 Determining peer nodes
    2019-05-31T11:16:00.681008 nodelist:    io3 io4
    2019-05-31T11:16:02.980707 Getting pdisk topology from node to create partner list io3
    2019-05-31T11:16:37.297986 Getting pdisk topology from node to create partner list io4
    2019-05-31T11:17:10.375599 Creating recovery group node class for IO partner
io3_10gio4_10g
    2019-05-31T11:17:12.381181 Configuring recovery group node class and servers for IO
partner  io3_10gio4_10g
    2019-05-31T11:19:07.395621 Creating recovery group for IO partner  io3_10gio4_10g
    2019-05-31T11:21:45.146143 Successfully created recovery group for IO partner
io3_10gio4_10g
    2019-05-31T11:21:45.146286 Task complete.
```

See also

- “gssgenvdisks command” on page 30

See also the following *IBM Spectrum Scale: Command and Programming Reference* topics:

- `mmcrfs` command

Location

`/opt/ibm/gss/tools/bin`

gssgennetworks command

Create a bonded ESS network

Synopsis

```
gssgennetworks { -N Node-List | -G Node-Group } [ --prefix Prefix ] [ --suffix Suffix ]
               [ --interface Interface ] [--assignip ASSIGNIP]
               [ --create-bond | --delete-bond |--add-slave ]
               [ --gateway Gateway ] [--bond Bond ]
               [ --mode { balance-rr,active-backup,balance-xor,broadcast,
               802.3ad,balance-tlb,balance-alb}]
               [ --hash-policy {layer2+3,layer3+4}] [--netmask Crid]
               [ --ipoib ] [--mtu {1500,2048,4092,9000} ]
               [ --verbose ] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

Use **gssgennetworks** to create a high speed network by using **nmcli**. This command is applicable to any network with Ethernet and InfiniBand interfaces. This command also analyzes the `/etc/hosts` file in the EMS node and (based on the input that is provided in that file) it creates a bonded connection on the high speed interfaces that are in the target node. If new slave interfaces are added (or up) after the bond is created, they can be added to the bond.

By default, the:

- Miimon is set to 100
- Bonding mode is set to 802.3ad (LACP)
- Xmit_hash_policy is set to layer2+3

Any other bond options contain the default value, which includes the *lacp_rate* (the default value is slow). For proper network operation, the Ethernet switch and InfiniBand switch settings in the networking infrastructure must match the I/O server node interface bond settings.

Parameters

-N *Node-List*
Specifies a list of nodes to run the check.

-G *Node-Group*
Specifies the name of the node group to run the check.

--prefix *Prefix*
Specifies the hostname prefix.

Use an equal sign (=) between `--prefix` and *Prefix* if *Prefix* starts with a hyphen (-).

--suffix *Suffix*
Specifies the hostname suffix.

Use an equal sign (=) between `--suffix` and *Suffix* if *Suffix* starts with a hyphen (-).

--interface *Interface*
Specifies a list of interfaces for bonding. If the list is not provided, by default all high-speed interfaces are taken.

--assignip *ASSIGNIP*
Assigns IP address to provide interface in the `--interface` switch.

--create-bond
Creates a bonded interface.

--delete-bond
Deletes a bonded interface.

--add-slave
Adds the slave interfaces to an existing bond. This is useful when more high-speed links are up or added since the bond creation.

--gateway *Gateway*
Specifies a gateway for the network.

--bond *Bond*
Specifies the name of the bond. The default is bond0.

--mode
Specifies mode for the bonded interface. The default is `802.3ab` (recommended). The bonding option xmit_hash_policy is set to `layer2+3` when `802.3ab` or `balance-xor` is selected.

--hash-policy {layer2+3,layer3+4}
Specifies the xmit hash policy for `802.3ad` and `balanced-xor`. The default value is `layer2+3`.

--netmask *Crid*
Specifies the CIDR or network mask for the interface. The default is /24. The network mask should be specified in the format of CIDR.

--verbose
Provides more verbose output. The default is `false`.

--ipoib
Provides IP over Infiniband services.

--mtu {1500,2048,4092,9000}
Provides the MTU of the bond network. For Ethernet, 1500 or 9000 MTU is allowed (Default is 1500). For Infiniband, 2048 or 4092 MTU is allowed (Default is 2048).

-h | --help
Displays usage information about this script and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssgennetworks` script.

Examples

1. This example shows how to run the **gssgennetworks** to obtain information of high-speed interfaces IP address assigned to the bond:

```
[root@ems1 ~]# gssgennetworks -G gss_ppc64 --suffix=-te0 --verbose
          2016-01-25T16:05:14.184397 Starting network generation
          2016-01-25T16:05:15.782794 nodelist:    gssio1 gssio2
          2016-01-25T16:05:15.782846 suffix used for network hostname: -te0
           mlx4_0 port 1 ==> enp1s0 (Down)
           mlx4_0 port 2 ==> enp1s0d1 (Down)
           mlx4_1 port 1 ==> enP4p1s0 (Up)
           mlx4_1 port 2 ==> enP4p1s0d1 (Down)
           mlx4_2 port 1 ==> enP9p1s0 (Down)
           mlx4_2 port 2 ==> enP9p1s0d1 (Down)

          Interface list for node  gssio1
          Down interface enp1s0
          Down interface enp1s0d1
```

```
          Up interface enP4p1s0
          Down interface enP4p1s0d1
          Down interface enP9p1s0
          Down interface enP9p1s0d1
           mlx4_0 port 1 ==> enp1s0 (Down)
           mlx4_0 port 2 ==> enp1s0d1 (Down)
           mlx4_1 port 1 ==> enP4p1s0 (Up)
           mlx4_1 port 2 ==> enP4p1s0d1 (Down)
           mlx4_2 port 1 ==> enP9p1s0 (Down)
           mlx4_2 port 2 ==> enP9p1s0d1 (Down)

          Interface list for node  gssio2
          Down interface enp1s0
          Down interface enp1s0d1
          Up interface enP4p1s0
          Down interface enP4p1s0d1
          Down interface enP9p1s0
          Down interface enP9p1s0d1
          Node: gssio1-te0, IP Address: 11.1.202.13
          Node: gssio2-te0, IP Address: 11.1.202.14
```

2. This example shows how to create a bond in the I/O server node `gssio1` using the information provided in the `/etc/hosts` file:

```
          [root@ems1 bin]# gssgennetworks -N gssio1 --suffix=-te0 --create
          2016-01-25T14:19:42.615008 Starting network generation
          2016-01-25T14:19:44.132500 nodelist:    gssio1
          2016-01-25T14:19:44.132551 suffix used for network hostname: -te0
           mlx4_0 port 1 ==> enp1s0 (Down)
           mlx4_0 port 2 ==> enp1s0d1 (Down)
           mlx4_1 port 1 ==> enP4p1s0 (Up)
           mlx4_1 port 2 ==> enP4p1s0d1 (Down)
           mlx4_2 port 1 ==> enP9p1s0 (Down)
           mlx4_2 port 2 ==> enP9p1s0d1 (Down)

          Interface list for node  gssio1
          Down interface enp1s0
          Down interface enp1s0d1
          Up interface enP4p1s0
          Down interface enP4p1s0d1
          Down interface enP9p1s0
          Down interface enP9p1s0d1
          Node: gssio1-te0, IP Address: NA
          gssio1: Connection 'bond-bond0' (aaf9ff6c-2cb4-4cd8-9912-96a27da5d86c)
successfully added.


          [WARN] gssio1: Bond created with one slave interface
           nmcli c add type bond-slave ifname enP4p1s0 master bond0
          gssio1: Connection 'bond-slave-enP4p1s0' (4ce0e384-4044-4675-b6a6-51588e30efad)
          successfully added.

          nmcli c up bond-slave-enP4p1s0
          gssio1: Connection successfully activated (D-Bus active path:
          /org/freedesktop/NetworkManager/ActiveConnection/11)

          nmcli c up bond-bond0
          gssio1: Connection successfully activated (master waiting for slaves)
          (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/12)

           nmcli d sh bond0
          gssio1: GENERAL.DEVICE:                         bond0
          gssio1: GENERAL.TYPE:                           bond
          gssio1: GENERAL.HWADDR:                         F4:52:14:FD:58:92
          gssio1: GENERAL.MTU:                            1500
          gssio1: GENERAL.STATE:                          100 (connected)
          gssio1: GENERAL.CONNECTION:                     bond-bond0
          gssio1: GENERAL.CON-PATH:                       /org/freedesktop/NetworkManager/
ActiveConnection/12
          gssio1: IP4.ADDRESS[1]:                         11.1.202.13/24
          gssio1: IP4.GATEWAY:                            11.1.202.1

           nmcli c
          gssio1: NAME                UUID                                  TYPE
DEVICE
          ...
          gssio1: bond-bond0          aaf9ff6c-2cb4-4cd8-9912-96a27da5d86c  bond
bond0
          gssio1: enP4p1s0            6068e853-30c4-44e0-82b5-658d439fd37b  802-3-ethernet
--
```

```
          ...

           nmcli d
          gssio1: DEVICE        TYPE      STATE         CONNECTION
          ...
          gssio1: bond0         bond      connected     bond-bond0
          gssio1: enP4p1s0      ethernet  connected     bond-slave-enP4p1s0
          ...

          Bond creation compete
```

1. To obtain information of high speed interface IP address assigned to the bond for Ethernet interfaces, run:

```
# gssgennetworks -G gss_ppc64 --suffix=-10g --verbose
  2018-02-28T01:33:51.764194 Starting network generation
  2018-02-28T01:33:52.432630 nodelist:    gssio1 gssio2
  2018-02-28T01:33:52.432669 suffix used for network hostname: -10g
  Interface(s) available on node gssio1-10g
  Up interface:  enP2p1s0
  Up interface:  enP2p1s0d1
  Up interface:  ib0
  Down interface:  ib1
  Up interface(s) of node gssio1-10g considered for bonding are ['enP2p1s0', 'enP2p1s0d1']
  Interface(s) available on node gssio2-10g
  Up interface:  enP2p1s0
  Up interface:  enP2p1s0d1
  Up interface:  ib0
  Down interface:  ib1
  Up interface(s) of node gssio2-10g considered for bonding are ['enP2p1s0', 'enP2p1s0d1']
  gssio1-10g: Current IP Address: IP not assigned
  gssio2-10g: Current IP Address: IP not assigned
```

2. To create a bond (for Ethernet interfaces where the bond name is bond0) in an I/O server node by using information that is provided in the /etc/hosts file:

```
  # gssgennetworks -G gss_ppc64 --suffix=-10g --bond bond0 --create-bond
  2018-02-28T01:41:11.413341 Starting network generation
  2018-02-28T01:41:12.072727 nodelist:    gssio1 gssio2
  2018-02-28T01:41:12.072765 suffix used for network hostname: -10g
  Interface(s) available on node gssio1-10g
  Up interface:  enP2p1s0
  Up interface:  enP2p1s0d1
  Up interface:  ib0
  Down interface:  ib1
  Up interface(s) of node gssio1-10g considered for bonding are ['enP2p1s0', 'enP2p1s0d1']
  Interface(s) available on node gssio2-10g
  Up interface:  enP2p1s0
  Up interface:  enP2p1s0d1
  Up interface:  ib0
  Down interface:  ib1
  Up interface(s) of node gssio2-10g considered for bonding are ['enP2p1s0', 'enP2p1s0d1']
  gssio1-10g: Current IP Address: IP not assigned
  gssio2-10g: Current IP Address: IP not assigned
  gssio1-10g: IP Address assigned to bond: 172.31.250.17
  gssio2-10g: IP Address assigned to bond: 172.31.250.18
  Bond creation complete
```

