

Maintenance Guide Version 5.7

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Chapter 1: About this Guide

The PeerApp Maintenance Guide is designed to provide specific information to assist the user in remedying various issues described in the forthcoming chapters.

Intended Audience

This guide is intended for service personnel responsible for assisting in the replacement or addition of vendors software and/or hardware.

Scope of Guide

Chapter 1: About this Guide

Chapter 2: Cache Engine Replacement Procedure

Chapter 3: Cache Engine Addition Procedure

Chapter 4: External Storage Replacement Procedure

Chapter 5: Replacing the Management Server Procedure

Chapter 6: Connecting an External Storage to an Existing System

Chapter 7: External Storage Disk Replacement Procedure

Chapter 8: Hot Swap HDD Replacement for DAS

Chapter 9: UltraBand Clear Caching Content

Chapter 10: Upgrade Procedure from 5.6 to 5.7 for UB5000

Chapter 11: The Rollback Procedure from 5.7 to 5.6 for UB5000

Chapter 12: Manual UltraBand Rollback Procedure from 5.7 to 5.6 for UB5000

Chapter 13: UBWeb Installation

Chapter 14: Upgrade Procedure to 5.7 for UB6000 and above

Important and Notes

IMPORTANT! This provides important information about a procedure, which if not followed may result in faults in the system.

Note: A note provides additional information about the current topic.

Chapter 2: Cache Engine Replacement Procedure

Overview

To determine whether a cache engine has failed in a Server installation, log into the UBView. By default, the Logical Status tab is displayed. If you are already logged into UBView, click the **Logical Status** tab.

If a cache engine has failed it will appear with a gray box surrounding it, as show with the bottom cache engine in the following figure.

Replacing a Cache Engine

To Replace the Cache Engine:

1 Connect a cache engine machine to the grid and install it by using "Cache Engine Servers Installation" from the installation guide.

Note: While installing, when it asks about the Cache Engine number, enter number of the CE that should be replaced.

2 Update the grid ssh keys by running the replace servers key command from the management:

```
cd /opt/pang/useful/
/replace_server_keys.sh -servers <number of blades in the grid>
```

```
For example in a grid with 16 cache engines run:
mg-1:~ # cd /opt/pang/useful/
mg-1:/opt/pang/useful #
mg-1:/opt/pang/useful # ./replace_server_keys.sh -servers 16
Version 3.1
mg-1:/opt/pang/useful #
```

3 Connecting the new cache engine to the storage.

On the management use the command:

cd /opt/pang/useful/configure_storages

Run the configure storage command:

./configure_storages.py -s < number of storage enclosures> -b < number of blades in the grid> -c <the replaced CE-ID number>

Note: If an error message appears, ignore it.

A warning message about the SSD format will be shown, to continue the storages configuration, enter y.

******** WARNING! ********

SSD drives of selected blades will be formatted.

Do you want to continue? (y/n) y

Connect to each CE and check the connections by using:

ssh ce-<cache engine number>

iscsiadm -m session

The expected output per product is:

1G Storages:

■ 8 * sessions per storage, for example for 1 storage: tcp: [17] 10.11.14.100:3260,1 ign.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [18] 10.11.14.101:3260,2 ign.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [19] 10.11.16.100:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [20] 10.11.16.101:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [21] 10.11.15.100:3260,1 ign.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [22] 10.11.15.101:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [23] 10.11.17.101:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [24] 10.11.17.100:3260,1 ign.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a

10G Storages:

4 * sessions per storage, for example for 1 storage:
tcp: [1] 10.11.14.100:3260,1 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9
tcp: [2] 10.11.14.101:3260,2 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9
tcp: [3] 10.11.15.100:3260,1 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9
tcp: [4] 10.11.15.101:3260,2 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9
tcp: [4] 10.11.15.101:3260,2 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9

