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## EMC Power Path commands for system administrators

By [unixadminschoo.com](http://unixadminschoo.com)

### EMC PowerPath

EMC PowerPath Multipathing automatically tunes your storage area network (SAN) and selects alternate paths for your data if necessary. Residing on the server, PowerPath Multipathing enhances SAN performance and application availability. It also integrates multiple-path I/O capabilities, automatic load balancing, and path failover functions for complete path management.

PowerPath Multipathing supports a wide range of servers including cluster servers connected to EMC Symmetrix, EMC CLARiiON, EMC Invista, Hitachi Data Systems Lightning, HP XP, IBM Enterprise Storage Server, and HPQ storage systems. Virtual Servers are supported by EMC PowerPath/VE.

#### 1. powermt display - Display High Level HBA I/O Paths

powermt display command (without any arguments), displays the available HBAs and their current status. The following examples, shows that there are 2 HBAs connected to the server, both the HBAs are in active condition with 2 I/O path's each. qla2xxx indicates that it is using the Q-Logic HBA card.

This also indicates that the connected EMC device is CLARiiON, as it displays a value for "CLARiiON logical device count" as 1.

```
Gurkulindia# powermt display
Symmetrix logical device count=0
CLARiiON logical device count=1
Hitachi logical device count=0
Invista logical device count=0
HP xp logical device count=0
Ess logical device count=0
HP HSx logical device count=0
```

```
-----
-- Host Bus Adapters --- I/O Paths --- Stats ---
### HW Path Summary Total Dead IO/Sec Q-IOs Errors
-----
```

```
1 qla2xxx optimal 2 0 - 0 0
2 qla2xxx optimal 2 0 - 0 0
```

## 2. powermt display dev=all - Display All Attached LUNs

This is the most frequently used powermt command, which will display all the attached logical devices to the server.

```
Gurkulindia# powermt display dev=all
Pseudo name=emcpowera
CLARiiON ID=AAA00000000000 [dev-server]
Logical device ID=111111111111111111 [LUN 1]
state=alive; policy=CLAROpt; priority=0; queued-IOs=0
Owner: default=SP B, current=SP B Array failover mode: 1
=====
----- Host ----- - Stor - - I/O Path - - Stats -
### HW Path I/O Paths Interf. Mode State Q-IOs Errors
=====
1 qla2xxx sdd SP A4 active alive 0 0
1 qla2xxx sde SP B4 active alive 0 0
2 qla2xxx sdf SP A5 active alive 0 0
2 qla2xxx sdg SP B5 active alive 0 0
Pseudo name=emcpowerb
CLARiiON ID=AAA00000000000 [dev-server]
Logical device ID=211111111111111111 [LUN 2]
state=alive; policy=CLAROpt; priority=0; queued-IOs=0
Owner: default=SP A, current=SP A Array failover mode: 1
=====
----- Host ----- - Stor - - I/O Path - - Stats -
### HW Path I/O Paths Interf. Mode State Q-IOs Errors
=====
1 qla2xxx sdh SP A4 active alive 0 0
1 qla2xxx sdi SP B4 active alive 0 0
2 qla2xxx sdj SP A5 active alive 0 0
2 qla2xxx sdk SP B5 active alive 0 0
The above indicates that there are two LUNs attached to the dev-server with 4 I/O paths from the
server to the SAN storage device.
```

The above command output indicates the following:

Pseudo name=emcpowera - The device name that can be used by the server. For example, /dev/emcpowera.  
 CLARiiON ID=AAA00000000000 [dev-server] - EMC CLARiiON CX3 serial number and the server name.  
 Logical device ID=11111111 [LUN 1] - LUN number. For example, LUN 1.  
 state=alive; policy=CLAROpt; - This displays that this particular LUN is valid and using the CLAROpt policy.  
 Owner: default=SP B, current=SP B - This indicates that the default (and current) owner for this LUN is storage processor SP B.