3. To obtain information of high speed interface IP address that are assigned to the bond for Infiniband interfaces, run:

```
# gssgennetworks -G gss_ppc64 --suffix=-ib --ipoib
  2018-02-28T01:46:52.785492 Starting network generation
  2018-02-28T01:46:53.452440 nodelist:    gssio1 gssio2
  2018-02-28T01:46:53.452475 suffix used for network hostname: -ib
  Interface(s) available on node gssio1-ib
  Up interface:  enP2p1s0
  Up interface:  enP2p1s0d1
  Up interface:  ib0
  Down interface:  ib1
  Up interface(s) of node gssio1-ib considered for bonding are ['ib0']
  Interface(s) available on node gssio2-ib
  Up interface:  enP2p1s0
  Up interface:  enP2p1s0d1
  Up interface:  ib0
  Down interface:  ib1
  Up interface(s) of node gssio2-ib considered for bonding are ['ib0']
```

```
  gssio1-ib: Current IP Address: IP not assigned
  gssio2-ib: Current IP Address: IP not assigned
```

4. To create a bond (for Ethernet interfaces where the bond name is bond1) in an I/O server node by using information that is provided in the /etc/hosts file:

```
# gssgennetworks -G gss_ppc64 --suffix=-ib --ipoib --create-bond
  2018-02-28T01:48:31.769301 Starting network generation
  2018-02-28T01:48:32.432582 nodelist:    gssio1 gssio2
  2018-02-28T01:48:32.432633 suffix used for network hostname: -ib
  Interface(s) available on node gssio1-ib
  Up interface:  enP2p1s0
  Up interface:  enP2p1s0d1
  Up interface:  ib0
  Down interface:  ib1
  Up interface(s) of node gssio1-ib considered for bonding are ['ib0']
  Interface(s) available on node gssio2-ib
  Up interface:  enP2p1s0
  Up interface:  enP2p1s0d1
  Up interface:  ib0
  Down interface:  ib1
  Up interface(s) of node gssio2-ib considered for bonding are ['ib0']
  gssio1-ib: Current IP Address: IP not assigned
  gssio2-ib: Current IP Address: IP not assigned
  gssio1-ib: IP Address assigned to bond: 172.31.250.1
  [WARN] gssio1-ib: Bond created with one slave interface
  gssio2-ib: IP Address assigned to bond: 172.31.250.2
  [WARN] gssio2-ib: Bond created with one slave interface
  Bond creation complete
```

Location

/opt/ibm/gss/tools/bin

gssgenvdisks command

Generates vdisk stanza files and creates vdisks, NSDs, and file systems.

Synopsis

```
gssgenvdisks [ --recovery-group RecoveryGroup ] [--add-vdisk]
             [ --vdisk-set VdiskSet] [ --vdisk-suffix VdiskSuffix ] [ --create-vdisk]
                [ --create-filesystem] [ --filesystem-name Device ]
                [ --filesystem-mount MountPoint ]  [ --filesystem-options Options ]
             [ --system SystemPool ]
             [ --vdisk-placement VdiskPlacement] [ --use-only-da USE-DA ]
                [ --num-of-metadata-nsds NumOfMetadataNsds ] [ --num-of-nsds NumOfNsds ]
                [ --num-of-data-nsds NumOfDataNsds ] [ --metadata-vdisk-size MetadataVdiskSize ]
                [ --data-vdisk-size DataVdiskSize ] [ --vdisk-size VdiskSize ]
                [ --data-blocksize DataBlockSize ] [ --blocksize BlockSize ]
             [ --metadata-blocksize MetadataBlockSize ] [ --metadata-percent MetadataPercent ]
                [ --reserved-space-percent ReservedSpacePercent ] [ --raid-code RaidCode ]
             [ --failure-group FailureGroup ] [ --crcesfs ]
             [ --verbose  ] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The `gssgenvdisks` command generates vdisk stanza files and creates NSDs, and file systems.

gssgenvdisks provides a default placement policy in case hybrid enclosures are used. In case of hybrid enclosures, any data vdisk goes to a DA which is composed of HDDs and any metadata vdisk goes to a DA which is composed of SDDs.

The **gssgenvdisks** command can detect the hybrid enclosures.

You can override the default vdisk placement policy used in case of a hybrid enclosure system, by using the `--use-only-da` option. The `--use-only-da` option allows data and metadata vdisks on only the specified DA. It ignores other DAs available in the recovery group.

Parameters

-h | --help
Displays usage information about this command and exits.

--recovery-group *RecoveryGroup*
Specifies a list of recovery groups. If specific recovery groups are not provided all recovery groups are used to generate vdisk stanza.

--add-vdisk
Adds existing vdisk from an existing vdiskset or from an existing RG.

--vdisk-set *VdiskSet*
Specifies vdiskset name to add existing file system vdiskset or from an existing RG.

--vdisk-suffix *VdiskSuffix*
Specifies the suffix for the vdisk names. The valid characters that can be used in the suffix are: a to z, A to Z, 0 to 9, and _ (underscore).

--create-vdisk
Creates the vdisks. Without this option, only the vdisk stanza is created.

--create-filesystem
Creates a filesystem using NSDs.

--filesystem-name *Device*
Specifies the file system name. The default is gpfs0.

--filesystem-mount *MountPoint*
Specifies the file system mount point. The default is `/gpfs`.

--filesystem-options *Options*
Specifies other file system creation options. The default is None. Enclose with quotation marks (' or ") if there are blank spaces within the options.

See the `mmcrfs` command description in the *IBM Spectrum Scale: Command and Programming Reference* for valid file system creation options.

--system *SystemPool* {yes | no}
Creates the vdisk to store data and metadata in the same vdisk under the system pool.

--vdisk-placement *VdiskPlacement*
Specifies the placement of the vdisks in DAs in case of a hybrid system.

--use-only-da USE-DA
Provides the DA name that must be considered while creating vdisks.

--num-of-metadata-nsds *NumOfMetadataNsds*
Specifies the number of metadata NSDs per DA. The default values are:

- 1 for GS1, GS2, and GL2 systems
- 2 for GS4 and GL4 systems
- 3 for GS6 and GL6 systems

The space available for the metadata is equally divided between the metadata NSDs.

--num-of-data-nsds *NumOfDataNsds*
Specifies the number of data NSDs per DA. The default values are:

- 1 for GS1, GS2, and GL2 systems
- 2 for GS4 and GL4 systems
- 3 for GS6 and GL6 systems

The space available for the data is equally divided between the data NSDs.

--num-of-nsds *NumOfNsds*

--metadata-vdisk-size *MetadataVdiskSize*
Specifies the size of the metadata vdisks in GiB.

When specified, this option is used (instead of the `--metadata-percent` option) to calculate the vdisk size. If no data vdisks are being configured (the value of *NumberOfDataNsds* is 0), *DataVdiskSize* should be set to a non-zero number (for example: 1000) to set the metadata vdisk size correctly. Otherwise, the metadata vdisk size is set to 0 in the vdisk stanza file. To work around this, a non-zero *DataVdiskSize* should be provided (with a *NumberOfDataNsds* value of 0) when metadata vdisks only are configured.

--data-vdisk-size *DataVdiskSize*
Specifies the size of the data vdisks in GiB. If **`--data-vdisk-size`** is zero or not provided, the vdisk size is determined from the available space after removing the reserved space.

--vdisk-size *VdiskSize*

--metadata-blocksize *MetadataBlockSize*
Specifies the block size of the metadata NSDs. The default is 1M.

--data-blocksize *DataBlockSize*
Specifies the block size of the data NSDs. The default is 8M.

--blocksize *BlockSize*
Specifies the block size of data and metadata NSD. The default is 16M.

--metadata-percent *MetadataPercent*
Specifies the metadata NSD capacity as a percentage of the overall usable capacity. The default is 5. The estimate is based on usable capacity (after redundancy overhead, for example: 8+2p for data and 3wayreplicated for metadata). When **`metadata-vdisk-size`** is provided this option is ignored.

--raid-code *RaidCode*
Specifies the RAID code. The default is 8+2p. Acceptable raid-codes are 8+2p and 8+3p. The 3wayreplicated code is used for metadata vdisks. The raid code for data vdisks is 8+2p. The 4wayreplicated code is used for metadata vdisk. The raid code for data vdisks is 8+3p.

--failure-group *FailureGroup*
Specifies the NSD base failure group. All NSDs in a building block are provided with the same failure group. If two or more building blocks are present, NSDs in each building block are assigned increasing failure group numbers, starting with the base failure group number. The default base failure group is 30.

--reserved-space-percent *ReservedSpacePercent*
Specifies the percentage of total space to reserve. The default is 1.

--crcesfs
Creates the filesystem for the Cluster Export Services (CES) shared root.

--verbose
Provides more details.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssgenvdisks` command.

Examples

This example shows `gssgenvdisks` command creating vdisks, NSDs, and file system using all recovery groups in the cluster. Run:

```
gssgenvdisks  --create-vdisk --create-filesystem --raid-code 8+3p
```

See also

See also the following *IBM Spectrum Scale: Command and Programming Reference* topics:

- `mmcrfs` command

Location

`/opt/ibm/gss/tools/bin`

gssinstallcheck command

Performs ESS install check.

Synopsis

```
gssinstallcheck { -N NODE-LIST } [ --prefix PREFIX ]
                [ --get-version ] [ --suffix SUFFIX ]
                [ --syslog] [ --phy-mapping  ] [ --srv-events ]
                [ --hmc-username HSCUSERNAME ] [ --platform-events EVENTLIST ]
                [ --close-platform-events CLOSEEVENTLIST ]
                [ --net-errors ] [ --errthld ERROR-THRESHOLD ]
                [ --dropthld DROP-THRESHOLD ] [ --monitor ] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The `gssinstallcheck` command checks various aspects of the installation.

Parameters

-N *NODE-LIST*
Provides a list of nodes to run the check.

--prefix *PREFIX*
Provides a host name prefix. Use = between --suffix and value if the value starts with -.

--get-version
Provides the ESS package version.

--suffix *SUFFIX*
Provides the host name suffix. Use = between --suffix and value if the value starts with -.

--syslog
Logs output to syslog (`/var/log/messages`). Default no logging to syslog.

--phy-mapping
Check only phy mapping. When selected only this option is run.

--srv-events
Shows the serviceable events. When selected, only this option is run.

--hmc-username *HSCUSERNAME*
Provides the HMC root user name for PPC BE deployments.

--platform-events *EVENTLIST*
Provides platform event details.

--close-platform-events *CLOSEEVENTLIST*
Closes the provided platform event details.

--net-errors
Checks for the network error counts. When selected, only this option is run.

--errthld *ERROR-THRESHOLD*
Provides packet error threshold in percent during net-errors check.

--dropthld *DROP-THRESHOLD*
Provides packet drop threshold in percent during net-errors check.

--monitor
In this mode, outputs are only logged in to syslog. The stdout is turned off.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the gssinstallcheck command.