Configuring the Storages

1 From the management server, start the VNCServer by using the following commands:

rm /tmp/.X1-lock rm /tmp/.X11-unix/X1 vncserver :1

2 Connect to the server with a VNC Viewer

(host:display or host::port) o select best settings) bit/s) - Experimental Mbit/s) - Max Colors Cance
o select best settings) Dit/s) - Experimental Mbit/s) - Max Colors Cance
128Kbit/s) - 258 Colors 128Kbit/s) - 64 Colors 9kKbit/s) - 8 Colors options button) uto Scaling Confirm Exit
SecureVNCPlugin64.dsm Confi

UltraVNC Viewer

3 Run the MD Storage Manager using the command:

SMclient

4 For each storage enclosure in the Grid,

go to the "Host Mappings" tab and right-click on the replaced cache engine (Host CE-x) and click "Manage Host Port Identifiers"

Summary Storage & Copy Services Host Mappings Defined Map Find object in tree Image: Copy Services Image:	PA-1-192_168_0	_ 52 🔽 Optimal		
Find object in tree E Defined Map Storage Array PA-1-192_168_0_52 1 1 Undefined Mappings 2 3 Undefined Mappings 4 5 Unassociated Host Port Identifiers 6 Host CF-1 Define Storage Partition 6 Host CF-1 Define Storage Partition Add LUN Mapping Host C Change Host Operating System 0 Host C Manage Host Port Identifiers 0 View Unassociated Host Port Identifiers 0 Wanage Host Port Identifiers 0 Move Rename 0	Summary Stora	ge & Copy Services	Host Mappi	ings Hardwar
Storage Array PA-1-192_168_0_52	Find object in tree		8	Defined Mapp Virtu
Properties	Storage Array Undefine Default C Unassociat Host C Host C Host C Host C	PA-1-192_168_0_52 d Mappings iroup ted Host Port Identifier iroup PA 	s om ng System entifiers ost Port Ider	iiii 0 iiii 1 iiii 2 iiiii 3 iiiiiiii 5 iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii

Manage Host Port Identifiers

- **5** From the Host Port Identifiers,
 - Click on old iqn
 - Click Replace

urrent Host Port Identifiers			
how host port identifiers associated with:			
CE-1			2
Host port identifier information:			
Host Port Identifier	Interface Type	Alias / User Label	Associated With Host
ign.1996-04.de.suse:01:f5eacb0719f	ISCSI	LCE-10	CE-1
			,
Add Edit Replace Remove			

Old iqn

- 6 From the Host Port Identifier
 - Choose **ISCSI** (where applicable)
 - Select Replace by Selecting Known
 - Choose the new *server iqn* from the list

Click Replace

Selected host port identifier to be replaced	
Host port identifier.	
ign.1996-04.de.suse:01:f5eacb0719f	
Associated with host:	
CE-1	
Choose a host interface type: ISCSI I7 Choose a method for replacing the host port identifier.	
Replace by selecting a known unassociated host port identifier	
Known unassociated host port identifier:	
iqn. 1996-04. de. suse: 01:69b6251c20e8	Rofrach
- Select Identifier -	n <u>e</u> mesn
iqn. 1996–04. de. suse: 01: 69b6251c20e8	
New host port identifier (max 223 characters):	
Jger Label (30 characters maximum):	
LCE-10	
Replace Cancel Help	

Host Port Identifiers

- 7 From the Current Host Port Identifiers
 - Click Close

ow host port identifiers associated with:			
2st port identifier information:			
Host Port Identifier	Interface Type	Alias / User Label	Associated With Host
qn. 1996-04. de. suse: 01:69b6251c20e8	ISCSI	LCE-10	CE-1
Add Edit Replace Remove			

Current Host Port Identifiers

Note: Repeat <u>Step 4</u>-<u>Step 7</u> for all the storage enclosures.