## 3. powermt display dev=emcpowera - Display specific LUN

When there are multiple LUNs connected to a server, you might want to view information about a specific LUN by providing the logical name of the LUN as shown below.

```
Gurkulindia# powermt display dev=emcpowera
Pseudo name=emcpowera
CLARiiON ID=AAA00000000000 [dev-server]
Logical device ID=111111111111111111 [LUN 1]
state=alive; policy=CLAROpt; priority=0; queued-IOs=0
Owner: default=SP B, current=SP B Array failover mode: 1
=====
----- Host ----- - Stor - - I/O Path - - Stats -
### HW Path I/O Paths Interf. Mode State Q-IOs Errors
=====
1 qla2xxx sdd SP A4 active alive 0 0
1 qla2xxx sde SP B4 active alive 0 0
2 qla2xxx sdf SP A5 active alive 0 0
2 qla2xxx sdg SP B5 active alive 0 0
If the device is not available, you'll get a "Bad dev value" as shown below.
```

```
Gurkulindia# powermt display dev=emcpowerc
Bad dev value emcpowerc, or not under Powerpath control.
```

## 4. powermt check\_registration - Display PowerPath Registration Key / Status

If you've lost the PowerPath registration key that you've used during the EMC PowerPath installation, you can retrieve it using the following command.

```
Gurkulindia# powermt check_registration
Key AAAA-BBBB-CCCC-DDDD-EEEE-FFFF
Product: PowerPath
Capabilities: All
```

#### 5. powermt display options - Display EMC PowerPath Options

Displays the high level EMC SAN array options as shown below.

```
Gurkulindia# powermt display options
Default storage system class: all
Show CLARiON LUN names: true
Path Latency Monitor: Off
Path Latency Threshold: 0 Sec.
Storage
System Class Attributes
-----
Symmetrix periodic autorestore = on
status = managed
CLARiON periodic autorestore = on
status = managed
Hitachi periodic autorestore = on
status = managed
Invista periodic autorestore = on
status = managed
HP xp periodic autorestore = on
status = managed
Ess periodic autorestore = on
status = managed
HP HSx periodic autorestore = on
status = managed
```

#### 6. powermt display hba\_mode - Display PowerPath HBA Mode

This is similar to #1, but displays whether hba is enabled or not, as shown in the last column of the output.

#### 7. powermt display path - Display available I/O Paths.

This displays all available path for your SAN device.

```
Gurkulindia# powermt display paths
Symmetrix logical device count=0
=====
-- Host Bus Adapters ---- -- Storage System -- I/O Paths -
### HW Path ID Interface Total Dead
=====
CLARiON logical device count=1
=====
-- Host Bus Adapters ---- -- Storage System -- I/O Paths -
### HW Path ID Interface Total Dead
=====
1 qla2xxx AAA0000000000 SP A4 1 0
1 qla2xxx AAA0000000000 SP B4 1 0
2 qla2xxx AAA0000000000 SP A5 1 0
2 qla2xxx AAA0000000000 SP B5 1 0
Hitachi logical device count=0
=====
-- Host Bus Adapters ---- -- Storage System -- I/O Paths -
### HW Path ID Interface Total Dead
=====
Invista logical device count=0
=====
-- Host Bus Adapters ---- -- Storage System -- I/O Paths -
### HW Path ID Interface Total Dead
=====
HP xp logical device count=0
=====
-- Host Bus Adapters ---- -- Storage System -- I/O Paths -
### HW Path ID Interface Total Dead
=====
```

```

Ess logical device count=0
=====
-- Host Bus Adapters ---- -- Storage System -- I/O Paths -
### HW Path ID Interface Total Dead
=====
HP HSx logical device count=0
=====
-- Host Bus Adapters ---- -- Storage System -- I/O Paths -
### HW Path ID Interface Total Dead
=====

```

### 8. powermt displays port\_mode - Display Port Status

Displays the status of the individual ports on the HBA. i.e Whether the port is enabled or not.

```

Gurkulindia# powermt display port_mode
Storage class = Symmetrix
=====
----- Storage System ----- -- I/O Paths -- Stats --
ID Interface Wt_Q Total Dead Q-IOs Mode
=====
Storage class = CLARiiON
=====
----- Storage System ----- -- I/O Paths -- Stats --
ID Interface Wt_Q Total Dead Q-IOs Mode
=====
AAA000000000000 SP A4 256 1 0 0 Enabled
AAA000000000000 SP B4 256 1 0 0 Enabled
AAA000000000000 SP A5 256 1 0 0 Enabled
AAA000000000000 SP B5 256 1 0 0 Enabled

```

### 9. powermt version - Display EMC PowerPath Version

How to identify the version number of EMC PowerPath software?

```

Gurkulindia# powermt version
EMC powermt for PowerPath (c) Version 5.3 (build 185)

```

### 10. powermt check - Check the I/O Paths

If you have made changes to the HBA's, or I/O paths, just execute powermt check, to take appropriate action. For example, if you have manually removed an I/O path, check command will detect a dead path and remove it from the EMC path list.

```

Gurkulindia# powermt check
Warning: storage_system I/O path path_name is dead.
Do you want to remove it (y/n/a/q)?
Note: If you want powermt to automatically remove all dead paths, without any confirmation,
execute "powermt check force".