Examples

1. This example shows running install check to obtain installed package version.

```
# gssinstallcheck -N EMSNode,IONode1,IONode2 --get-version
```

A sample output is as follows:

```
Start of install check
  nodelist:       ems1 gssio1 gssio2

  Node: ems1              Installed version:
5.3.0-20180221T135444Z_ppc64_datamanagement
  Node: gssio1            Installed version:
5.3.0-20180221T142513Z_ppc64le_datamanagement
  Node: gssio2            Installed version:
5.3.0-20180221T142513Z_ppc64le_datamanagement
```

2. This example shows running install check on an I/O server node in the gss_ppc64 group.

```
# gssinstallcheck -N gssio2
```

A sample output is as follows:

```
================== Summary of node: gssio2 ============================
  Getting system firmware level. May take a long time...
  Getting system profile setting.

  Installed version:
5.3.0-20180221T142513Z_ppc64le_datamanagement
  [OK] Linux kernel installed:                    3.10.0-514.41.1.el7.ppc64le
  [OK] Systemd installed:                         219-42.el7_4.7.ppc64le
  [OK] Networkmgr installed:                      1.8.0-11.el7_4.ppc64le
  [OK] OFED level:                                MLNX_OFED_LINUX-4.1-4.1.6.1
  [OK] IPR SAS FW:                                17518300
  [OK] ipraid RAID level:                         10
  [OK] ipraid RAID Status:                        Healthy
  [OK] IPR SAS queue depth:                       64
  [OK] System Firmware :                          FW860.42 (SV860_138)
  [OK] System profile setting:                    scale
  [OK] Host adapter driver:                       13.100.00.00
  [OK] Kernel sysrq  level is: kernel.sysrq = 1
  Spectrum Scale RAID is not active, can not get gpfs version
  Spectrum Scale RAID is not active. Can not check GNR configuration data
  Performing Spectrum Scale RAID configuration check.
  ems nodeclass not found. Parameter checking as IO Server node.
  Spectrum Scale RAID is not active. Configuration settings can not be checked
  [ERROR] Can not obtain GNR configuration parameters
  [ERROR] Can not obtain GNR callback settings
  [ERROR] GNR Callback is not set correctly
  [OK] New disk prep script: /usr/lpp/mmfs/bin/tspreparenewpdiskforuse
  [OK] Network adapter MT4115 firmware: 12.20.1010, net adapter count: 2
  [OK] Network adapter MT26448 firmware: 2.9.1326, net adapter count: 1
  Obtaining storage firmware versions from IO nodes. May take a long time...
  Can not obtain firmware level of storage elements
  [ERROR] Unsupported or incorrect firmware found in storage subsystem
```

```
   Phy mapping check skipped for LE systems
   End of install check
```

See also

- “gssdeploy script” on page 64
- “gssinstall script” on page 69

Location

/opt/ibm/gss/tools/bin

gssnettest command

Performs ESS Network test.

Synopsis

```
gssnettest { -N NODE-LIST | -G NODE-GROUP } [ --prefix  PREFIX ] [ --suffix  SUFFIX ]
           [ --duration  TEST-DURATION ] [ --buffersize  BUFFER-SIZE ]
           [ --errthld ERROR-THRESHOLD ] [ --dropthld  DROP-THRESHOLD ]
           [ --rdma  ] [--syslog] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The **gssnettest** script helps in running the network workload to test network for proper operations. The **nsdperf** workload generator is the underlying tool to generate the workload.

Parameters

-N *NODE-LIST*
Provides a list of nodes to run the network performance test.

-G *NODE-GROUP*
Provides the name of node group.

--prefix *PREFIX*
Provides the host name prefix. Use = between --prefix and value if the value starts with -.

--suffix *SUFFIX*
Provides the host name suffix. Use = between --suffix and value if the value starts with -.

--duration *TEST-DURATION*
Provides the test run time in seconds. Default test duration is 30 seconds.

--buffersize *BUFFER-SIZE*
Provides the buffer size in bytes. Default is 4194304 (4 MiB).

--errthld *ERROR-THRESHOLD*
Provides the packet error threshold in percent.

--dropthld *DROP-THRESHOLD*
Provides the packet drop threshold in percent.

--rdma
Specifies RDMA test only; skips IP part.

--syslog
Logs the packet error and drop percent to syslog (`/var/log/messages`). Default no logging to syslog.

-h | --help
Displays usage information about this script and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssnettest` script.

Example

This example shows running the network test on the management server node (EMS) and I/O server nodes.

```
GSSENV=TEST gssnettest -N ems1,gss_ppc64 --suffix=-hs
```

Location

`/opt/ibm/gss/tools/bin`

gssnodedetails command

Obtains node details.

Synopsis

```
gssnodedetails { -N NODE-LIST | -G NODE-GROUP }
               [ --prefix Prefix ] [ --suffix Suffix ]
               [ --fspdiscover][--identify] [--iprange IPRANGE]
               [ --pass PASSWORD] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The **gssnodedetails** command can be used to obtain node details.

Parameters

-N *NODE-LIST*
Specifies a comma separated list of nodes to get the node details.

-G *NODE-GROUP*
Specifies a node group.

--prefix *Prefix*
Provides a host name prefix. Use = between `--prefix` and value if the value starts with a `-`.

--suffix *Suffix*
Provides a host name suffix. Use = between `--suffix` and value if the value starts with `-`.

--fspdiscover
Specifies to discover nodes on the FSP network.

--identify
Specifies to identify the node.

--iprange *IPRANGE*
Provides the IP range use to discover nodes.

--pass *PASSWORD*
Specifies the IPMI password of FSP. Default password is used when not provided.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssnodedetails` command.

Example

This example shows how to obtain the node details of the gssio1 node.

```
# gssnodedetails -N gssio1
```

A sample output is as follows:

```
2018-02-28T03:30:07.688876 Generating node list for the test...
    2018-02-28T03:30:08.352377 nodelist:    gssio1
    Node type    : 8247-22L
    Node serial  : 2159F3A
       Static hostname: gssio1.gpfs.net
             Icon name: computer
            Machine ID: 213721d940844446a8b7e5f7bdf2ad1e
               Boot ID: cf8f091260ac4a9d92a48ca7f9f730be
      Operating System: Red Hat Enterprise Linux Server 7.4 (Maipo)
           CPE OS Name: cpe:/o:redhat:enterprise_linux:7.4:GA:server
                Kernel: Linux 3.10.0-693.33.1.el7.ppc64le
          Architecture: ppc64-le

    IP Address:
    1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
        inet 127.0.0.1/8 scope host lo
    --
    2: enP3p9s0f0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP qlen 1000
        inet 192.168.45.21/24 brd 192.168.45.255 scope global enP3p9s0f0
    Kernel       : Linux gssio1.gpfs.net 3.10.0-693.33.1.el7.ppc64le
    #1 SMP Wed Jan 17 10:35:28 EST 2018 ppc64le ppc64le ppc64le GNU/Linux

    OFED         : MLNX_OFED_LINUX-4.1-4.1.6.1:
    gssio1: PCI Adapters
    0001:05:00.0 Serial Attached SCSI controller:
    LSI Logic / Symbios Logic SAS2308 PCI-Express Fusion-MPT SAS-2 (rev 05)

    0001:0b:00.0 Serial Attached SCSI controller:
    LSI Logic / Symbios Logic SAS2308 PCI-Express Fusion-MPT SAS-2 (rev 05)

    0001:0c:00.0 RAID bus controller: IBM PCI-E IPR SAS Adapter (ASIC) (rev 02)

    0005:03:00.0 Serial Attached SCSI controller:
    LSI Logic / Symbios Logic SAS2308 PCI-Express Fusion-MPT SAS-2 (rev 05)

    0005:09:00.0 Serial Attached SCSI controller:
    LSI Logic / Symbios Logic SAS2308 PCI-Express Fusion-MPT SAS-2 (rev 05)

    0006:03:00.0 Serial Attached SCSI controller:
    LSI Logic / Symbios Logic SAS2308 PCI-Express Fusion-MPT SAS-2 (rev 05)

    0006:09:00.0 Serial Attached SCSI controller:
    LSI Logic / Symbios Logic SAS2308 PCI-Express Fusion-MPT SAS-2 (rev 05)
    gssio1: Memory
                  total        used        free      shared  buff/cache   available
    Mem:           123G        2.9G        119G         26M        1.0G        119G
    Swap:          7.8G          0B        7.8G
    gssio1: Highspeed Interface
    mlx4_0 port 1 ==> enP2p1s0 (Up)
    mlx4_0 port 2 ==> enP2p1s0d1 (Up)
    mlx5_0 port 1 ==> ib0 (Up)
    mlx5_1 port 1 ==> ib1 (Down)
    Kernel Interface table
    Iface      MTU    RX-OK RX-ERR RX-DRP RX-OVR    TX-OK TX-ERR TX-DRP TX-OVR Flg
    enP2p1s0  1500        0      0      0 0             0      0      0      0 BMRU
    enP2p1s0  1500        0      0      0 0             0      0      0      0 BMRU
    enP3p9s0  1500      595      0      0 0          4884      0      0      0 BMRU
    enP3p9s0  1500        0      0      0 0             0      0      0      0 BMU
    enP3p9s0  1500        0      0      0 0             0      0      0      0 BMU
    enP3p9s0  1500        0      0      0 0             0      0      0      0 BMU
    ib0       2044      129      0      0 0             0      0      0      0 BMRU
    ib1       4092        0      0      0 0             0      0      0      0 BMU
    lo       65536        4      0      0 0             4      0      0      0 LRU
    gssio1: IP RAID Adaptere Status
    Name   PCI/SCSI Location          Description               Status
    ------ ------------------------  ------------------------- -----------------
    sda    0001:0c:00.0/0:2:0:0       RAID 10 Array                Optimized
```

Location

/opt/ibm/gss/tools/bin

gssprecheck command

Performs the ESS install or upgrade precheck.

Synopsis

```
gssprecheck  { -N NODE-LIST | -G NODE-GROUP } { --install | --upgrade }
             { --file CONFIG_FILE } [ --syslog ]  [ --monitor ]
             [ --verbose] [--pre] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The `gssprecheck` command checks for common errors upon new installs or upgrades.

Parameters

-N *NODE-LIST*
Provides a list of node to run the check.

-G *NODE-GROUP*
Provides the name of the node group to run the check.

--file *CONFIG_FILE*
Provides the location of `gssdeploy.cfg` file for parsing.

--install
Prechecks for install related items only.

--upgrade
Prechecks for upgrade related items only.

--syslog
Logs the output to syslog (`/var/log/messages`). Default no logging to syslog.

--monitor
In this mode outputs are only logged in to syslog. The *stdout* is turned off.

--verbose
Indicates verbose mode.

--pre
Does the initial check prior to running the **`gssdeploy -x`**.

-h --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssprecheck` command.

Examples

This example shows running a precheck on the management server node (EMS) prior to running the **gssdeploy -d** command:

```
[root@ems1 precheck]# ./gssprecheck -N ems1 --install --file /var/tmp/gssdeploy.cfg
```

A sample output is as follows:

```
2016-12-02T10:09:37.252363 >>>ESS500_BETA_3<<< Start of pre-install check
          2016-12-02T10:09:37.252413 This may take a few minutes. Please be patient

          ================== Summary of EMS node ============================
          [OK] Parsing configuraton file
          [OK] Checking xCAT version
          [OK] Checking xCAT site table
          [OK] Checking for general repo errors
          [OK] Checking for enabled external subscriptions
          [OK] Checking kernel repo
          [ERROR] DHCP server check
                  >>>[HINT] Check dhcp is running and the leases file exists.<<<
                  >>>[HINT] Run makedhcp -q <group> to make sure mac->IP are setup.<<<
          [OK] Checking FSP iface
          [OK] DNS server check
          [OK] /etc/hosts advanced checks
          [OK] Manifest check
          [OK] Checking /etc/hosts exists
          [OK] Checking deploy iface
          [OK] Checking correct redhat version
          [OK] Checking correct Endian type
          [OK] No high CPU % processes found
          [OK] Root FS space check
          [OK] tmp FS space check
          [OK] Var FS space check
          [OK] var log FS space check
          [OK] Timezone consistency check

          2016-12-02T10:10:11.541241 Checking nodes.

