

# LPM Practices and the PowerVM LPM/SRR Automation Tool

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# Agenda and TakeAways

## Agenda

- Live Partition Mobility (LPM) and Simplified Remote Restart (SRR) Overview
- Best Practices for LPM
- How to implement best practices
- Overview of the PowerVM LPM/SRR Automation Tool
- Learn the capabilities of the Tool

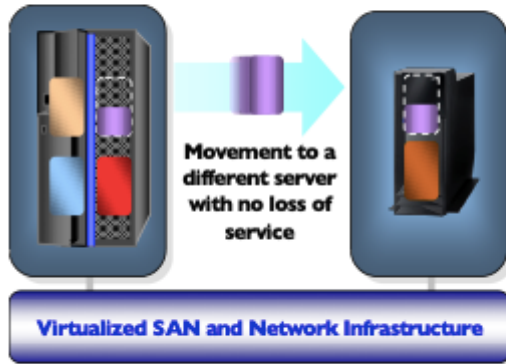
## TakeAways

- Move many partitions at a time and the tool remembers where they need to go back to
- Customize partition moves to your environment without becoming an HMC Command Line expert
- Plan your partitions moves days in advance and Click and Go during maintenance window

# What is LPM and SRR?

## Live Partition Mobility Overview

*Move a running partition from one POWER server to another with no application downtime*



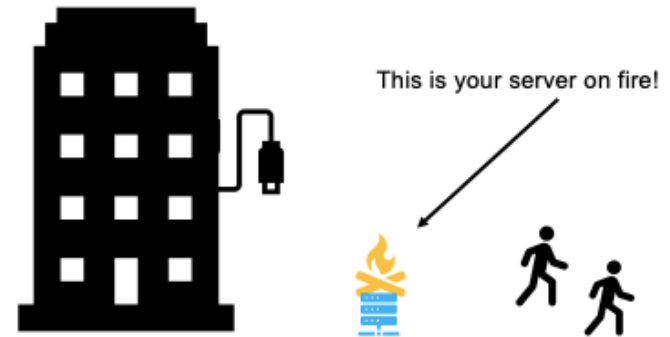
- Reduce planned downtime by moving workloads to another server during system maintenance

- Rebalance processing power across servers when and where you need it

## Simplified Remote Restart (SRR) Overview

*Move partitions from one POWER 8/9 server to another Power 8/9 when the server has crashed (aka unplanned outage)*

*Released in December 2014.*



Over 150,000 LPMs performed in the last year.

# A little more on IBM's different availability products

- IBM has multiple products that fill some part of this space.
  - Simplified Remote Restart –
    - part of PowerVM Enterprise Edition.
    - A partition crashes when the server crashes and is “relocated” to another server and activated.
    - Mainly a solution within a Data Center – needs stretched LAN and SAN to work across DCs
  - PowerHA
    - Separately purchased product
    - Group LPARs into a cluster within or across DCs.
    - A partition crashes and the other LPAR in the cluster continues the work
  - PowerVM Recovery Manager HA (lower featured HA solution)
    - Separately purchased product
    - Uses LPM and SRR underlying technology to help manage the environment within a DC
  - PowerVM Recovery Manager DR
    - Separately purchased product
    - Does storage replication across DCs and uses SRR technology to restart
- Please see other sessions for the complete functionality of these products

# Live Partition Mobility evolution

Released in Spring 2008 on Power 6 servers (over 11 years ago)

Included with PowerVM Enterprise Edition

Ability to move from an older generation of server to the new generation of servers. <ftp://ftp.software.ibm.com/systems/power/docs/hw/p9/p9hc3.pdf>

- Power6 to/from Power7
- Power7 to/from Power8
- Power 8 to/from Power9
- Power9 to Power7

Has been enhanced continuously to add in features for new technologies and to speed up the LPM process

## LPM Question

- How many people have used LPM in the past 6 months?

# LPM experiences/environment drive Best Practices

- Customer environments can drive your practices
  - LPMing large LPARs – 1 TB memory and larger? – use high speed networks and concurrency performance levels
  - Want to do many LPMs at a time – consider concurrent LPM count and high speed networks
  - Little experience with LPM and NPIV – consider LUN validation
  - Different VIOS pairs for NPIV – need to map NPIV to appropriate VIOS pair
  - Multiple IP addresses on the VIOS(s) – consider setting default MSPs
  - Power Enterprise Pools enabled – move resources from source server to destination server
  - Different Vswitch names – select destination Vswitch

# Getting the best performance during LPM

- Performance
  - Key factors
    - MSP (VIOS) network speed – LPM traffic flows between VIOS and this is called Mover Service Partition (MSP) traffic. It flows over an IP address in the VIOS. PowerVM can drive 100 Gigabit networks.
    - Size of LPAR's memory – LPM traffic is the memory contents of an LPAR. The larger the Memory, the more that is transferred.
      - > For example, a 500 Gigabyte LPAR needs a minimum of 7 minutes to transfer over a 10 Gigabit network. The same LPAR can be moved in 40 seconds on a 100 Gbit network using concurrency performance level = 1
  - Other factors
    - Number of IP addresses on VIOS – HMC performs “ping” tests from each IP address on source VIOSs to each IP address on destination VIOSs for MSP pairings.
      - > This test is additional overhead and in some environments takes 10s of minutes on each LPAR.
    - LPAR activity – if memory contents are changing rapidly, those memory contents have to be resent as part of the LPM traffic
    - Move LPARs when less busy



# Getting the best performance during LPM

- Solutions

- Select MSP pairings - HMC does not select fastest network automatically
- Use appropriate concurrency performance level
- Configure default MSPs
- Move LPARs when less busy

# Having the LPAR configured/running correctly after LPM

- VIOS mappings
  - VSCSI mappings are normally done in advance on destination VIOS
  - Some NPIV (virtual fibre channel) mappings are chosen by HMC or customer
  - Vswitch mappings need to be overridden if names are different
- Successful NPIV zoning/storage
  - NPIV uses even/odd WWPNs. Customers' SAN team must zone/map both WWPNs for successful LPM
- Power Enterprise Pools
  - CPU and/or memory resources need to be moved in advance of LPM activities

# How to utilize these different practices

- Some of these features on the HMC GUI.