```

### 11. powermt set mode hba - Forcefully set the mode for a specific HBA

You can change the mode of a specific HBA to either standby or active using this command. Following example, changes HBA #1's mode from active to standby.

```

Gurkulindia# powermt set mode=standby hba=1
After the above command, you can see the mode for HBA#1 changed to standby, as shown below.

```

```

Gurkulindia# powermt display dev=all
Pseudo name=emcpowera
CLARiiON ID=AAA0000000000 [dev-server]
Logical device ID=111111111111111111 [LUN 1]
state=alive; policy=CLAROpt; priority=0; queued-IOs=0
Owner: default=SP B, current=SP B Array failover mode: 1
=====
----- Host ----- - Stor - -- I/O Path - -- Stats --
### HW Path I/O Paths Interf. Mode State Q-IOs Errors
=====
1 qla2xxx sdd SP A4 standby alive 0 0
1 qla2xxx sde SP B4 standby alive 0 0
2 qla2xxx sdf SP A5 active alive 0 0
2 qla2xxx sdg SP B5 active alive 0 0

```

Note: Path mode can also be "unlic" indicating that you've not registered the PowerPath with proper License key.

Note: Some powermt commands (for example, powermt set port\_disable), is restricted to certain

platform and storage type – On AIX and Solaris, only Fibre channel is supported. On HP-UX, only iSCSI and Fibre are supported. On Linux, Only iSCSI (HBAs) and Fibre are supported.

## 12. powermt remove - Delete an I/O Path

Use this command to remove any specific I/O path (or) a whole device.

The following example has 4 I/O Paths.

```
Gurkulindia# powermt display dev=all
=====
----- Host ----- Stor - - I/O Path - - Stats -
### HW Path I/O Paths Interf. Mode State Q-IOs Errors
=====
1 qla2xxx sdd SP A4 standby alive 0 0
1 qla2xxx sde SP B4 standby alive 0 0
2 qla2xxx sdf SP A5 active alive 0 0
2 qla2xxx sdg SP B5 active alive 0 0
To remove I/O Path sdd, execute the following powermt remove command.
```

```
Gurkulindia# powermt remove dev=sdd
```

```
Gurkulindia# powermt display dev=all
=====
----- Host ----- Stor - - I/O Path - - Stats -
### HW Path I/O Paths Interf. Mode State Q-IOs Errors
=====
1 qla2xxx sde SP B4 standby alive 0 0
2 qla2xxx sdf SP A5 active alive 0 0
2 qla2xxx sdg SP B5 active alive 0 0
```

Following will remove all I/O Path for a particular device. i.e To remove /dev/emcpowera, do the following. If the /dev/emcpowera is mounted and used by some program, following command will not work.

```
Gurkulindia# powermt remove dev=emcpowera
```

## 13. powermt config - Configure PowerPath

This command checks for available EMC SAN logical devices and add those to PowerPath configuration list. Powermt config command, sets some of the options to it's default values. For example, write throttling = off, HBA mode = active, CLARiON policy = CLAROpt, etc.

Possible EMC SAN LUN policy values are: Adaptive, BasicFailover, CLAROpt, LeastBlocks, Leastlos, NoRedirect, Request, RoundRobin, StreamIO, or SymmOpt.

After you execute the powermt config, if you don't like any of the default values, you should change it accordingly.

```
Gurkulindia# powermt config
```

## 14. powermt restore - Make Dead I/O Path Alive

If you have dead I/O paths, and if you've done something to fix the issue, you can request PowerPath to re-check the paths and mark it as active using powermt restore command.

When you execute powermt restore, it does an I/O path check. If a previously dead path is alive, it will be marked as alive, and if a previously alive path is dead, it will be marked as dead.

For some reason, if you see the default owner and the current owner of a particular LUN is not the same storage processor, then execute the following command, which will make the current owner of the LUN same as the default owner.

```
Gurkulindia# powermt restore dev=all
```

Instead of dev, you can also specify class in the powermt restore command. Class can be one of the following depending on your system.

```
symm - Symmetrix
clariion - CLARiON
invista - Invista
ess - IBM ESS
hitachi - Hitachi Lightning TagmaStore
hpxp - HP StorageWorks XP, or EVA series
hphsx - HP StorageWorks EMA, or MA
all - All systems
```



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2. Yogesh Raheja on September 5, 2012 at 9:23 am

I would also like to add one more important point over, in order to install License one need to use a command called "empreg -install" to install a new/fresh license. After lic. installation we need to perform config step and then luns will be visible them i.e powermt check\_registration , powermt config & then piowermt display, ALL DONE 😊