          2016-12-02T10:10:11.541301 >>>ESS500_BETA_3<<< End of pre-install check

This example shows running precheck prior to upgrading an ESS cluster

          [root@ems1 precheck]# ./gssprecheck -N ems1 --upgrade --file /var/tmp/gssdeploy.cfg
          2016-12-02T10:11:38.504845 >>>ESS500_BETA_3<<< Start of pre-install check
          2016-12-02T10:11:38.504903 This may take a few minutes. Please be patient
          2016-12-02T10:11:39.430609 nodelist:    ems1

          ================== Summary of EMS node ============================
          [OK] Parsing configuraton file
          [OK] Checking for heavy mm commands
          [OK] Checking xCAT version
          [OK] Checking xCAT site table
          [OK] Checking xdsh connectivity
          [ERROR] Bonded link check
                  >>>[HINT] One or more network bond links down. Run....<<<
                  >>>[HINT] Run cat /proc/net/bonding/bond0 | grep MII on each node and fix<<<
          [OK] Spectrum Scale lock check
          [OK] Checking deploy iface
          [OK] Timezone consistency check
          [OK] Universal time consistency check
          [OK] Quorum node check
          [OK] long waiters check
          [ERROR] mmhealth health check
                  >>>[HINT] Run mmhealth node show -N all and investigate.<<<
          [ERROR] mmhealth eventlog check
                  >>>[HINT] Run mmhealth node eventlog and investigate.<<<
          [ERROR] resolv.conf valid and matches all nodes
                  >>>[HINT] Make sure each node in the Building Block have /etc/resolv.conf<<<
                  >>>[HINT] and the nameserver points back to the EMS mgt IP<<<
          [OK] DNS server check
                  >>Running gnrhealthcheck...This will take a few moments<<
          [ERROR] GNR health check
                  >>>[HINT] GNR health check detected errors  Investigate before proceeding.<<<
          [OK] Manifest check
          [OK] Checking FSP iface
          [OK] Checking /etc/hosts exists
          [OK] /etc/hosts same on all nodes
          [OK] /etc/hosts advanced checks
```

```
           [OK] Checking for general repo errors
           [OK] Checking for enabled external subscriptions
           [OK] Checking kernel repo
           [OK] Checking correct redhat version
           [OK] Checking correct Endian type
           [OK] No high CPU % processes found
           [OK] Root FS space check
           [OK] tmp FS space check
           [OK] Var FS space check
           [OK] var log FS space check
           [OK] Checking that tracing is disabled
           [OK] Active Node Check
           [OK] Checking for deadlocks

           2016-12-02T10:13:31.499906 Checking nodes.

           2016-12-02T10:13:31.499972 >>>ESS500_BETA_3<<< End of pre-install check
```

See also

- *Elastic Storage Server: Quick Deployment Guide*.

Location

/opt/ibm/gss/tools/bin

gssruntask command

Runs specific tasks on a node.

Synopsis

```
gssruntask { -N NodeList | -G NodeGroup }
           [ --prefix Prefix ] [ --suffix Suffix ]
           --task Task [ --mode MODE]
           [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The **gssruntask** command can be used to run specific tasks on a node.

Parameters

-N *NodeList*
Specifies a comma separated list of nodes to get the node details.

-G *NodeGroup*
Specifies a node group.

--prefix *Prefix*
Provides a host name prefix. Use = between `--prefix` and value if the value starts with a `-`.

--suffix *Suffix*
Provides a host name suffix. Use = between `--suffix` and value if the value starts with `-`.

--task *Task*
Provides the task with options to run on the *NodeList* or *NodeGroup*. The allowed values are `scsi`, `scsi-encl`, `scsi-disk`, `scsi-sg`, `ping`, `ssh`, `mmlsenclosure-all`, `mmlsenclosure-all-not-ok`, `mmlsenclosure-all-L`, `mmlsfirmware-adapt`, `mmlsfirmware-encl`, `mmlsfirmware-drv`, and `mmlspdisk-not-ok`.

--mode *Mode*
Provides the run mode of the task. The default is `local`. the allowed values are `local` and `ota`.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssruntask` command.

Example

This example shows how to run the `scsi` task on the `gssio1` node.

```
# gssruntask -N gssio1 --task scsi-sg
```

A sample output is as follows:

```
2018-02-28T03:35:35.540298 Generating node list for the test...
    2018-02-28T03:35:36.202471 nodelist:    gssio1
    Running task lsscsi -sg  node gssio1
    Success: Running task lsscsi -sg  on node gssio1

    gssio1: [0:0:0:0]    storage IBM      AL14SEB060N      6506  -          /dev/sg1        -
    gssio1: [0:0:1:0]    storage IBM      AL14SEB060N      6506  -          /dev/sg2        -
    gssio1: [0:0:2:0]    enclosu IBM      VSBPD14M1 6GSAS    03  -          /dev/sg5        -
    gssio1: [0:0:3:0]    cd/dvd  IBM.     RMBO0140572      IP02  /dev/sr0   /dev/sg6        -
    gssio1: [0:0:4:0]    enclosu IBM      PSBPD14M1 6GSAS  1508  -          /dev/sg7        -
    gssio1: [0:0:5:0]    enclosu IBM      PSBPD14M1 6GSAS  1508  -          /dev/sg8        -
    gssio1: [0:1:0:0]    no dev  IBM      IPR-10  68C38500         -          /dev/sg3        -
    gssio1: [0:2:0:0]    disk    IBM      IPR-10  68C38500         /dev/sda   /dev/sg4    571GB
    gssio1: [0:3:0:0]    no dev  IBM      57DC001SISIOA    0150  -          /dev/sg0        -
    gssio1: [2:0:0:0]    disk    IBM      MTFDJAK400MBS    502E  /dev/sdb   /dev/sg9    400GB
    gssio1: [2:0:1:0]    disk    IBM      MTFDJAK400MBS    502E  /dev/sdc   /dev/sg10   400GB
    gssio1: [2:0:2:0]    disk    IBM      MTFDJAK400MBS    502E  /dev/sdd   /dev/sg11   400GB
    gssio1: [2:0:3:0]    disk    IBM      MTFDJAK400MBS    502E  /dev/sde   /dev/sg12   400GB
    gssio1: [2:0:4:0]    disk    IBM      MTFDJAK400MBS    502E  /dev/sdf   /dev/sg13   400GB
    ....
    ....
```

Location

/opt/ibm/gss/tools/bin

gssstoragequickcheck command

Quickly checks the attached configuration.

Synopsis

```
gssstoragequickcheck { -N NodeList }
                     [ --component ComponentList ] [ --prefix Prefix ]
                     [ --suffix Suffix ] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The `gssstoragequickcheck` command is used to perform a high level check of the storage connectivity and configuration. It is run from the management server node (EMS).

Parameters

-N *NodeList*
Specifies a comma separated list of nodes.

--component *ComponentList*
Provides a component list to specify the scope of check. The options are as follows:

- server - to check I/O server node
- adapter - to check installed network and storage adapters
- storage - to check attached enclosures and disks

--prefix *Prefix*
Provides a host name prefix. *Prefix* is used with *NodeList* to generate node names where the check is run. Use = between `--prefix` and value if the value starts with a `-`.

--suffix *Suffix*
Provides a host name suffix. *Suffix* is used with *NodeList* to generate node names where the check is run. For example, with a node list of `gssio1,gssio2` and prefix `A-` and suffix `-ib`, node names `A-gssio1-ib` and `A-gssio2-ib` will be used to run the test. The newly formed node name must be resolvable to the corresponding IP address. Use = between `--suffix` and value if the value starts with `-`.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssstoragequickcheck` command.

Example

This example shows **gssstoragequickcheck** running on the nodes gssio1 and gssio2 and for the SCSI component.

```
gssstoragequickcheck -N gssio1,gssio2 --comp scsi
```

A sample output is as follows:

```
2014-12-02T17:33:15.826648 Start of storage quick configuration check
  2014-12-02T17:33:17.518018 nodelist:      gssio1 gssio2

  gssio1: Machine Type: 8247-22L
  gssio2: Machine Type: 8247-22L
  gssio1: Valid SAS Adapter Configuration. Number of Adapter(s) found 3
  gssio1: Valid Network Adapter Configuration. Number of Adapter(s) found: 3
  gssio2: Valid SAS Adapter Configuration. Number of Adapter(s) found 3
  gssio2: Valid Network Adapter Configuration. Number of Adapter(s) found: 3
  gssio1: Enclosure DCS3700 found 2
  gssio1: Disk ST2000NM0023 found 116
  gssio1: Total disk found 116, expected 116
  gssio1: SSD SG9XCA2G200GEIBM found 2
  gssio1: Total SSD found 2, expected 2
  gssio2: Enclosure DCS3700 found 2
  gssio2: Disk ST2000NM0023 found 116
  gssio2: Total disk found 116, expected 116
  gssio2: SSD SG9XCA2G200GEIBM found 2
  gssio2: Total SSD found 2, expected 2

  2014-12-02T17:33:26.985323 End of storage quick configuration check
```

Location

/opt/ibm/gss/tools/bin

gssstress command

Runs a stress test on the file system with different options.

Synopsis

```
gssstress [ -t Threads ] [ -i Iterations ] [ -b BlockSize ]
          [ -s FileSize ] [ -o OperationList ] [ -p IoPattern ] [ -f FileName ]
          TargetPath Node1 [Node2...NodeN] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The `gssstress` command can be invoked from the management server node (EMS) to run stress tests on the file system with different options.

Parameters

-t *NumThreads*
Specifies the number of simultaneous threads. The default is 16.

-i *Iterations*
Specifies the number of iterations of read-write operations to be performed on the file system. The default is 20.

-b *BlockSize*
Specifies the block size to be used for the stress test. The default is 16M.

-s *FileSize*
Specifies the size of the file to be used for the stress test. The default is 200G.

-o *OperationList*
Specifies the I/O operation type to be performed while running the stress test. Valid values are: create, read, write, read. The default is create.

-p *IoPattern*
Specifies the I/O pattern to be used for the stress test. Valid values are: seq (for sequential), rand (for random access). The default is seq.

-f *FileName*
Specifies the base file name used in the stress test. The default is stressFile. The file names for the tests are generated as: *FileName.Iteration.NodeWhereRunning*. For example: `stressFile.1.gssio1`, `stressFile.2.gssio1`,.... for iterations 1 and 2 on node gssio1.

TargetPath
Specifies the GPFS file system mount point on which the stress test is performed.

***Node1* [*Node2...NodeN*]**
Is a space-separated list of nodes where the stress test is run. Do not use commas between the node names. For example:

```
gssio1 gssio2
```

The node must have file system mounted on it before performing any stress test.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssstress` command.

Example

This example shows how to run the stress test on GPFS file system `/gpfs/gpfs0`.

```
# mmmount gpfs0 -a
# gssstress /gpfs/gpfs0 gssio1 gssio2
```

In this example, **gssstress** is invoked on the management server node. It is run on I/O server nodes gssio1 and gssio2 with `/gpfs/gpfs0` as the target path. By default, **gssstress** runs for 20 iterations, which can be adjusted using the **-i** option.

Location

`/opt/ibm/gss/tools/bin`

essutils command

Installs and deploys ESS

Synopsis

```
essutils {-N NODE-LIST | -G NODE-GROUP}
         [--prefix PREFIX] [--suffix SUFFIX] [-h | --help ]
         [--config CONFIG_FILE] [--customize]
         [--ems-node-name EMS_NODE] [--io-node-one-name IO_NODE1]
         [--io-node-two-name IO_NODE2] [--prefix-name PREFIX_NAME] [--suffix-name SUFFIX_NAME]
```

Availability

Available with the Elastic Storage Server.