**Partition Migration Validation - jupe4dfp1 - lpmclient13**

Fill in the following information to set up a migration of the partition to a different managed system. Click Validate to ensure that all requirements are met for this migration. You cannot migrate until the migration set up has been verified.

Source system : jupe4dfp1  
 Migrating partition: lpmclient13  
 Remote HMC:   
 Remote User:   
 Destination system: Server-9117-MMC-SN105C   
 Destination profile name:   
 Destination shared processor pool:   
 Source mover service partition:    
 Destination mover service partition:   
 Wait time (in min):   
 Override virtual network errors when possible:   
 Override virtual storage errors when possible:   
 Override partition UUID:   
 Recheck network communication between all MSPs:

Virtual Storage assignments :

Select	Source Slot ID	Slot Type	Destination VIOS
<input type="checkbox"/>			

- Most features are available via the HMC Command Line

```
migr_lpar -o m -m 'kurtkP8' -t 'bobfP8' -p 'bf_client1' --ip
bbhmc2.rchland.ibm.com -u hscroot -i
\""redundant_msp=53/kk1vios1//172.28.10.70/bb1vios1//172.28.10.55,53/kk1vios2//
/172.28.10.71/bb1vios2//172.28.10.56\"",\""
virtual_fc_mappings=3//1//,4//1//,5//6//,6//6//\"" -requirerr 2
```

All of these features are available on the PowerVM LPM/SRR Automation Tool plus more!

IBM PowerVM Live Partition Automation Version 9.1.910.0

Welcome Admin Help Sign Out

24 Live Partition Mobility (LPM) | 109 Logical Partitions LPAR | 7 Servers | 2 HMCs

**Move** (LPM Move): Use Live Partition Mobility to move partitions to a different server.

**Return** (LPM Return): Use Live Partition Mobility to return partitions to a server.

**Remote Restart** (SRR): Restart a partition on a different server.

**Auto-SRR** (Auto-SRR): Automate the restart of partitions on different servers.

**DPO** (Perform DPO): Dynamically optimize the placement of CPU and memory of partitions on a server.

**Schedule**: View the schedule of LPM operations.

**History**: View the history of LPM and remote restart operations.

**Manage** (Management): View HMCs, servers and partitions available to the tool.

**Setting** (Settings): Add and remove HMCs, add and remove users, change tool settings.

<b>Feature</b> <b>Most important/used highlighted</b>	<b>HMC GUI</b>	<b>HMC CLI</b>	<b>LPM/SRR tool</b>
MSP pairing (using high speed network)	✓	✓	✓
VSCSI/NPIV VIOS mapping	✓	✓	✓
NPIV VIOS FCS port mapping		✓	✓
Default MSP (avoid ping tests)			✓
LUN Validation (check proper zoning/mask)		✓	✓
Vswitch Name Change		✓	✓
Concurrency Perf Levels (large LPARs)		✓	✓
Concurrent LPMs (moving many LPARs)			✓
LPM/SRR Plans			✓
LPM/SRR scripts			✓
LPM frame evacuation and return			✓
SRR		✓	✓
Support Power Enterprise Pools (1.0)			✓
Daily SRR/LPM validations (healthcheck)			✓

# HMC LPM GUI Screen – main panel

## Partition Migration Validation - jupe4dfp1 - lpmclient13

Fill in the following information to set up a migration of the partition to a different managed system. Click Validate to ensure that all requirements are met for this migration. You cannot migrate until the migration set up has been verified.

Source system : jupe4dfp1  
Migrating partition: lpmclient13  
Remote HMC:   
Remote User:   
Destination system: Server-9117-MMC-SN105C   
Destination profile name:   
Destination shared processor pool:   
Source mover service partition:   
Destination mover service partition:   
Wait time (in min):   
Override virtual network errors when possible:   
Override virtual storage errors when possible:   
Override partition UUID:   
Recheck network communication between all MSPs:   
Virtual Storage assignments :

Select	Source Slot ID	Slot Type	Destination VIOS
--------	----------------	-----------	------------------

- Features not available –
  - Concurrency Performance Level
  - Configuring default MSPs
  - Choosing NPIV FCS ports
  - Skipping "ping" tests
  - NPIV LUN validation
  - Vswitch changes
  - Multiple LPMs

# HMC LPM GUI Screen – VSCSI/NPIV VIOS mapping

Virtual Storage assignments :

Select	Source Slot ID	Slot Type	Destination VIOS
<input type="checkbox"/>	6	Fibre	jigp01
<input checked="" type="checkbox"/>	6	Fibre	jigp02
<input type="checkbox"/>	5	Fibre	jigp01
<input checked="" type="checkbox"/>	5	Fibre	jigp02
<input checked="" type="checkbox"/>	4	Fibre	jigp01
<input type="checkbox"/>	4	Fibre	jigp02
<input checked="" type="checkbox"/>	3	Fibre	jigp01
<input type="checkbox"/>	3	Fibre	jigp02

This box pops up automatically after you click validation and it succeeds.

However, no ability to choose NPIV FCS ports

If you want to specify 4 FCS ports, the HMC CLI is

```
migrIpar -o m -m 'bobfP8' -t 'kurtkP8' -p 'bf_client1' -i  
\"\"virtual_fc_mappings=6//2//fcs0,4//1//fcs0 5//1//fcs1,7//2//fcs1\"\"
```

# HMC LPM GUI Screen – MSP pairing (using high speed network)

Click “MSP Pairings” after the validation

The Mover Service Partitions coordinating a partition migration must be able to communicate with each other. Below is a list of the MSPs that were able to communicate over the network the last time the HMC checked. If you do not see an MSP selection you are expecting, you can refresh this list by clicking Cancel, then selecting the Recheck network communication between all MSPs option, then clicking Validate again.