8 On the management use the command:

cd /opt/pang/useful/configure_storages

Run the configure storage command:

./configure_storages.py -s < number of storage enclosures> -b < number of blades in the grid> -c <the replaced CE-ID number>

9 Software installation:

Copy the UltraBand Software Package to /tftpboot/

Note: The upgrade file name should be in this format (even version number): PeerApp_GA_5.7.0bXX_grid.tar.gz

- **10** In the management enter to the CLI in enable mode.
 - Upgrade the replaced CE by using: console# upgrade server <CE number> 127.0.0.1 <software_name>
- **11** Activate a new license what contains the new CE system ID. Activation license guide is in section "*Installing and Configuring the Software*" in the installation guide (under "post installation steps".
- **12** Start the application on the replaced CE. Example on CE-2:

console# oper server 2 oper server 2# start Starting server 2 service is started on server 2

Procedure completed.

Chapter 3: Cache Engine Addition Procedure

Overview

The following chapter details the procedure for adding a Cache Engine.

Adding a Cache Engine

To Add a Cache Engine:

1 Connect all new cache engine machines to the grid and install them by using "Cache Engine Servers Installation" from the installation guide.

Note: While installing, when it asks about the Cache Engine number, enter number of the CE that should be added.

2 After all the new cache engines have been installed, update the grid ssh keys by running the replace servers key command from the management:

```
cd /opt/pang/useful/
/replace_server_keys.sh -servers <number of blades in the grid>
```

```
For example in a grid that is expanding to 16 cache engines run the following:
mg-1:~# cd /opt/pang/useful/
mg-1:/opt/pang/useful #
mg-1:/opt/pang/useful # /replace_server_keys.sh -servers 16
Version 3.1
mg-1:/opt/pang/useful #
```

3 Connecting the new cache engines to the storage -

On the management use the command:

cd /opt/pang/useful/configure_storages

Run the configure storage command:

/configure_storages.py -s < number of storage enclosures> -b < number of blades in the grid> -c <the additional CE-ID number>

Note: If an error message appears, ignore it.

A warning message about the SSD format will be shown, to continue the storages configuration, enter y.

********* WARNING! *********

SSD drives of selected blades will be formatted.

Do you want to continue? (y/n) y

Connect to each CE and check the connections by using:

ssh ce-<cache engine number> iscsiadm -m session

The expected output per product is:

1G Storages:

■ 8 * sessions per storage, for example for 1 storage: tcp: [17] 10.11.14.100:3260,1 ign.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [18] 10.11.14.101:3260,2 ign.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [19] 10.11.16.100:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [20] 10.11.16.101:3260,2 ign.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [21] 10.11.15.100:3260,1 ign.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [22] 10.11.15.101:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [23] 10.11.17.101:3260,2 ign.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a tcp: [24] 10.11.17.100:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a

10G Storages:

4 * sessions per storage, for example for 1 storage:
tcp: [1] 10.11.14.100:3260,1 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9
tcp: [2] 10.11.14.101:3260,2 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9
tcp: [3] 10.11.15.100:3260,1 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9
tcp: [4] 10.11.15.101:3260,2 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9
tcp: [4] 10.11.15.101:3260,2 iqn.198405.com.dell:powervault.md3600i.6d4ae520009493cd00000004fc7eac9

Note: The above script should be executed N times, where N stands for the number of new cache-engines added to the grid. For example, when adding two new cache engines to grid with two CE, execute the command twice, once with "-b 3 -c 3" and afterwards with "-b 4 -c 4".

Configuring the Storages

1 From the management server, start the VNCServer by using the following commands

```
rm /tmp/.X1-lock
rm /tmp/.X11-unix/X1
vncserver :1
```

2 Connect to the server with a VNC Viewer.

VNC Server:	192.168.0.234:1	
wick Ontings	(host:display or host::port)	
AUTO (Au ULTRA (>2) LAN (> MEDIUM (128 MODEM (19 - SLOW (< 1 MANUAL (Use	to select best settings) Hbit/s) - Experimental 1Mbit/s) - Max Colors - 256Kbit/s) - 256 Colors 128Kbit/s) - 64 Colors 9kKbit/s) - 8 Colors e options button)	Connec Cancel Options.
	SecureVNCPlugin64.dsm	Config
Proxy/Repeater	?:0	
	0 22 hz 50 lls	

UltraVNC Viewer

3 Run the MD Storage Manager using the command:

SMclient

4 For each storage enclosure in the Grid,

go to the "Host Mappings" tab and right-click on the "Host Group PA".