Description

essutils is the ESS installation and deployment toolkit. It is a collection of tools and utilities to facilitate SSR, installation and deployment, and upgrade tasks. **essutils** can be invoked with or without any optional arguments.

It provides a set of task menus related to install and deploy activities. When a task is selected from the menu a command is issued to the system for that task. This toolkit requires a minimum of 80 x 24 character window to operate.

Restriction: Make sure that you use a console of adequate height and width to specify long options for the command during "C" button customization . An 80 x 24 console size might lead to an unexpected error, if the command option is very long.

At the bottom of the screen, the command for the task with the options is displayed. To change the options, you can press `c`. A dialog window opens to enter new or modified options. Select `back` or press `Esc` key to close the screen. You can select the corresponding menu item using 1 to 9 number keys. If you want to select a menu item mapped to a number that is greater than 9, you must scroll down to that menu item.

essutils can be run on the ESS management server (EMS) node only. If no node name, node list, or group name are specified, `ems1` and `ess_ppc64` are considered as the default name for EMS and I/O server nodes respectively.

You can customize **essutils** according to a specific environment such that parameters such as EMS and I/O server node names, and node name suffix and prefix are saved in the **essutils** configuration file. As a result, you do not need to specify these parameters every time that you use **essutils**. You can generate the **essutils** configuration file specific to your environment using `--customize` option and that configuration file can be used for subsequent **essutils** operations.

Parameters

-N *NODE-LIST*
Provides a list of nodes. If node list or group name is not provided, `-N localhost` is assumed.

-G *NODE-GROUP*
Provides the name of node group that the nodes are a member of. Nodes in the *NODE-LIST* are members of the *NODE-GROUP*.

--prefix *PREFIX*
Provides the host name prefix. Use = between `--prefix` and value if the value starts with -.

--suffix *SUFFIX*
Provides the host name suffix. Use = between `--suffix` and value if the value starts with -.

--config *CONFIG_FILE*

Provides the configuration file for **essutils** for a specific environment.

--customize

Customizes the EMS host name and I/O server node names and generates the **essutils** configuration file. This file can be used with `--config` to run **essutils** specific to an environment.

--prefix *PREFIX_NAME*

Specifies the custom prefix name to populate the **essutils** configuration file.

--suffix *SUFFIX_NAME*

Specifies the custom suffix name to populate the **essutils** configuration file.

--ems-node-name *EMS_NODE*

Specifies the EMS host name to populate the **essutils** configuration file.

--io-node-one-name *IO_NODE1*

Specifies the I/O node 1 host name to populate the **essutils** configuration file.

--io-node-two-name *IO_NODE2*

Specifies the I/O node 2 host name to populate the **essutils** configuration file.

-h | --help
Displays usage information about this script and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `essutlis` script.

Examples

- This example shows how to run **essutils** with default values.

```
# essutils
```

- This example shows how to run **essutils** for `ems2` and `ess_ppc64` I/O node group, with the suffix `-10g`.

```
# essutils -G ems2,ess_ppc64 --suffix=-10g
```

- This example shows how to run **essutils** with the prefix `sk-` and with the suffix `-ib`.

```
# essutils --prefix sk- --suffix=-ib
```

- This example shows how to customize **essutils** for a specific environment. In this example environment ems node is `ems2` and I/O server node names are `io3` and `io4`. The suffix to be used is `-40g`.

```
# essutils --customize --config /var/tmp/env2 --ems-node-name ems2 \
--io-node-one-name io3 --io-node-two-name io4 --suffix=-40g
```

```
Successfully generated the customization configuration file.
```

In this example, the user has generated the configuration file specific to their environment. The `--config` option can be used to load `essutils` with the values specific to the user environment.

```
# essutils –-config /var/tmp/env2
```

Location

`/opt/ibm/ess/tools/bin`

essutils main menu

ESS Installation and Deployment Toolkit (essutils) main menu

Synopsis

```
1. Help
2. SSR Tools                          >
3. Validation checks                  >
4. View/Collect service data (snaps) >
5. Advanced Tasks
6. Exit
```

Availability

Available with the Elastic Storage Server.

Description

The **essutils** main menu allows you to perform end-to-end operations for an ESS system.

Menu options

1. Help
Opens this manual page.

2. SSR Tools
Checks ESS for proper hardware installation, system configuration, and SAS connectivity. Using this menu item, users can perform the basic validation of the system once it arrives from manufacturing.

```
a) Perform check of various install parameters.
b) Perform a brief check of installed adapters and connected disks in the system.
c) Perform storage cable connection and topology check. This test is meaningful when run in
IO Server nodes.
d) Perform IO operations to the attached disks.
e) Assign IP address to an interface.
f) Ping all nodes in node list.
```

3. Validation check
Performs stress test of the ESS hardware after installation or upgrade. Users can perform operations such as:

- See detailed properties of the attached storage.
- Perform network stress test.
- Run file system stress test.

4. View/Collect service data (snaps)
Collects various snaps of ESS system and GPFS such as:

```
a) Collect gsssnap from the ESS Management Server (EMS) node.
b) Collect gpfs.snap for service.
c) Collect SOS report for service.
d) Generate call home xml config file for call home setup.
```

5. Advanced Tasks
Run advanced tasks by using the command prompt.

6. Exit
Exit to shell.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run **essutils**.

essutils - SSR Tools menu

ESS Installation and Deployment Toolkit (essutils) SSR Tools menu

Synopsis

```
1. Help
2. Check and validate various install parameters
3. Quick storage configuration check
4. Check enclosure cabling and paths to disks
5. Check disks for IO operations
6. Assign IP address to Interface
7. Ping tests
8. Back
```

Availability

Available with the Elastic Storage Server.

Description

The SSR Tools menu allows users to check ESS for proper hardware installation, system configuration, and SAS connectivity. Using this menu item, users can perform the basic validation of the system once it arrives from manufacturing.

Menu options

1. Help

Opens this manual page.

2. Check and validate various install parameters

Performs check of various installation parameters. Address items identified as WARN or ERROR. Some parameters can not be checked until the system is fully deployed. For more information, see *gssinstallcheck command*.

```
/opt/ibm/gss/tools/bin/gssinstallcheck -N EMSNode,IONode1,IONode2
```

Press c to change the EMS host name and I/O server nodes group name or I/O server node host name.

3. Quick storage configuration check

Performs a brief check of installed adapters and connected disks in the system. For more information, see *gssstoragequickcheck command*.

```
/opt/ibm/gss/tools/bin/gssstoragequickcheck -N IONode1,IONode2
```

Press c to change the EMS host name and I/O server nodes group name or I/O server node host name.

4. Check enclosure cabling and paths to disks

Performs storage cable connection and topology check. This test is meaningful when run on I/O server nodes. For more information, see *gssfindmissingdisks command*.

```
/opt/ibm/gss/tools/bin/gssfindmissingdisks -N IONode1,IONode2
```

Press c to change the EMS host name and I/O server nodes group name or I/O server node host name.

5. Check disks for IO operations
Performs I/O operations to the attached disks. This test should only be run in a test environment. The node name must match the host name of the node. For more information, see *gsscheckdisks command*.

```
xdsh IONode GSSENV=INSTALL gsscheckdisks --encl all --iotest a --write-enable
```

Press c to change the EMS host name and I/O server nodes group name or I/O server node host name.

6. Assign IP address to Interface
Assigns IP address to the provided interface.

```
/opt/ibm/gss/tools/bin/gssgennetworks -N localhost --interface enP3p9s0f0 --assignip
192.168.45.20 --netmask /24
```

Press c to customize the command options. Change IP address as needed.

7. Ping tests
Pings all nodes in the node list. For more information, see *gssruntask command*.

```
/opt/ibm/gss/tools/bin/gssruntask -N 198.51.100.10 --task ping --mode ota
```

Press c to change the EMS host name and I/O server nodes group name or I/O server node host name.

8. Back
Exit to the previous menu.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run **essutils**.

essutils - Validation and stress test menu

ESS Installation and Deployment Toolkit (essutils) Validation and stress test menu

Synopsis

```
1. Help
2. Show storage details       >
3. ESS network stress test
4. ESS filesystem stress test
5. Back
```

Availability

Available with the Elastic Storage Server.

Description

This menu can be used to perform stress test of the ESS hardware after installation or upgrade.

Menu options

1. Help
Opens this manual page.

2. Show storage details
View detailed properties of the attached storage.

```
a) Show attached enclosures
b) Show attached enclosures that are not-ok
c) Show attached enclosure detail
d) Show firmware details of SAS adapters
e) Show firmware details of storage enclosures
f) Show firmware details of installed drives
g) Show pdisks that are not-ok
```

3. ESS network stress test
Perform network stress test. This task must only be run in a test environment as it can generate high load on the network.

```
$ GSSENV=TEST gssnettest -N ems1,gss_ppc64
```

For more information, see *gssnettest command*.

Press c to change the EMS host name and I/O server nodes group name or I/O server node host name.

4. ESS filesystem stress test
Run file system stress test. Inspect and address any errors logged in `/var/log/messages` on the EMS node and `/var/adm/ras/mmfs.log.latest` on I/O server nodes.

```
$ gssstress /gpfs/gpfs0 gssio1 gssio2
```

For more information, see *gssstress command*.

Press c to change the file system name or the I/O server node host name.

5. Back
Exit to the previous menu.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run **essutils**.

essutils - Storage subsystem details menu

ESS Installation and Deployment Toolkit (essutils) Storage subsystem details menu

Synopsis

```
1. Help
2. Show attached enclosures
3. Show attached enclosures that are not-ok
4. Show attached enclosure detail
5. Show firmware details of SAS adapters
6. Show firmware details of storage enclosures
7. Show firmware details of installed drives
8. Show pdisks that are not-ok
9. Back
```

Availability

Available with the Elastic Storage Server.

Description

This menu can be used to view details of the storage subsystem including enclosure and disks.

Menu options

1. Help

Opens this manual page.

2. Show attached enclosures

View attached enclosures in the node list (**mmlsenclosure all**). The node(s) must be member of an ESS cluster.

```
$ GSSSSH=ssh gssruntask -G gss_ppc64 --task mmlsenclosure-all
```

For more information, see *gssruntask command*.

Press c to change the I/O server nodes group name or I/O server node host name.

3. Show attached enclosures that are not-ok

View attached enclosure in the node list needing service (**mmlsenclosure all --not-ok**). The node(s) must be member of an ESS cluster.

```
$ GSSSSH=ssh gssruntask -G gss_ppc64 --task mmlsenclosure-all-not-ok
```

For more information, see *gssruntask command*.

Press c to change the I/O server nodes group name or I/O server node host name.

4. Show attached enclosure detail

View attached enclosure details in the node list (**mmlsenclosure all -L**). The node(s) must be member of an ESS cluster.

```
$ GSSSSH=ssh gssruntask -G gss_ppc64 --task mmlsenclosure-all-L
```

For more information, see *gssruntask command*.

Press c to change the I/O server nodes group name or I/O server node host name.

5. Show firmware details of SAS adapters

View firmware of SAS adapters in the node list (**mmlsfirmware --type host-adapter**).

```
$ GSSSSH=ssh gssruntask -G gss_ppc64 --task mmlsfirmware-adapt
```

For more information, see *gssruntask command*.

Press c to change the I/O server nodes group name or I/O server node host name.

6. Show firmware details of storage enclosures
View firmware of attached enclosures in the node list (**mmlsfirmware --type storage-enclosure**).

```
$ GSSSSH=ssh gssruntask -G gss_ppc64 --task mmlsfirmware-encl
```

For more information, see *gssruntask command*.