Primary MSP

Select	Source MSP Partition	Source MSP Partition's IP	Source MSPs Redundant Capable	Destination MSP Partition	Destination MSP Partition's IP	Destination MSPs Redundant Capable
<input type="radio"/>	kk1vios1	9.5.110.224	YES	bb1vios2	172.28.10.56	YES
<input type="radio"/>	kk1vios1	9.5.110.224	YES	bb1vios2	9.5.110.223	YES
<input type="radio"/>	kk1vios1	172.28.10.70	YES	bb1vios2	172.28.10.56	YES
<input checked="" type="radio"/>	kk1vios1	172.28.10.70	YES	bb1vios2	9.5.110.223	YES
<input type="radio"/>	kk1vios1	9.5.110.224	YES	bb1vios1	172.28.10.55	YES
<input type="radio"/>	kk1vios1	9.5.110.224	YES	bb1vios1	9.5.110.222	YES
<input type="radio"/>	kk1vios1	172.28.10.70	YES	bb1vios1	172.28.10.55	YES
<input type="radio"/>	kk1vios1	172.28.10.70	YES	bb1vios1	9.5.110.222	YES
<input type="radio"/>	kk1vios2	9.5.110.225	YES	bb1vios2	172.28.10.56	YES
<input type="radio"/>	kk1vios2	9.5.110.225	YES	bb1vios2	9.5.110.223	YES

Secondary MSP :

Select	Source MSP Partition	Source MSP Partition's IP	Destination MSP Partition	Destination MSP Partition's IP
<input type="radio"/>	kk1vios2	9.5.110.225	bb1vios1	172.28.10.55
<input type="radio"/>	kk1vios2	9.5.110.225	bb1vios1	9.5.110.222
<input type="radio"/>	kk1vios2	172.28.10.71	bb1vios1	172.28.10.55
<input checked="" type="radio"/>	kk1vios2	172.28.10.71	bb1vios1	9.5.110.222

OK Cancel Help

Unable to save MSP pairings – “ping” tests done every time!

If you want to specify redundant MSPs, the HMC CLI is

```
migrpar -o m -m 'kurtkP8' -t 'bobfP8' -p 'bf_client1' --i
\'\'\'redundant_msps=53/kk1vios1//9.5.110.224/bb1vios1//9.5.110.222,53/kk1vios2//9.
5.110.225/bb1vios2//9.5.110.223\'\'\'
```

## Additional LPM Best Practices

- Enable Inactive Source Storage - see next slide
- Enable auto data collection – see next slides
- Enable SRR on all partitions
- Perform validations days in advance of scheduled maintenance window
- Shared Processor Pool is "Default" unless selected



# Enable this on all your servers that you have LPM setup on

The screenshot shows the Hardware Management Console (HMC) interface. The top navigation bar includes 'mgmhc Resources > All Systems ▾ bobfP8 ▾ General Settings ▾'. The main content area is titled 'General Settings' and contains a description: 'View or change the general and advanced settings for the managed system.' Below this, the 'Migration' section is expanded, showing the text: 'View the partition mobility properties and change the migration policy for inactive partitions on the managed system. [Learn More](#) →'. A red circle highlights the checkbox for 'Allow Migration with Inactive Source Storage VIOS', which is currently unchecked. Other visible elements include a sidebar with system status (Operating, Capacity, General Settings, Processor, Memory, I/O, Power VM) and buttons for 'Save' and 'Cancel'.

This capability allows you to LPM from a server where the VIOS has crashed or is sick. If this IS NOT set before your VIOS gets sick, you will not be able to LPM from this frame and will need to fix the VIOS or shutdown all your partitions. A sick VIOS needs to be shutdown to do LPM.

# Informal Polling on different LPM and SRR features thru @bobf\_foster Twitter Account



**Bob Foster** @bobf\_foster · Feb 20

#PowerVM\_LPM Hint #1 on making your #PowerVM LPM environment better. Make sure "Allow Migration with Inactive Source Storage VIOS" is set on your managed system. Very few customers have set this! You can LPM if a VIOS fails. See [ibm.biz/lpm\\_hint\\_1](http://ibm.biz/lpm_hint_1) @cgibbo #IBMLabServices

**We have set this already**

**50%**

**We have not set this**

**50%**

10 votes · Final results

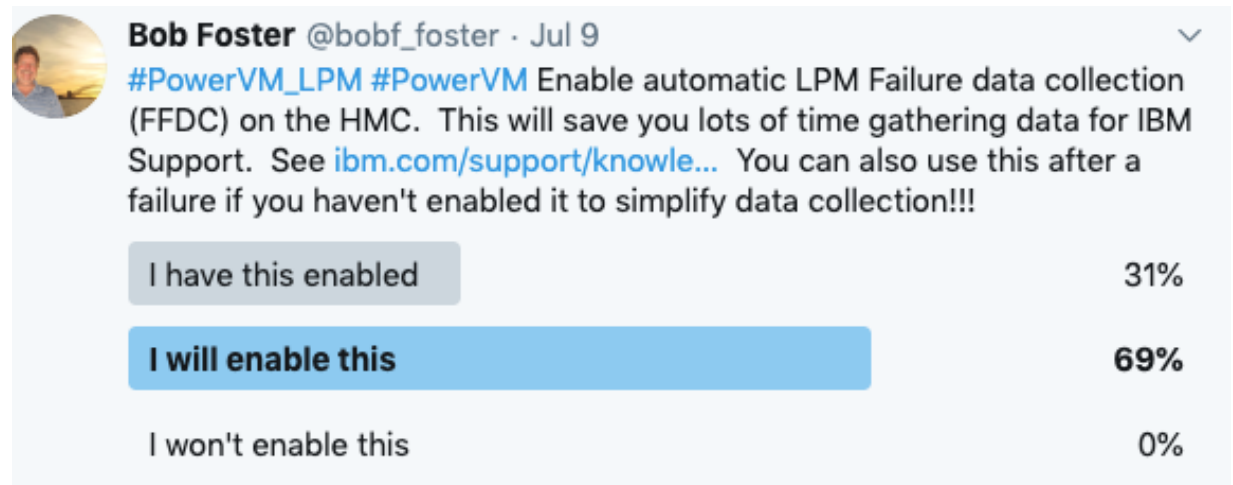
# Enable this on all your HMCs

With the Hardware Management Console (HMC) Version 8.2.0, or later, you can automatically collect first-failure data capture (FFDC) data when a partition mobility operation fails. This information is useful in analyzing partition mobility failures.