- Select Define
- Select Host
- 5 Enter the cache engine name with a dash,

Note: For example it could be CE-1.

Click Next

This wizard will help you define the hosts that will access the virtual disks in this storage array. You will define one host at a time.

Defining a host is one of the steps required to let the storage array know which hosts are attached to it and to allow access to the virtual disks.

<u>What preparation tasks are required?</u>

Ho<u>s</u>t name (30 characters maximum): CE-1

<u>N</u>ext > Cancel <u>H</u>elp

Manage Host Port Identifiers

6 Open a terminal to the management and open a ssh connection to the extended CE to check its iqn by using the command *cat /etc/iscsi/initiatorname.iscs*i

For example:

- ce-3:~ # cat /etc/iscsi/initiatorname.iscsi
- ##
- ## /etc/iscsi/iscsi.initiatorname
- ##
- ## Default iSCSI Initiatorname.

##

DO NOT EDIT OR REMOVE THIS FILE!

If you remove this file, the iSCSI daemon will not start.

If you change the InitiatorName, existing access control lists

may reject this initiator. The InitiatorName must be unique

for each iSCSI initiator. Do NOT duplicate iSCSI InitiatorNames.

InitiatorName=iqn.1996-04.de.suse:01:ff51f84a3bd

Note: The iqn is in the last line. It is bold in the example.

- 7 From the Define Host screen,
 - Choose "ISCSI" (where applicable),
 - Select the option Add by Selecting Known...
 - Choose the server iqn from the drop-down list as found on step 6,
 - In the *User Label* field, enter the cache engine name with a underscore (CE_<ce#>), in the example it will be CE_1,
 - Click Add
 - Click Next

The host communicates with the storage array through its host but has a unique host port identifier. In this step, select or create an associated with host CE-1.	is adapters (HBAs) or its ISCSI initiators where each phy identifier, give it an alias or user label, then add it to t	vsical port ne list to be
How do I match a host port identifier to a host?		
Choose a host interface type: SCSI Choose a method for adding a host port identifier to a host:		
Add by selecting a known unassociated host port identifier		
Known unassociated host port identifier:		
ign.1996-04.de.suse:01:69b6251c20e8	Y	Refresh
Add by creating a new host port identifier New host port identifier (max 223 characters):		
Uger Label (30 characters maximum):		
Add ▼ Remove ▲		
Host port identifiers to be associated with the host:		
Host Port Identifier	Alias / User Label	
	< Back Next > Canc	el <u>H</u> elp

Define Host

- **8** Under "Host type" (operating system),
 - Choose Linux
 - **a** In case that there is more than one "Linux" Host Type,
 - Choose: Linux (MPP\RDAC)
 - Click Next

Note: For some host ty	pes, there may be	several choices p	rovided in the list.				
Host type (operating s	/stem):						
Linux			14				
				< <u>B</u> a	ck <u>N</u> ext >	Cancel	Hel

- **9** From the Current Host Definition screen,
 - Click Finish

hould I save the host definition to a so	<u>rip17</u>	Save As Script
Host group: PeerApp		
Host: CE-1		
urrent host definition:		
Host name: Host type: iSCSI initiator label/name: Data Assurance (DA) capable: Associated host group:	CE-1 Linux CE_1/iqn.1996-04.de.suse:01:69b6251c20e8 No PeerApp	

Current Host Definition

Note: A popup screen is displayed asking, "*Do you want to define another host?*". If there are additional CEs to add, answer **Yes**. Repeat the previous <u>Step 5-Step 9</u>.

Note: Repeat <u>Step 4-Step 9</u> for all the storage enclosures.