Press c to change the I/O server nodes group name or I/O server node host name.

7. Show firmware details of installed drives
View firmware details of installed disks in the node list (**mmlsfirmware --type drive**).

```
$ GSSSSH=ssh gssruntask -N gss_ppc64 --task mmlsfirmware-drv
```

For more information, see *gssruntask command*.

Press c to change the I/O server nodes group name or I/O server node host name.

8. Show pdisks that are not-ok
View attached pdisks that are not healthy in the node list (**mmlspdisk all --not-ok**).

```
$ GSSSSH=ssh gssruntask -N gss_ppc64 --task mmlspdisk-not-ok
```

For more information, see *gssruntask command*.

Press c to change the I/O server nodes group name or I/O server node host name.

9. Back
Exit to the previous menu.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run **essutils**.

essutils - Collect misc service data menu

ESS Installation and Deployment Toolkit (essutils) Collect misc service data menu

Synopsis

```
1. Help
2. Collect ESS support data (gsssnap)
3. Collect gpfs.snap
4. Collect sos report
5. Create xml file for callhome
6. Back
```

Availability

Available with the Elastic Storage Server.

Description

This menu can be used to view and collect miscellaneous service data.

Menu options

1. Help
Opens this manual page.

2. Collect ESS support data (gsssnap)
Collect **gsssnap** from the ESS Management Server (EMS) node. It must be run on the EMS node.

```
$ /opt/ibm/gss/xcat/bin/gsssnap -i
```

3. Collect gpfs.snap
Collect **gpfs.snap** for service. The snap is stored in `/tmp/mmfs`. The EMS node must be a member of an IBM Spectrum Scale cluster.

```
$ /usr/lpp/mmfs/bin/gpfs.snap
```

4. Collect sos report
Collect sos report for service.

```
$ sosreport
```

5. Create xml file for callhome
Generate call home XML configuration file for the call home setup. This command must be run on the EMS node.

```
$ gsscrchxml -N ems1,gss_ppc64 --onscreen
```

6. Back
Exit to the previous menu.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run **essutils**.

Chapter 2. ESS scripts

This section includes descriptions of the ESS scripts.

Descriptions of these ESS scripts follow:

- “gssdeploy script” on page 64
- “gssinstall script” on page 69
- “gss_security.sh script” on page 71
- “gsssnap script” on page 73
- “gssupgrade.sh script” on page 75

ESS also includes the `mtuset` script in `/opt/ibm/gss/tools/samples` for changing the MTU.

For information about ESS commands, see Chapter 1, “ESS commands,” on page 1.

For information about IBM Spectrum Scale RAID commands and scripts, see *IBM Spectrum Scale RAID: Administration*.

For information about other IBM Spectrum Scale commands, see *IBM Spectrum Scale: Command and Programming Reference*.

gssdeploy script

Primary tool for ESS deployment.

Synopsis

```
gssdeploy [config_file][ -b | --base ] [ -c | --clean ] [ -d | --deploy ]
          [ -f | --find ] [ -g | --genesis ] [ -i | --identify ]
          [ {-k | --kernel } TGZ-FILE { ppc64 | ppc64le } ]
          [ -l | --less ] [ -m | --getmacs ] [ -o | --object ]
          [ {-p | --patch} TGZ-FILE1,TGZ-FILE2... [{ ppc64 | ppc64le } [PATCH-DIR]]
          [ { -r | --restore } Directory ] [ -s | --silent ] [ -S | --Silent ]
          [ -x | --xcat ] [ -V | --version ] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

`gssdeploy` is the primary tool for ESS system deployment. The **gssdeploy** deployment script is highly dependent on the parameter specified in the `gssdeploy.cfg` configuration file. Users must understand the entries in `gssdeploy.cfg` then proceed with the ESS deployment.

Update the `gssdeploy.cfg` file according to your requirements and the gathered information. Make sure you have edited the `gssdeploy.cfg` according to your environment before using `gssdeploy -b` or `-o`. The options that you can specify in the `gssdeploy.cfg` file include:

- Whether use DVD for installation: `RHEL_USE_DVD`

  The default option is to use ISO.
- If DVD, then device location: `RHEL_DVD`
- Mount point to use for RHEL media: `RHEL_MNT`
- ISO location: `RHEL_ISODIR`

  The default location is `/opt/ibm/gss/iso`.
- ISO file name: `RHEL_ISO`
- EMS host name: `EMS_HOSTNAME`
- Network interface for xCAT management network: `EMS_MGTNETINTERFACE`
- Network interface for FSP network: `FSP_MGTNETINTERFACE` [**Not applicable for PPC64BE**]
- FSP default IPMI password: `FSP_PASSWD` [**Not applicable for PPC64BE**]
- HMC host name: `HMC_HOSTNAME` [**Not applicable for PPC64LE**]
- HMC default user ID: `HMC_ROOTUID` [**Not applicable for PPC64LE**]
- HMC default password: `HMC_PASSWD`[**Not applicable for PPC64LE**]
- Type of deployment: `DEPLOYMENT_TYPE`

  The default type of deployment is ESS. It can also be `ADD_BB`.

  ESS: Deploys I/O server nodes.

  `ADD_BB`: Adds new building block of I/O server nodes.

  PPC64LE protocol nodes can be deployed using the `CES` or `ADD_CES` deployment types.

  `CES`: Deploys protocol nodes.

  `ADD_CES`: Adds new protocol nodes.
- I/O server user ID: `SERVERS_UID`

- I/O server default password: SERVERS_PASSWD
- I/O server serial numbers: SERVERS_SERIAL [**Not applicable for PPC64BE**]
- I/O server node names: SERVERS_NODES

  For example, gssio1 gssio2
- Deployment OS image: DEPLOY_OSIMAGE

Note: For PPC64LE, there must be a one-to-one relationship between serial number and node in `gssdeploy.cfg` and for every node specified in `gssdeploy.cfg`, there must be a matching entry in `/etc/hosts`.

Parameters

config_file
Specifies the optional path for the customized `gssdeploy.cfg` file.

-b | --base
Performs base EMS xCAT and GSS package installation.

-c | --clean
Performs an interactive management server xCAT dumpxCATdb operation and cleanup of previous management server xCAT installation and ESS installed RPM packages.

-d | --deploy
Performs an interactive deployment of the configured I/O servers.

-f | --find
Finds node machine type and serial number attached on the FSP network.

-g | --genesis
Performs the node discovery (genesis).

-i | --identify
Identifies node with the FSP IP address.

{ -k | --kernel } *TGZ-FILE* [ppc64 | ppc64le]
Sets up the kernel repository. *TGZ-FILE* is the tgz file containing kernel update RPMs. Optionally target architecture can be specified. Default is the run time architecture of the EMS node. When more than one arguments are provided, they must be enclosed in quotes. For example, `-k "kernel_update.tgz ppc64le"`.

Example: **`gssdeploy -k RHSA-2017-2437-73-LE-KERNEL.tar.gz`**

-l | --less
Shows brief output.

-m | --getmacs
Gets the MAC address of nodes.

-o | --object
Performs the required object creation and node discovery. This option requires base EMS xCAT and GSS packages to be already installed.

{ -p | --patch } TGZ-FILE1,TGZ-FILE2... [{ ppc64 | ppc64le } [*PATCH-DIR*]]
Sets up the EFIX/patch repository. *TGZ-FILEx* are the tgz files containing patch RPMs. Optionally target architecture can be specified. Default is the run time architecture of the EMS node. *PATCH-DIR* is the optional EFIX/patch directory. Default is patch. When more than one arguments are provided, they must be enclosed in quotes. For example, `-p "patch_update.tgz ppc64le patch1"`.

Example: **`gssdeploy -p systemd_LE.tar.gz,netmgr_LE.tar.gz`**

{ -r | --restore } *Directory*
Specifies an xCAT database dump directory. When it is used in conjunction with the `--clean` (or `-c`) option, the xCAT database is saved to the specified directory. When it is used in conjunction with the `--xcat` (or `-x`) option, an xCAT database restore operation is performed using data from the specified directory.

-s | --silent
Performs the selected operation non-interactively.

-S | --Silent
Performs the selected operation non-interactively. Stops on error.

-x | --xcat
Performs an interactive management server xCAT and ESS package installation. Creates the required objects and performs node discovery.

-V | --version
Displays the program's version number and exits.

-h | --help
Displays usage information about this script and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssdeploy` script.

Examples

1. This example shows how to clean the current xCAT installation and associated configuration to remove any preexisting xCAT configuration, and then address any errors before proceeding:

   ```
   $ /opt/ibm/gss/install/samples/gssdeploy -c
   ```

   This command cleans any previous ESS deployment file, repos, etc. from the system and makes the system ready for the new deployment.
2. This command scans the specified subnet range to ensure that only the nodes on which you want to deploy are available. These include I/O server nodes and management server node (EMS).

   ```
   $ tmp/gssdeploy -f FSP_Subnet_Range
   ```

   The **gssdeploy -f** command first determines if a DHCP server is running on the network. If the DHCP sever is not running, it prompts you to start one so that the I/O server nodes can obtain addresses. Select Y to start the DHCP server when prompted.

   This command also returns the following:

   - Serial numbers and FSP numbers of the nodes in the building block
   - Serial numbers and IP addresses of I/O server nodes in the building block

   Note: Do not proceed to the next step until FSP IP addresses and serial numbers of all known nodes are visible using the `gssdeploy -f` script.
3. This examples shows how to physically identify the nodes in the rack.

   ```
   $ /var/tmp/gssdeploy -i
   ```

   With the -i option, *Node_IP*, *Default_Password*, and *Duration* need to be provided as input, where:

   - *Node_IP* is the returned FSP IPMI IP address of the node obtained by using the **gssdeploy -f** command.
   - *Default_Password* is the default password of the node, which is PASSW0RD
   - *Duration* is the time duration in seconds for which the LED on the node should blink.

After you issue this command, the LED blinks on the specified node for the specified duration. You can identify the node in the rack using the blinking LED.

Depending on the order of a node in the rack, its corresponding entry is made in the `gssdeploy.cfg` file. For example, for the bottommost node in the rack, its corresponding entry is put first in `gssdeploy.cfg`.

4. This example shows how perform a fresh deployment of an ESS system by running **gssdeploy** in two steps.

```
$ gssdeploy -b
```

The `-b` option does the base xCAT installation.

```
$ gssdepoy -o
```

The `-o` option creates the xCAT object.

The use of **gssdeploy -x** is not recommended, as it does the base xCAT installation every time you run with the `-x` option.

5. This example shows how to set up the kernel, systemd, and Network Manager errata repositories. Use the following command on PPC64BE systems:

```
/var/tmp/gssdeploy -k /home/deploy/kernel-RHXX-XXXX-XXXX-BE.tar.gz -p \
/home/deploy/systemd-RHXX-XXXX-XXXX-BE.tar.gz,/home/deploy/netmanager-RHXX-XXXX-XXXX-
BE.tar.gz,\
```

Note: This command extracts the supplied tar zip files and builds the associated repository.

- -k option: Set up the kernel repository
- -p option: Set up the patch repository (For example: systemd, network manager). One or more patches might be specified at the same time separated by comma.
- Directory structure:

  Kernel repository

  `/install/gss/otherpkgs/rhels7/<arch>/kernel`

  Patch repository

  `/install/gss/otherpkgs/rhels7/<arch>/patch`

Note: Make sure that all RPMs in the `/install` directory including the extracted files in the kernel directory (`/install/gss/otherpkgs/rhels7/<arch>/kernel`), the patch directory (`/install/gss/otherpkgs/rhels7/<arch>/patch`), and xCAT RPMs, etc. have the correct read permission for user, group, and others (chmod 644 files). For example:

```
/install/gss/otherpkgs/rhels7/<arch>/kernel
-rw-r--r-- 1 nobody nobody 39315448 Nov 29 10:17 kernel-X.XX.X-XXX.XX.X.el7.ppc64.rpm
```

```
/install/gss/otherpkgs/rhels7/<arch>/patch
-rw-r--r-- 1 nobody nobody  5412240 Nov 29 12:02 systemd-XXX-XX.el7_X.X.ppc64.rpm
-rw-r--r-- 1 nobody nobody 1785872 Nov 29 10:49 NetworkManager-X.XX.X-XX.el7_X.ppc64.rpm
```

Important: Wrong file permission will lead to node deployment failure.

6. This example shows how to deploy on the I/O server nodes using the customized deploy script.