Run the following command to enable or disable the automatic collection of FFDC data:

```
migrdbg -o e | d
```

[https://www.ibm.com/support/knowledgecenter/8286-42A/p8hc3/p8hc3\\_hmcffdcoview.htm](https://www.ibm.com/support/knowledgecenter/8286-42A/p8hc3/p8hc3_hmcffdcoview.htm)



**Bob Foster** @bobf\_foster · Jul 9

#PowerVM\_LPM #PowerVM Enable automatic LPM Failure data collection (FFDC) on the HMC. This will save you lots of time gathering data for IBM Support. See [ibm.com/support/knowle...](https://www.ibm.com/support/knowledgecenter/8286-42A/p8hc3/p8hc3_hmcffdcoview.htm) You can also use this after a failure if you haven't enabled it to simplify data collection!!!

I have this enabled	31%
<b>I will enable this</b>	<b>69%</b>
I won't enable this	0%

## PowerVM LPM and SRR Tool History

- This tool was released in 4Q2014. Over 500 customers worldwide have already adopted it. There is very high customer satisfaction with this tool.
- There have been 6 releases of the tool with each release supporting the new LPM and SRR features released in the base PowerVM. The tool has also been adding new capabilities to enhance the ease of use, adding advanced features, more automation, etc.
- With the SRR feature of Power8 and Power9 servers, this tool is becoming a must for any customer wanting to use SRR. There is no HMC GUI for SRR!

# PowerVM LPM and SRR Automation

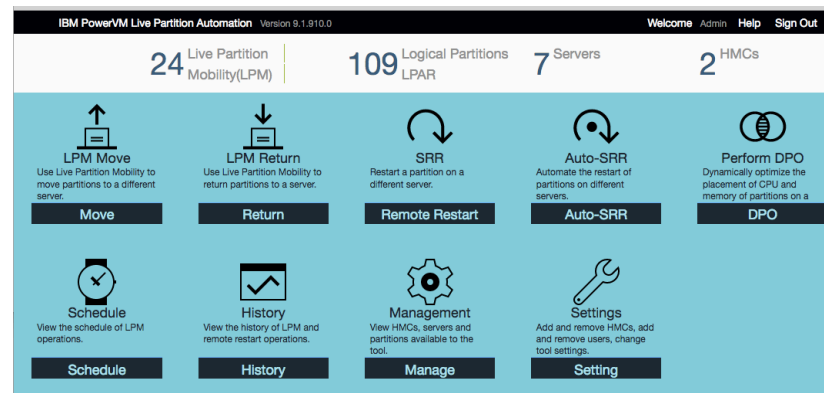
## Design, Automate, Rollback

### Live Partition Mobility (LPM)

- **Design** for maintenance and migration
  - Build a LPM plan for a maintenance window with control over VIO, HBA mappings, etc.
- **Automate** and accelerate mobility action
  - Schedule automated LPM operations or quickly move one or many partitions to another server in as few as 4 clicks with an easy-to-use GUI
- **Rollback** simply to original server
  - Return the partition/s back in a few as 4 clicks to the original server with the original HBA and Virtual slot ID mappings

### Simplified Remote Restart (SRR)

- **Design** for unplanned outages
  - Build a SRR plan ready to execute in the event of an unplanned outage
- **Automate** and accelerate mobility action
  - Use a GUI to quickly SRR many or all the partitions to one or more destination servers
- **Rollback** simply to original server
  - Once the outage has been resolved / repaired, move all the partitions back to the original server with just a few clicks



# LPM/SRR Automation Tool Version 9.1.930.0

- The tool supports Power7 and Power8 and Power9 servers.
- Your HMC must be at level V7R760 or higher.
- The tool can be installed on AIX and Windows and Linux platforms. It is packaged as a zip file and contains all the code/packages needed to run.
- The tool only communicates to the HMCs in your environment via ssh issuing HMC CLI commands. There is no need for agents or access to the VIOS or client partitions. It only needs an HMC userid and its password.
- It only takes minutes to install the tool and connect to the HMCs and start using the tool.

# LPM and SRR Automation Version 9 – New features

- **Support for POWER9**
- Support for new LPM and SRR features
- New, simplified user interface
- Automate SRR operations
- Ability to disable PEP operations
- Ability for pre-LPM and post-LPM scripting
- Bypass VLAN issues during validation
- LDAP support
- Automatic plans creation
- Links to online help videos
- LPM affinity feature supported
- VNIC backing devices support
- Ability to set default MSPs
- AutoSRR and email validation
- Ability for pre-SRR and post-SRR scripts
- Ability for AutoSRR scripts
- **Demo version available**

See [ibm.biz/lpm\\_srr\\_tool](http://ibm.biz/lpm_srr_tool) for lots more detailed information on V9 new features

## Using the tool – login to tool

Launch a browser and point to the server where the tool is installed  
i.e. <https://<server where you installed the tool>:8443/lpm>

(make sure you use this complete syntax as some browsers don't like shortened URLs)

IBM PowerVM Live Partition Automation Version 9.1.910.0

Welcome Help Sign Out

### Sign in

---

User Name Password

Admin .....

Login with userid Admin, password Admin

Sign in



# Home Screen – V9.9.930 release

IBM PowerVM Live Partition Automation Version 9.1.930.0

Welcome Admin Help Sign Out

35 Live Partition  
Mobility(LPM)

105 Logical Partitions  
LPAR

7 Servers

2 HMCs



## LPM Move

Use Live Partition Mobility to move partitions to a different server.

Move



## LPM Return

Use Live Partition Mobility to return partitions to a server.

Return



## SRR

Restart a partition on a different server.