10 From the management use the command:

cd /opt/pang/useful/configure_storages

For each additional CE Run the configure storage command:

/configure_storages.py -s < number of storage enclosures> -b < number of blades in the grid> -c <the additional CE-ID number>

Note: For each CE, run this script, each running the "-b" parameter which is the number of the CEs on the new grid and the "-c" parameter is changed for each running CE that is added. For example for an expanded grid of 4 CEs with 1 storage (2 CEs added) run:

```
/configure_storages.py -s 1 -b 4 -c 3
/configure_storages.py -s 1 -b 4 -c 4
```

Note: Additional steps: Follow the Administration Guide instructions regarding requesting a license with additional servers and contact your network engineers regarding additional bounce IP addresses and configuration to modify the cluster_conf appropriately.

11 Activate a new license that contains the new CE system ID. Activation license guide is in section "Installing and Configuring the Software" in the installation guide (see "Post Installation Steps").

- 12 Upload a new cluster_conf.xml with parameters for the new grid structure.
- 13 Software installation
 - Copy the UltraBand Software Package to /tftpboot/

Note: The upgrade file name should be in this format (even version number): PeerApp_GA_5.7.0bXX_grid.tar '

- **14** From the management,
 - Enter to the CLI in enable mode.
- **15** Upgrade the added CEs by using:

console# upgrade server <CE number> 127.0.0.1 <software_name>

16 Start the application on the added CEs. For example using CE-2:

console# oper server 2 oper server 2# start Starting server 2 service is started on server 2

Chapter 4: External Storage Replacement Procedure

Overview

The following chapter details the procedure for replacing the External Storage.

Replacing an External Storage

In Order to Disconnect a Faulty Storage Use the Following Procedure:

- **1** As soon as the storage enclosure failure is detected, disconnect the iSCSI from the faulty enclosure to restore the system to nominal operation.
 - Stop the pang service using CLI.

If the system was under load when a storage enclosure fails then in all probability all the cache engines will reboot.

If by some chance any of the cache engines did not reboot manually reboot it via the commands:

- ssh root@ce-x
- echo b > /proc/sysrq-trigger
- **2** After all the cache engines have been rebooted, on every cache engine, run yast with the command:

yast

- 3 From yast, enter the Network Services
 - Select iSCSI Initiator

	YaST2 Control Center	
Software Hardware System Network Devices Network Services Novell AppArmor Security and Users Virtualization Support Miscellaneous	LDAP Browser LDAP Client Mail Transfer Agent NFS Client NFS Server NIS Client NIS Server NTP Configuration Network Services (xinetd) Proxy Remote Administration (VNC) SLP Server Samba Server TFTP Server Windows Domain Membership ISCSI Initiaton ISCSI Target	
Help]		[Qui

iSCSI Initiator

4 Select Discovered Targets,

of each monthear	Target Name	and the set of the set	connecte
0.11.17.103:3260	2 ign.1992-01.com.	lsi:2365.60080e50002f1e86000000005063c	e77 True
0.11.14.102:3260	1 1qn. 1992-01. com.	Is1:2365.60080e50002f1e8600000005063c	e77 True
0.11.16.102:3260	1 1qn. 1992-01. com.	Is1:2365.60080e50002f1e86000000005063c	e77 True
0.11.14.103:3260	2 1qn. 1992-01. com.	Is1:2365.60080e50002f1e8600000005063c	e77 True
0.11.15.103:3260	2 1qn. 1992-01. com.	Is1:2365.60080e50002f1e86000000005063c	e77 True
0.11.17.102:3260	1 1qn.1992-01.com.	Is1:2365.60080e50002f1e86000000005063c	e// True
0.11.16.103:3260	2 1qn.1992-01.com.	Is1:2365.60080e50002f1e8600000005063c	e77 True
0.11.15.102:3260	1 1qn.1992-01.com.	Is1:2365.60080e50002f1e8600000005063c	e77 True
0.11.17.104:3260	1 1qn.1992-01.com.	Is1:2365.60080e50002f05da00000005063c	d82 False
0.11.14.104:3260	1 iqn.1992-01.com.	lsi:2365.60080e50002f05da000000005063c	d82 False
0.11.16.104:3260	1 iqn.1992-01.com.	lsi:2365.60080e50002f05da000000005063c	d82 False
0.11.17.105:3260	2 iqn.1992-01.com.	lsi:2365.60080e50002f05da000000005063c	d82 False
0.11.15.105:3260	2 iqn.1992-01.com.	lsi:2365.60080e50002f05da000000005063c	d82 False
0.11.14.105:3260	2 iqn.1992-01.com.	lsi:2365.60080e50002f05da000000005063c	d82 False
0.11.16.105:3260	2 iqn.1992-01.com.	lsi:2365.60080e50002f05da000000005063c	d82 False
0.11.15.104:3260	1 ign.1992-01.com.	lsi:2365.60080e50002f05da000000005063c	d82 False
0.11.14.100:3260	1 ign.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c	74a True
0.11.14.101:3260	2 ign.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c	74a True
0.11.16.100:3260	1 ign.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c	74a True
0.11.16.101:3260	2 ign.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c	74a True
0.11.15.100:3260	1 ign.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c	74a True
0.11.15.101:3260	2 ign.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c	74a True
0.11.17.101:3260	2 ign. 1992-01. com.	lsi:2365.60080e50002f4e82000000005063c	74a True
0.11.17.100:3260	1 ign. 1992-01. com.	lsi:2365.60080e50002f4e82000000005063c	74a True