```
$ /var/tmp/gssdeploy -d
```

This command starts deploying the I/O server nodes such as starting with disk partitioning, operating system installation, update driver and firmware on I/O server nodes, etc.

7. This examples shows how to use the `-g` option in case of PPC64LE deployment if the xCAT genesis discovery fails to discover the I/O nodes.

   ```
   $ gssdeploy -g
   ```

   This command performs only xCAT genesis discovery.

See also

- “gssinstall script” on page 69
- “gssinstallcheck command” on page 33

Location

- PPC64BE: `/opt/ibm/gss/install/rhel7/ppc64/samples`
- PPC64LE: `/opt/ibm/gss/install/rhel7/ppc64le/samples`

gssinstall script

ESS software packages installer

Synopsis

```
gssinstall [ { -m | --manifest } Manifest ] ]
           [ { -N | --nodes } NodeList ] [ -s | --silent ]
           [ -r | --repoupdate ] [ -u | --update ]
           [ -v | --verbose ] [ -V | --version ] [ {-t | --tarch } TARCH ]
           [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

gssinstall is the ESS software packages installer. The actual file name of **gssinstall** is **gssinstall_<arch>** where <arch> can be either ppc64 or ppc64le depending on the architecture of the binary packages you have extracted. It can be found in the /var/tmp directory.

Parameters

{ -m | --manifest } ***Manifest***
Specifies a manifest file for version comparison. There is no default.

{ -N | --nodes } ***NodeList***
Specifies a comma-separated I/O node list on which to operate. There is no default.

-s | --silent
Performs the update non-interactively. The default is False.

-r | --repoupdate
Updates the repository. The default is False.

-u | --update
Updates the software repository with the specified archive. The default is False.

-v | --verbose
Specifies the level of detail. The default level is 0. The maximum level is 1.

-V | --version
Displays the program's version number and exits.

{ -t | --tarch } ***TARCH***
Specifies the target architecture of the deployment. The default is the architecture of the running operating system. This option can be used when the extracted ESS software binary is not matching with the running operating system binary. For example, running operating system architecture is ppc64 (Big Endian) and the used binary architecture is pcc64le (Little Endian).

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gssinstall` command.

Examples

1. This example shows the current version of **`gssinstall`**.

   PPC64 (Big Endian) node

   ```
   gssinstall_ppc64 -V
   ```

   PPC64LE (Little Endian) node

   ```
   gssinstall_ppc64le -V
   ```

2. This example shows how to compare the existing ESS software repository with the manifest file. The following command compares the repository with the manifest file and shows the list of Not Installed, Currently Installed, New and Older packages. It does not create any new repository or update any existing repository. The `-m` option can be just used to compare the repository with manifest.

   ```
   gssinstall_ppc64 -m /opt/ibm/gss/install/rhel7/ppc64/manifest
   ```

3. This example shows how to create a new or update an existing software repository of the ESS package installer on PPC64 (Big Endian) type of nodes.

   ```
   gssinstall_ppc64 -u
   ```

4. This example shows how to create a new or update an existing software repository of the ESS package installer on PPC64LE (Little Endian) type of nodes.

   ```
   gssinstall_ppc64le -u
   ```

5. This example shows how to refresh an existing repository.

   ```
   gssinstall_ppc64 -r
   ```

6. This example shows how to create a different ESS software architecture repository.

   ```
   gssinstall_ppc64le -u --tarch ppc64
   ```

   Consider a scenario in which the running operating system architecture is PPC64 and the used ESS binary architecture is PPC64LE. User wants to host the PPC64LE software repository on the PPC64 architecture host. Here, the file name is `gssinstall_ppc64le` as the ESS binary used in this example is of PPC64LE however the running operating system architecture is PPC64.

See also

See also the following *Deploying the Elastic Storage Server* topics:

- “gssdeploy script” on page 64
- “gssinstallcheck command” on page 33

Location

- PPC64BE: `/opt/ibm/gss/install/rhel7/ppc64/samples`
- PPC64LE: `/opt/ibm/gss/install/rhel7/ppc64le/samples`

gss_security.sh script

Primary tool to enable security on an ESS node.

Synopsis

```
gss_security.sh [-e] [-d] [-c] [-h]
```

Availability

Available with the Elastic Storage Server.

Description

gss_security.sh is the primary tool for enabling security on a node. Enabling security in an ESS environment is a one-step process and it can be enabled for EMS, I/O server nodes, and protocol nodes by using the **gss_security.sh** script.

By default, any node in an ESS environment has security disabled. When you enable security on the node, the following changes occur:

1. OS hardening is enabled by disabling TCP timestamps and ICMP protocol in network packets on the node.
2. The HTTPd server is disabled from running on the node.

   Note: All services that are using the HTTPd server, including xCAT, might be affected when HTTPd is disabled.
3. Strong ciphers, Macs, and KexAlgorithms are enabled on the node.
4. SSH timeout is set to 300 seconds (5 minutes).

Note: If security is enabled on the EMS node, xCAT commands fail. Hence, before installation, configuration, or upgrade, disable security on the EMS node.

Parameters

-e | --enable
Enables security on the node.

-d | --disable
Disables security on the node.

-c | --check
Verifies security on the node.

-h | --help
Displays usage information about this command and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the `gss_security` script.

Examples

1. Enable security on the I/O server node by running the following command.

```
./gss_security -e
```

   A sample output is as follows:

```
gss_security [INFO]: Enabling Security...
gss_security [INFO]: Security is enabled.
```

2. Check the status of the security on a node as follows.

```
./gss_security -c
```

   A sample output is as follows:

```
gss_security [INFO]: SSH timout is enabled
gss_security [INFO]: ICMP timestamp is disabled
gss_security [INFO]: TCP timestamp is disabled
gss_security [INFO]: httpd is disabled
gss_security [INFO]: Strong Ciphers, MACs and KexAlgorithms are enabled.
```

3. Disable security on the node by running the following command.

```
./gss_security -d
```

   A sample output is as follows:

```
gss_security [INFO]: Disabling Security...
gss_security [INFO]: Security is disabled.
```

Location

`/opt/ibm/gss/xcat/postscripts/` (EMS node)

`/xcatpost/` (I/O server and protocol nodes)

gsssnap script

Collects the snapshot of the ESS deployment

Synopsis

```
gsssnap [ { -N | --nodes } NodeList ] [ -g | --gpfs ] [ -V | --version ]
        [ -i | --installcheck ] [ -t | --tarch ] [ -h | --help ]
```

Availability

Available with the Elastic Storage Server.

Description

The gsssnap script creates an informational system snapshot at a single point in time. This system snapshot consists of cluster configuration, disk configuration, network configuration, network status, ESS logs, dumps, and traces. Use the gsssnap script as one of the main tools to gather preliminary data when an ESS problem is encountered, such as a hung ESS script. The information that is gathered with the gsssnap script can be used in conjunction with other information (for example, ESS internal dumps, traces, and kernel thread dumps) to solve an ESS problem.

By default, the gsssnap script collects snapshot information from the management server node.

Parameters

-g | --gpfs
Takes a GPFS snapshot.

-i | --installcheck
Capture the **gssinstallcheck** output.

-t | --tarch
Specifies the target architecture of deployment. ppc64 or ppc64le.

-N | --nodes *NodeList*
Specifies a comma-separated list of nodes from which to collect snapshot information.

-V | --version
Displays the program's version number and exits.

-h | --help
Displays usage information about this script and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run the gsssnap script.

Example

This example shows how to collect the snapshot information from I/O server node gssio1:

```
gsssnap -N gssio1
```

The system displays output similar to this:

```
# gsssnap -N gssio1,gssio2

gsssnap [INFO]: Collecting xcat snap
gsssnap [INFO]: Collecting sosreports for node(s): ems1,gssio1,gssio2
gsssnap [INFO]: Collecting GSS snap
################################################################################################################
gsssnap tar file: /tmp/gsssnap.20151013T213843Z.tgz
MD5 file: /tmp/gsssnap.20151013T213843Z.tgz.md5
Please provide tar file to IBM service
################################################################################################################
```

Location

/opt/ibm/gss/xcat/bin/gsssnap

gssupgrade.sh script

ESS upgrade supplemental tasks

Synopsis

```
gssupgrade.sh { -a | -b | -s | -c | -v VerbsPort | -f | -n ContactNode } [ NodeName |
NodeClass ]
```

Availability

Available with the Elastic Storage Server.

Description

The `gssupgrade.sh` script performs the supplemental tasks for ESS upgrade.

Parameters

-a
Perform all supplemental tasks

(IO Server node config setting of gss_ppc64 node class,

EMS node config setting of ems node class,

perform IBM Spectrum Scale RAID Callback settings,

copy prepare new disk script)

-b
Specifies IBM Spectrum Scale RAID callback settings.

-s { *NodeName* | *NodeClass* }
Specifies the I/O server node configuration settings, optional node name or node class.

-c { *NodeName* | *NodeClass* }
Specifies the management server node configuration settings, optional node name or node class.

-v *VerbsPort*
Specifies the Mellanox verbsPort settings.

-f
Forcibly resets the verbsPort settings and recalculates it automatically.

-n *ContactNode*
Specifies the active I/O sever node that will be used for verbsPort calculation. This option can be used only with the `-s` option.

-h
Displays usage information about this script and exits.

Exit status

0
Successful completion.

nonzero
A failure has occurred.

Security

You must have root authority to run this script.

Examples

1. This example shows steps to upgrade IBM Spectrum Scale RAID configuration parameters on the EMS node during upgrade.

   ```
   $ /opt/ibm/gss/tools/samples/gssupgrade.sh -b ems1-hs,gss_ppc64
   $ /opt/ibm/gss/tools/samples/gssupgrade.sh -c
   ```

2. This example shows how to update the node configuration for I/O nodes upgrade.

   ```
   $ /opt/ibm/gss/tools/samples/gssupgrade.sh -s CurrentIoServer-hs
   ```

   This command is run from the EMS node and `CurrentIoServer-hs` must be replaced with the I/O server node name.

See also

- *Upgrading Elastic Storage Server* in *Elastic Storage Server: Quick Deployment Guide*

Location

`/opt/ibm/gss/tools/samples`

Chapter 3. ESS environment variables

This topic includes descriptions of the ESS environment variables.

Table 2. ESS environment variables

Environment variable	Set:	Possible values	Default value
GSSENV	To indicate the environment in which you are running - a manufacturing environment or an installation and deployment environment, for example.	INSTALL MFG	

Notices

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Glossary

This glossary provides terms and definitions for the ESS solution.

The following cross-references are used in this glossary:

- *See* refers you from a non-preferred term to the preferred term or from an abbreviation to the spelled-out form.
- *See also* refers you to a related or contrasting term.