Remote Restart



## Auto-SRR

Automate the restart of partitions on different servers.

Auto-SRR



## Perform DPO

Dynamically optimize the placement of CPU and memory of partitions on a server.

DPO



## Schedule

View the schedule of LPM operations.

Schedule



## History

View the history of LPM and remote restart operations.

History



## Management

View HMCs, servers and partitions available to the tool.

Manage



## Settings

Add and remove HMCs, add and remove users, change tool settings.

Setting



## LPM Settings

set default MSP connection for each server then execute lpm.

LPM Settings

# LPM Move: One Source & Multiple Destinations

Optionally  
Import Plan

IBM PowerVM Live Partition Automation Version 9.1.910.0 Welcome Admin Help

## LPM Move

Partitions and destinations >

**Choose partitions to be moved**  
Select a System or a set of partitions within a system to be moved

**Choose destination systems**  
Select one or more destination systems that are different than the source system

**Partitions**

Total cores  
6 cores

Total memory  
41984 MB

**Destination systems**

Available cores

Ignore VLAN errors     LUN Validation    **Next** →

The screenshot shows the LPM Move web interface. On the left, there is a sidebar with an 'Import' button and a 'Partitions' section showing system details (6 cores, 41984 MB memory) and a 'Destination systems' section. The main area is divided into two columns. The left column, 'Choose partitions to be moved', lists systems: Bob HMC, Mike HMC, and jupe4bfp1. Under jupe4bfp1, several partitions are listed with checkboxes: lpmclient11, lpmclient16, ha\_lpar\_1, and lpmclient7. The right column, 'Choose destination systems', lists systems: BOB HMC, Mike HMC, and Server-9117-MMC-SN105C627. Under Mike HMC, several partitions are listed with checkboxes: jupe4bfp1, MAp720, jupe4dfp1, thoradfp1, kurtkP8, and Server-9117-MMC-SN105C627. At the bottom, there are checkboxes for 'Ignore VLAN errors' and 'LUN Validation', and a 'Next' button with a right arrow.

Select an entire frame  
or multiple lpar in a frame  
or a single lpar to move

Select one frame  
or multiple frames  
as destination

for v-eth adapters

Port & disk for NPIV

# LPM Validation In Progress

IBM PowerVM Live Partition Automation Version 9.1.910.0 Welcome Admin Help Sign Out

## LPM Move

Partitions and destinations > Validate Partitions >

Re-Validate Errors Export Status

Sorting Filter

LPAR Name	Source Server	Dest Server	Validation State	Detail
ha_lpar_1	thoradfp1	jupe4bfp1	Success	<a href="#">message</a>
ha_lpar_1	thoradfp1	jupe4dfp1	Success	<a href="#">message</a>
lpmclient10	thoradfp1	jupe4bfp1	Success	<a href="#">message</a>
lpmclient10	thoradfp1	jupe4dfp1	Success	
lpmclient12	thoradfp1	jupe4bfp1	Success	<a href="#">message</a>
lpmclient12	thoradfp1	jupe4dfp1	Success	
lpmclient14	thoradfp1	jupe4bfp1	Success	<a href="#">message</a>

**Validation complete**  
All selected partitions have been validated.

Next → Cancel

Revalidate Errors only

Save results to XLS

Default concurrent count:  
8 lpars at a time. Additional lpars  
will be queued up & wait.

# LPM Move – Placement

IBM PowerVM Live Partition Automation Version 9.1.910.0 Welcome Admin Help Sign Out

## LPM Away

partitions and destinations > Validation Partitions > System Settings >

[Export Plan](#)

LPAR Name	Cores	Mem	Settings	Source Systems	Dest Server
ha_lpar_1	0.0	0		thoradfp1	<div style="background-color: black; color: white; padding: 2px;">✓ jupe4bfp1 jupe4dfp1 None</div>
lpmclient10	0.5	3072		thoradfp1	jupe4bfp1
lpmclient12	0.1	5376		thoradfp1	jupe4dfp1
lpmclient14	0.1	4352		thoradfp1	jupe4dfp1
lpmclient15	1	1280		thoradfp1	jupe4bfp1

Order	Dest Server	Remaining CPU	Remaining MEM
1	jupe4bfp1	0.55	3840
2	jupe4dfp1	2.15	5120

**Partition placement**

**Packing** (Place on another)  **Striping** (Place fully then move)

**Concurrent Count**


As dest server is changed, the Remaining values change

Change dest server

# LPM Move – Placement right side

Order	Dest Server	Remaining CPU	Remaining MEM
1	jupe4bfp1	0.55	3840
2	jupe4dtp1	2.15	5120

Click and drag these to change the order of placement



## Partition placement policy

- Packing** (Place partitions on a single system until it is fully then move on another)
- Striping** (Place partitions evenly across all Servers)

## Concurrent Count

8



Note:Some LPARs may be queued after other partitions are finished.

## Other settings

- Retain virtual slots , HBA mapping
- Retain processor pool mapping
- Do not allow LPM return

# LPM Move – MSP and Shared Proc Pool (WITH redundant MSPs)

## Partition Settings

Partition: **bf\_client3**

Source System: **bobfP8**

Source Vswitch

ETHERNET0

Source VIOS

any

Source VIOS IP

Target Vswitch

any

Target VIOS

any

Target VIOS IP

Target ProcPool

any

Source VIOS2

any

Source VIOS IP2

Concurrency Level

4

Target VIOS2

any

Target VIOS IP2

Use Single MSP Pair

Apply

Apply To All

Cancel

APPLY will only change this one partitions LPM settings (MSP Config and ProcPool Config)

The tool will automatically show the redundant MSP pairs if both source and destination server support it.

You must check this box if you do not redundant MSPs. The HMC does redundant MSPs by default.