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3. [unixadminschoo.com » Solaris host level SAN migration from Clariion to VMAX – Hands on Lab](#) on October 26, 2012 at 7:36 am

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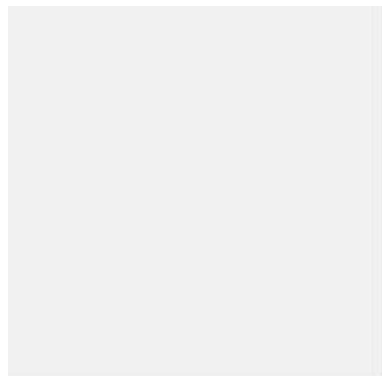
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
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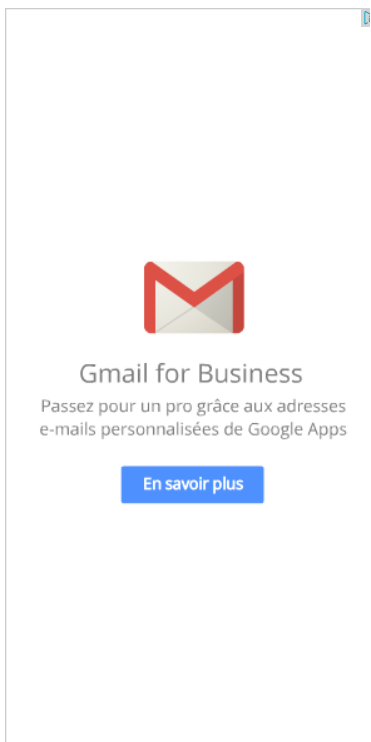
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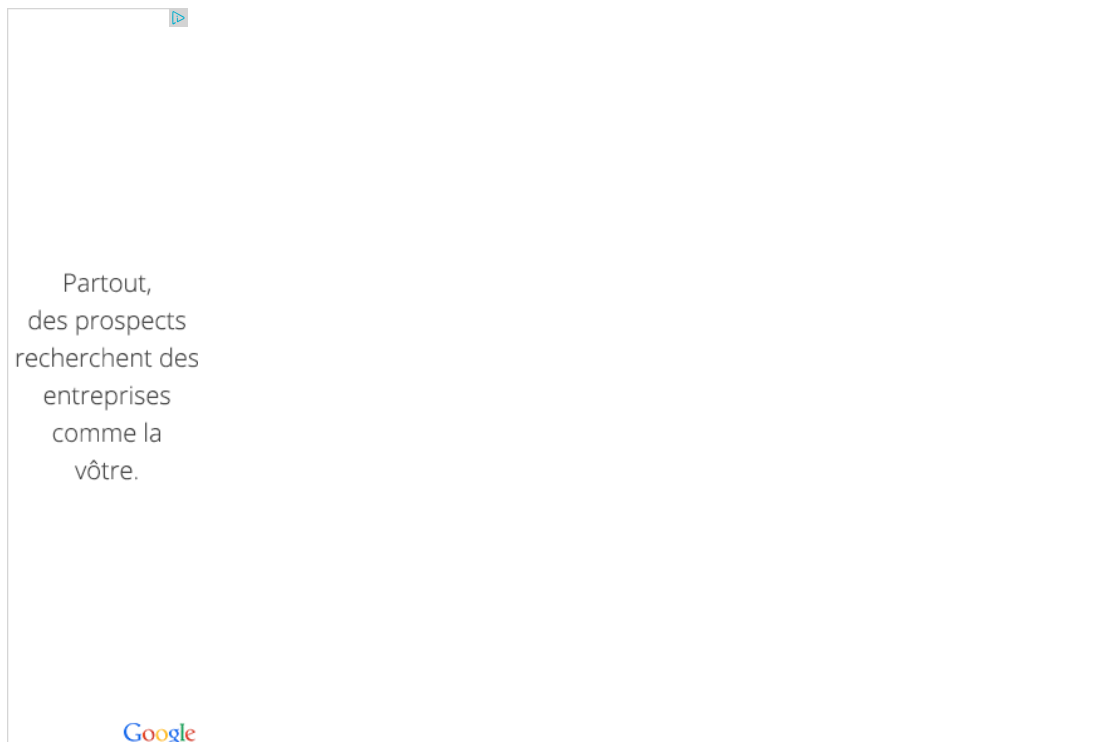





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




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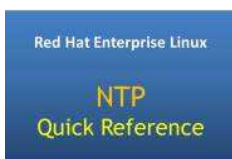


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