For other terms and definitions, see the IBM Terminology website (opens in new window):

http://www.ibm.com/software/globalization/terminology

B

building block
A pair of servers with shared disk enclosures attached.

BOOTP
See *Bootstrap Protocol (BOOTP)*.

Bootstrap Protocol (BOOTP)
A computer networking protocol that is used in IP networks to automatically assign an IP address to network devices from a configuration server.

C

CEC
See *central processor complex (CPC)*.

central electronic complex (CEC)
See *central processor complex (CPC)*.

central processor complex (CPC)
A physical collection of hardware that consists of channels, timers, main storage, and one or more central processors.

cluster
A loosely-coupled collection of independent systems, or *nodes*, organized into a network for the purpose of sharing resources and communicating with each other. See also *GPFS cluster*.

cluster manager
The node that monitors node status using disk leases, detects failures, drives recovery, and selects file system managers. The cluster manager is the node with the lowest node number among the quorum nodes that are operating at a particular time.

compute node
A node with a mounted GPFS file system that is used specifically to run a customer job. ESS disks are not directly visible from and are not managed by this type of node.

CPC
See *central processor complex (CPC)*.

D

DA
See *declustered array (DA)*.

datagram
A basic transfer unit associated with a packet-switched network.

DCM
See *drawer control module (DCM)*.

declustered array (DA)
A disjoint subset of the pdisks in a recovery group.

dependent fileset
A fileset that shares the inode space of an existing independent fileset.

DFM
See *direct FSP management (DFM)*.

DHCP
See *Dynamic Host Configuration Protocol (DHCP)*.

direct FSP management (DFM)
The ability of the xCAT software to communicate directly with the Power Systems server's service processor without the use of the HMC for management.

drawer control module (DCM)
Essentially, a SAS expander on a storage enclosure drawer.

Dynamic Host Configuration Protocol (DHCP)
A standardized network protocol that is used on IP networks to dynamically distribute such network configuration parameters as IP addresses for interfaces and services.

E

Elastic Storage Server (ESS)
A high-performance, GPFS NSD solution made up of one or more building blocks that runs on IBM Power Systems servers. The ESS software runs on ESS nodes - management server nodes and I/O server nodes.

ESS Management Server (EMS)
An xCAT server is required to discover the I/O server nodes (working with the HMC), provision the operating system (OS) on the I/O server nodes, and deploy the ESS software on the management node and I/O server nodes. One management server is required for each ESS system composed of one or more building blocks.

encryption key
A mathematical value that allows components to verify that they are in communication with the expected server. Encryption keys are based on a public or private key pair that is created during the installation process. See also *file encryption key (FEK)*, *master encryption key (MEK)*.

ESS
See *Elastic Storage Server (ESS)*.

environmental service module (ESM)
Essentially, a SAS expander that attaches to the storage enclosure drives. In the case of multiple drawers in a storage enclosure, the ESM attaches to drawer control modules.

ESM
See *environmental service module (ESM)*.

Extreme Cluster/Cloud Administration Toolkit (xCAT)
Scalable, open-source cluster management software. The management infrastructure of ESS is deployed by xCAT.

F

failback
Cluster recovery from failover following repair. See also *failover*.

failover
(1) The assumption of file system duties by another node when a node fails. (2) The process of transferring all control of the ESS to a single cluster in the ESS when the other clusters in the ESS fails. See also *cluster*. (3) The routing of all transactions to a second controller when the first controller fails. See also *cluster*.

failure group
A collection of disks that share common access paths or adapter connection, and could all become unavailable through a single hardware failure.

FEK
See *file encryption key (FEK)*.

file encryption key (FEK)
A key used to encrypt sectors of an individual file. See also *encryption key*.

file system
The methods and data structures used to control how data is stored and retrieved.

file system descriptor
A data structure containing key information about a file system. This information includes the disks assigned to the file system (*stripe group*), the current state of the file system, and pointers to key files such as quota files and log files.

file system descriptor quorum
The number of disks needed in order to write the file system descriptor correctly.

file system manager
The provider of services for all the nodes using a single file system. A file system manager processes changes to the state or description of the file system, controls the regions of disks that are allocated to each node, and controls token management and quota management.

fileset
A hierarchical grouping of files managed as a unit for balancing workload across a cluster. See also *dependent fileset*, *independent fileset*.

fileset snapshot
A snapshot of an independent fileset plus all dependent filesets.

flexible service processor (FSP)
Firmware that provices diagnosis, initialization, configuration, runtime error detection, and correction. Connects to the HMC.

FQDN
See *fully-qualified domain name (FQDN)*.

FSP
See *flexible service processor (FSP)*.

fully-qualified domain name (FQDN)
The complete domain name for a specific computer, or host, on the Internet. The FQDN consists of two parts: the hostname and the domain name.

G

GPFS cluster
A cluster of nodes defined as being available for use by GPFS file systems.

GPFS portability layer
The interface module that each installation must build for its specific hardware platform and Linux distribution.

GPFS Storage Server (GSS)
A high-performance, GPFS NSD solution made up of one or more building blocks that runs on System x servers.

GSS
See *GPFS Storage Server (GSS)*.

H

Hardware Management Console (HMC)
Standard interface for configuring and operating partitioned (LPAR) and SMP systems.

HMC
See *Hardware Management Console (HMC)*.

I

IBM Security Key Lifecycle Manager (ISKLM)
For GPFS encryption, the ISKLM is used as an RKM server to store MEKs.

independent fileset
A fileset that has its own inode space.

indirect block
A block that contains pointers to other blocks.

inode
The internal structure that describes the individual files in the file system. There is one inode for each file.

inode space
A collection of inode number ranges reserved for an independent fileset, which enables more efficient per-fileset functions.

Internet Protocol (IP)
The primary communication protocol for relaying datagrams across network boundaries. Its routing function enables internetworking and essentially establishes the Internet.

I/O server node
An ESS node that is attached to the ESS storage enclosures. It is the NSD server for the GPFS cluster.

IP
See *Internet Protocol (IP)*.

IP over InfiniBand (IPoIB)
Provides an IP network emulation layer on top of InfiniBand RDMA networks, which allows existing applications to run over InfiniBand networks unmodified.

IPoIB
See *IP over InfiniBand (IPoIB)*.

ISKLM
See *IBM Security Key Lifecycle Manager (ISKLM)*.

J

JBOD array
The total collection of disks and enclosures over which a recovery group pair is defined.

K

kernel
The part of an operating system that contains programs for such tasks as input/output, management and control of hardware, and the scheduling of user tasks.

L

LACP
See *Link Aggregation Control Protocol (LACP)*.

Link Aggregation Control Protocol (LACP)
Provides a way to control the bundling of several physical ports together to form a single logical channel.

logical partition (LPAR)
A subset of a server's hardware resources virtualized as a separate computer, each with its own operating system. See also *node*.

LPAR
See *logical partition (LPAR)*.

M

management network
A network that is primarily responsible for booting and installing the designated server and compute nodes from the management server.

management server (MS)
An ESS node that hosts the ESS GUI and xCAT and is not connected to storage. It must be part of a GPFS cluster. From a system management perspective, it is the central coordinator of the cluster. It also serves as a client node in an ESS building block.

master encryption key (MEK)
A key that is used to encrypt other keys. See also *encryption key*.

maximum transmission unit (MTU)
The largest packet or frame, specified in octets (eight-bit bytes), that can be sent in a packet- or frame-based network, such as the Internet. The TCP uses the MTU to determine the maximum size of each packet in any transmission.

MEK
See *master encryption key (MEK)*.

metadata
A data structure that contains access information about file data. Such structures include inodes, indirect blocks, and directories. These data structures are not accessible to user applications.

MS
See *management server (MS)*.

MTU
See *maximum transmission unit (MTU)*.

N

Network File System (NFS)
A protocol (developed by Sun Microsystems, Incorporated) that allows any host in a network to gain access to another host or netgroup and their file directories.

Network Shared Disk (NSD)
A component for cluster-wide disk naming and access.

NSD volume ID
A unique 16-digit hexadecimal number that is used to identify and access all NSDs.

node
An individual operating-system image within a cluster. Depending on the way in which the computer system is partitioned, it can contain one or more nodes. In a Power Systems environment, synonymous with *logical partition*.

node descriptor
A definition that indicates how IBM Spectrum Scale uses a node. Possible functions include: manager node, client node, quorum node, and non-quorum node.

node number
A number that is generated and maintained by IBM Spectrum Scale as the cluster is created, and as nodes are added to or deleted from the cluster.

node quorum
The minimum number of nodes that must be running in order for the daemon to start.

node quorum with tiebreaker disks
A form of quorum that allows IBM Spectrum Scale to run with as little as one quorum node available, as long as there is access to a majority of the quorum disks.

non-quorum node
A node in a cluster that is not counted for the purposes of quorum determination.

O

OFED
See *OpenFabrics Enterprise Distribution (OFED)*.

OpenFabrics Enterprise Distribution (OFED)
An open-source software stack includes software drivers, core kernel code, middleware, and user-level interfaces.

P

pdisk
A physical disk.

PortFast
A Cisco network function that can be configured to resolve any problems that could be caused by the amount of time STP takes to transition ports to the Forwarding state.

R

RAID
See *redundant array of independent disks (RAID)*.

RDMA
See *remote direct memory access (RDMA)*.

redundant array of independent disks (RAID)
A collection of two or more disk physical drives that present to the host an image of one or more logical disk drives. In the event of a single physical device failure, the data can be read or regenerated from the other disk drives in the array due to data redundancy.

recovery
The process of restoring access to file system data when a failure has occurred. Recovery can involve reconstructing data or providing alternative routing through a different server.

recovery group (RG)
A collection of disks that is set up by IBM Spectrum Scale RAID, in which each disk is connected physically to two servers: a primary server and a backup server.

remote direct memory access (RDMA)
A direct memory access from the memory of one computer into that of another without involving either one's operating system. This permits high-throughput, low-latency networking, which is especially useful in massively-parallel computer clusters.

RGD
See *recovery group data (RGD)*.

remote key management server (RKM server)
A server that is used to store master encryption keys.

RG
See *recovery group (RG)*.

recovery group data (RGD)
Data that is associated with a recovery group.

RKM server
See *remote key management server (RKM server)*.

S

SAS
See *Serial Attached SCSI (SAS)*.

secure shell (SSH)
A cryptographic (encrypted) network protocol for initiating text-based shell sessions securely on remote computers.

Serial Attached SCSI (SAS)
A point-to-point serial protocol that moves data to and from such computer storage devices as hard drives and tape drives.

service network
A private network that is dedicated to managing POWER8 servers. Provides Ethernet-based connectivity among the FSP, CPC, HMC, and management server.

SMP
See *symmetric multiprocessing (SMP)*.

Spanning Tree Protocol (STP)
A network protocol that ensures a loop-free topology for any bridged Ethernet local-area network. The basic function of STP is to prevent bridge loops and the broadcast radiation that results from them.

SSH
See *secure shell (SSH)*.

STP
See *Spanning Tree Protocol (STP)*.

symmetric multiprocessing (SMP)
A computer architecture that provides fast performance by making multiple processors available to complete individual processes simultaneously.

T

TCP
See *Transmission Control Protocol (TCP)*.

Transmission Control Protocol (TCP)
A core protocol of the Internet Protocol Suite that provides reliable, ordered, and error-checked delivery of a stream of octets between applications running on hosts communicating over an IP network.

V

VCD
See *vdisk configuration data (VCD)*.

vdisk
A virtual disk.

vdisk configuration data (VCD)
Configuration data that is associated with a virtual disk.

X

xCAT
See *Extreme Cluster/Cloud Administration Toolkit*.

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