# LPM Move – migration in progress

## LPM Away

partitions and destinations > Validation Partitions > System Settings > Move Summary

Partition name	Mem	Source Server	LPAR I...	Dest Server	Remot...	Move status	Time Remaining	Move Progress
ha_lpar_1	0	thoradfp1	7	jupe4dfp1	7	Success	0	100%
lpmclient15	1280	thoradfp1	45	jupe4dfp1	45	Success	0	100%
lpmclient18	3072	thoradfp1	15	jupe4dfp1	15	227 seconds	2 seconds	85%
lpmclient2	3072	thoradfp1	8	jupe4dfp1	8	227 seconds	71 seconds	73%
lpmclient20	4352	thoradfp1	16	jupe4dfp1	4	Success	0	100%
lpmclient5	3072	thoradfp1	30	jupe4dfp1	9	227 seconds	162 seconds	14%

# LPM Return – return partitions back to original server

**Import**

## Partitions

Total cores  
0 cores

Total memory  
0 MB

### Choose Destination System

Select one Destination System to Return to

- Bob HMC
- Mike HMC
- thoradfp1

### Partition details

The partition information you want to move back

LPAR Name	Source Server	Dest Server	Cores	Memory
-----------	---------------	-------------	-------	--------

This screen will show servers with partitions that haven't been returned to their source server. If the partitions were moved to multiple servers, this operation will bring them back from all the servers.

If multiple plans were used to move partitions off of this server, you have 2 options. Let the tool bring all the partitions back at once or you can import the plans one by one to restore the server.

**When moving the partitions back to the original managed system, the tool will restore the virtual adapter numbers and shared proc pools and HBA mappings that were originally being used before the managed system was evacuated**



# LPM Return – choose partitions

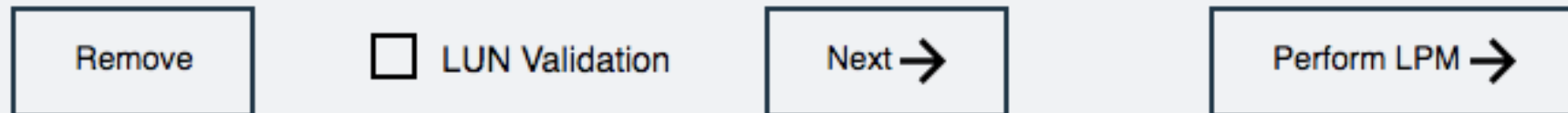
The screenshot shows the 'LPM Return' interface with the following components:

- Import** button (top left)
- Partitions** section (left sidebar) showing:
  - Total cores: 3.5 cores
  - Total memory: 14848 MB
- Choose Destination System** section (center):
  - Select one Destination System to Return to
  - Bob HMC (expanded)
  - Mike HMC (collapsed)
  - thoradfp1 (selected with radio button and checked checkbox)
  - lpmclient20 (checked checkbox)
  - lpmclient15 (checked checkbox)
  - ha\_lpar\_1 (checked checkbox)
  - lpmclient18 (checked checkbox)
- Partition details** section (right):
  - The partition information you wan to move back
  - Table with columns: LPAR Name, Source Server, Dest Server, Cores, Memory
- Bottom Action Bar** containing:
  - Remove button
  - LUN Validation checkbox
  - Next button with arrow
  - Perform LPM button with arrow

LPAR Name	Source Server	Dest Server	Cores	Memory
lpmclient20	thoradfp1	jupe4dfp1	1	4352
lpmclient15	thoradfp1	jupe4dfp1	1	1280
ha_lpar_1	thoradfp1	jupe4dfp1	0.0	0
lpmclient18	thoradfp1	jupe4dfp1	0.5	3072
lpmclient2	thoradfp1	jupe4dfp1	0.5	3072
lpmclient5	thoradfp1	jupe4dfp1	0.5	3072

You don't have to return all partitions at once. Default is ALL partitions. Just check the LPARs that you want to do an Action on.

## LPM Return Buttons



**Next Button** – for the LPARs you selected, go to Validation screen and then go to Placement Screen

**Remove Button** – for the LPARs you selected, Delete these LPARs source server and mappings and all remnants from the tools database (you don't want to return this LPAR to the source server)

**LUN Validation checkbox**- specify if you want NPIV LUN Validation to be part of the LPM validation process

**Perform LPM** – for the LPARs you selected, skip the Validation step and the Placement panel and just start the LPM. **This is a huge timesaver if you are returning lots of LPARs and a validation will be done as part of the LPM anyways.**

# LPM Return Validate Panel



## LPM Return

Partitions and destinations > Validate Partitions >

Re-Validate Errors	Export Status	Filter		
LPAR Name ↕	Source Server ↕	Dest Server ↕	Validation State ↕	Detail ↕
ha_lpar_1	jupe4dfp1	thoradfp1	Success	<a href="#">message</a>
lpmclient15	jupe4dfp1	thoradfp1	Success	
lpmclient18	jupe4dfp1	thoradfp1	Success	
lpmclient2	jupe4dfp1	thoradfp1	Success	
lpmclient20	jupe4dfp1	thoradfp1	Success	
lpmclient5	jupe4dfp1	thoradfp1	Success	

**Validation complete**  
All selected partitions have been validated.

Next →

Cancel

Revalidate Errors only

Save results to XLS

# LPM Return – Options screen

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## LPM Return

partitions and destinations > Validation Partitions > System Settings >

[Export Plan](#)

LPAR Name	Cores	Mem	Settings	Source Systems	Dest Server
ha_lpar_1	0.0	0		jupe4dfp1	thoradfp1
lpmclient15	1	1280		jupe4dfp1	thoradfp1
lpmclient18	0.5	3072		jupe4dfp1	thoradfp1
lpmclient2	0.5	3072		jupe4dfp1	thoradfp1
lpmclient20	1	4352		jupe4dfp1	thoradfp1

Dest Server	Remaining CPU	Remaining MEM
thoradfp1	3.45	258816

**Concurrent Count**

Note: Some LPARs may be queued after other partitions are finished.

A subset of the options on the LPM Move screen as those options aren't applicable to LPM Return (i.e. Packing/Striping...there's only 1 source server).

## Exporting/Importing Plans

- The tool is designed so that a customer can create plans, **MODIFY** them outside of the tool, and import those changed plans into the tool.
- The plan is an Excel spreadsheet where many of the fields can be modified and imported back into the tool.
- The plan includes both the LPM Move functionality and the LPM Return functionality on a different worksheet.
- You can import plans on either the LPM Move GUI or the LPM Return GUI. It will read the appropriate worksheet (“LPM Move” or “LPM Return”) and load that into the tool.

-

# Advanced LPM and SRR features

- While many customers are happy with just the GUI panels, some customers need a lot of control when performing LPM and SRR.
- The spreadsheet is a superset of the GUI capabilities.
- Anything on the GUI can be changed in the spreadsheet.
- Items that are not on the GUI but can be modified in plans are –
  - Vfc mappings (both LPM and SRR)
  - Vscsi mappings (only LPM)
  - SR-IOV VNIC mappings (only LPM)
  - Affinity (only LPM)
  - Changing CPU and Memory during SRR (only SRR)
  - Group IDs (only LPM)

# Support for Power Enterprise Pools

## What are Power Enterprise Pools

Mobile processor and memory activations may be re-allocated to any system within a defined pool

- Systems with different clock speeds can coexist in the same pool
- Activation assignment and resource movement is controlled by the HMC

POWER8 systems may interoperate in the same pool with POWER7 systems

- High-end pool for POWER7+ 780, Power 795 & Power E880 systems
- Midrange pool for POWER7+ 770 systems & Power E870

Activations can be moved within a pool at any time, without contacting IBM

- No limit to the number of times activations can be moved

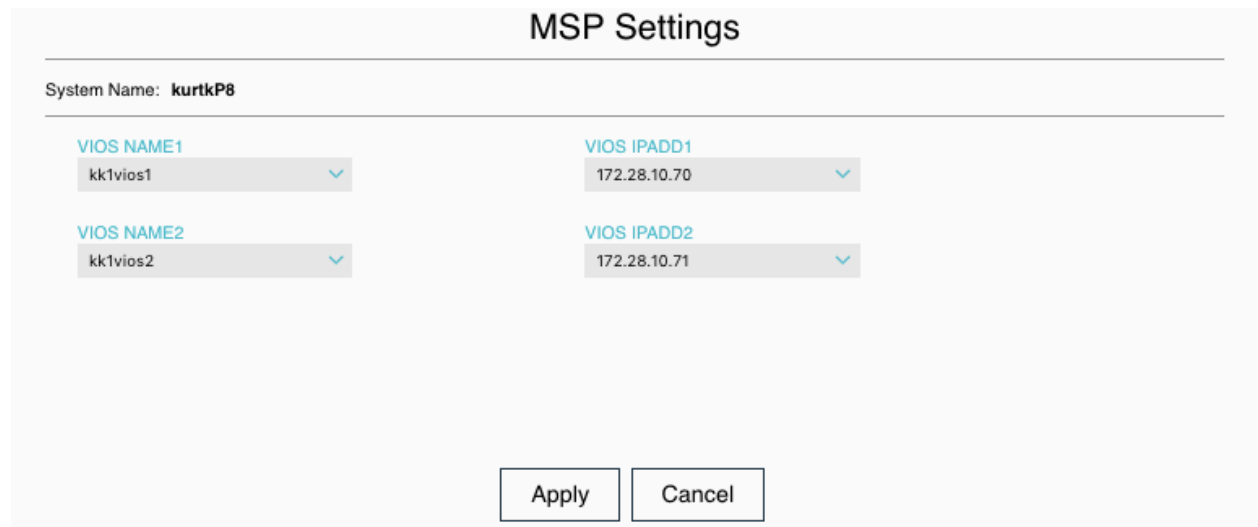
Movement of activations is *instant, dynamic* and *non-disruptive*

- Ideal for workload balancing and optimizing application availability

The tool can do placement based on Power Enterprise Pools and also do the activations as part of the LPM operations.

# Default MSP configuration

- VIOS IP address ping tests during LPM validation and LPM moves can be extremely slow. Some customer's waste 10s of minutes waiting for these pings to timeout.
- Setting a Default MSP config stops the pings and can be used to make sure your faster IP connection is always used for LPMs.
- There is a new LPM Settings panel on the Home Screen.

A screenshot of the "MSP Settings" configuration screen. The title "MSP Settings" is at the top. Below it, the "System Name" is "kurtkP8". There are four dropdown menus arranged in a 2x2 grid. The first row contains "VIOS NAME1" with the value "kk1vios1" and "VIOS IPADD1" with the value "172.28.10.70". The second row contains "VIOS NAME2" with the value "kk1vios2" and "VIOS IPADD2" with the value "172.28.10.71". At the bottom right are two buttons: "Apply" and "Cancel".











You can set this on a per frame basis and override later if needed.



# Simplified Remote Restart Capabilities in the tool

IBM PowerVM Live Partition Automation Version 9.1.930.0 Welcome Admin Help Sign Out

35 Live Partition Mobility(LPM) | 105 Logical Partitions LPAR | 7 Servers | 2 HMCs

 <b>LPM Move</b> Use Live Partition Mobility to move partitions to a different server. <b>Move</b>	 <b>LPM Return</b> Use Live Partition Mobility to return partitions to a server. <b>Return</b>	 <b>SRR</b> Restart a partition on a different server. <b>Remote Restart</b>	 <b>Auto-SRR</b> Automate the restart of partitions on different servers. <b>Auto-SRR</b>	 <b>Perform DPO</b> Dynamically optimize the placement of CPU and memory of partitions on a server. <b>DPO</b>
 <b>Schedule</b> View the schedule of LPM operations. <b>Schedule</b>	 <b>History</b> View the history of LPM and remote restart operations. <b>History</b>	 <b>Management</b> View HMCs, servers and partitions available to the tool. <b>Manage</b>	 <b>Settings</b> Add and remove HMCs, add and remove users, change tool settings. <b>Setting</b>	 <b>LPM Settings</b> set default MSP connection for each server then execute lpm. <b>LPM Settings</b>

# Remote/Restart – Choose servers

The screenshot displays the 'Remote Restart' configuration page. On the left, there is a sidebar with an 'Import' button and system statistics: 'Total cores 18.9 cores' and 'Total memory 548864 MB'. Below this are sections for 'Partitions' and 'Destination systems'. The main area is divided into two columns: 'Choose partitions to be moved' and 'Choose destination systems'. In the 'Choose partitions to be moved' column, a radio button is selected for 'Bob HMC', and a checkbox is checked for 'kurtkP8'. In the 'Choose destination systems' column, a checkbox is checked for 'bobfP8'. At the bottom right, there is a checkbox for 'Allow No Connection' and a 'Next' button with a right-pointing arrow.

One click will select all the partitions or select/deselect individual partitions

Can choose one or many destination servers

## Remote/Restart – No HMC GUI – here is CLI

The HMC doesn't have any GUI panels for Simplified Remote Restart.

So if you wanted to do SRR with the command line and you want to specify 4 FCS ports and keep it in a specific shared processor pool, the HMC CLI is

```
rrstartlpar -o restart -m 'bobfP8' -p bf_client1 -t kurtkP8 -i  
\"shared_proc_pool_name=Oracle_pool,  
\"virtual_fc_mappings=6//2//fcs0,4//1//fcs0 5//1//fcs1,7//2//fcs1\"  
--noconnection
```

# Remote/Restart – Validate Complete

## Remote Restart

Partitions and destinations > Validate Partitions >

Re-Validate Errors	Export Status	Filter			
LPAR Name	Source Server	Dest Server	Validation State	Last Time	Detail
gb_client5	kurtkP8	bobfP8	Success	8 seconds	
bf_client2	kurtkP8	bobfP8	Success	26 seconds	
gb_client10	kurtkP8	bobfP8	Success	32 seconds	
gb_client3	kurtkP8	bobfP8	Success	28 seconds	
gb_client6	kurtkP8	bobfP8	Success	20 seconds	
gb_client2	kurtkP8	bobfP8	Success	38 seconds	
qb_client1	kurtkP8	bobfP8	Success	36 seconds	

**Validation complete**  
All selected partitions have been validated.

Next →

Cancel

Revalidate Errors only

Save results to XLS

# Remote/Restart – Placement

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## Remote Restart partitions and destinations >

**Export Plan** Filter

System	Size	Mem	Dest	Tools
cc_server2	0.4	32768	None	
cc_server3	1.0	32768	None	
cc_server4	0.4	32768	None	
gb_client1	0.8	2048	bobfP8	
gb_client10	1.0	6144	bobfP8	
gb_client9	1.0	6144	bobfP8	

**Destination systems**  
Drag and drop the system below in the order in which you want the partition to restart

Order	Dest Server	Remaining CPU	Remaining MEM
1	bobfP8	0.6	182784

**Partition placement policy**

- Packing** (Place partitions on a single system until it is fully utilized then move on another)
- Striping** (Place partitions evenly across all Servers)

**Concurrent Count**

Change dest server with Drop down

As dest server is changed, the Remaining values change

# LPM Return – return SRR'd partitions back to original server after the server is repaired

IBM PowerVM Live Partition Automation Version 9.1.910.0 Welcome Admin Help Sign Out

## LPM Return

Partitions and destinations >

**Import**

**Partitions**

Total cores  
0 cores

Total memory  
0 MB

### Choose Destination System

Select one Destination System to Return to

- ⊕ Bob HMC
- ⊖ Mike HMC
- ⊕    thoradfp1

### Partition details

The partition information you want to move back

LPAR Name	Source Server	Dest Server	Cores	Memory
-----------	---------------	-------------	-------	--------

Remove  LUN Validation Next → Perform LPM →

**LPM Return is used to move the SRR'd partitions back to the original server. When moving the partitions back to the original managed system, the tool will restore the original settings (similar to when partitions are LPMd)**

# Support for new SRR features released in PowerVM

These are the new SRR features added to the tool to exploit the new features of SRR released in PowerVM.

- Ability to remote restart with reduced CPU, Memory on target system.
- Ability to choose a different virtual switch on the target system
- Test option to remote restart a partition when the system is in Operating state
- Ability to remote restart without powering on the partition on target system

## **Automate SRR operations – includes daily validates**

The tool can automate SRR operations when a server has crashed.

The customer can also have the AutoSRR plan validated daily and get an email on Success/Failure.

The automation and validation can be separately enabled.

**You can think of this validation as both a LPM and SRR healthcheck on your partitions. So if something goes wrong with an LPAR or VIOS, this validation will flag the issue.**



## SRR Question

- How many people have enabled SRR on their P8/P9 servers?

## Online Resources for the tool

- With the new V9 of the tool, we have started a IBM developer works community to educate customers.
- Customers can ask questions of the tool and LPM and SRR questions.
- There are FAQs, videos, etc.
- This website is [ibm.biz/lpm\\_srr\\_tool](http://ibm.biz/lpm_srr_tool)
  
- We also have videos of the previous versions of the tool. These videos shows various features of the tool. All those features are in the latest version of the tool but the videos haven't been updated yet with the new GUI panels.
- These videos are at [ibm.biz/bobtube](http://ibm.biz/bobtube)

# PowerVM LPM and SRR Automation Tool Offering and Contacts

- LPM and SRR Automation Tool is available WW from IBM Systems Lab Services
  - Lab Services Offering Manager: Randy Greenberg [rsg@us.ibm.com](mailto:rsg@us.ibm.com)
  - Lab Services NA Opportunity Manager: Stephen Brandenburg [sbranden@us.ibm.com](mailto:sbranden@us.ibm.com)
  - Lab Services Europe Opportunity Manager: Virginie Cohen [VirginieCohen@fr.ibm.com](mailto:VirginieCohen@fr.ibm.com)
  - Other regions: please contact your local Lab Services opportunity manager <http://ibm.biz/LabServicesOM>
  - General Lab Services enquiries [ibmsls@us.ibm.com](mailto:ibmsls@us.ibm.com)