Discovered Targets

- **5** Select a node that has a *"false"* connection status
 - Choose [**Delete**] for each "*false*" connection node.

Portal Address Target Name Connect 10.11.7.103:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f1e8600000005063ce77 True 10.11.16.102:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f1e8600000005063ce77 True 10.11.16.102:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f1e8600000005063ce77 True 10.11.15.103:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f1e8600000005063ce77 True 10.11.15.103:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f1e8600000005063ce77 True 10.11.15.102:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f1e8600000005063ce77 True 10.11.15.102:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f1e8600000005063ce77 True 10.11.15.102:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f1e8600000005063ce77 True 10.11.16.104:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f05da00000005063cd82 False 10.11.16.104:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f05da00000005063cd82 False 10.11.16.104:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3				
10.11.14.102:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f1e8600000005063ce77 True 10.11.14.102:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f1e8600000005063ce77 True 10.11.14.103:3260,2 iqn.1992-01.com.1s1:2365.60080e50002f1e8600000005063ce77 True 10.11.15.103:3260,2 iqn.1992-01.com.1s1:2365.60080e50002f1e8600000005063ce77 True 10.11.17.102:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f1e8600000005063ce77 True 10.11.15.102:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f1e8600000005063ce77 True 10.11.15.102:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f1e8600000005063ce77 True 10.11.17.104:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063ce77 True 10.11.17.104:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063ce82 False 10.11.14.104:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.16.104:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.15.102:3260,2 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,2 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.14.101:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.14.101:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f05da00000005063cd82 False 10.11.14.101:3260,2 iqn.1992-01.com.1s1:2365.60080e50002f4e8200000005063c74a True 10.11.15.100:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f4e8200000005063c74a True 10.11.15.100:3260,1 iqn.1992-01.com.1s1:2365.60080e50002f4e8200000005063c74a True 10.11.15.101:3260,2 iqn.1992-01.com.1s1:2365.60080e50002f4e8200000005063c74a True 10.11.17.101:3260,2 iqn.1992-01.com.1s1:23	Portal Address	Target Name		Connecte
10.11.14.102:3260,1 1qn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.16.102:3260,1 iqn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.17.102:3260,1 iqn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.17.102:3260,1 iqn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.17.102:3260,1 iqn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.17.104:3260,1 iqn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.17.104:3260,1 iqn.1992-01.com.151:2365.60080e50002f1e8600000005063ce82 False 10.11.14.104:3260,1 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.16.104:3260,1 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.16.104:3260,2 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.15.105:3260,2 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.15.105:3260,2 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.15.105:3260,2 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.15.105:3260,2 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.14.105:3260,2 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.14.105:3260,1 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.14.101:3260,1 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.14.101:3260,2 iqn.1992-01.com.151:2365.60080e50002f05da00000005063ce82 False 10.11.14.101:3260,1 iqn.1992-01.com.151:2365.60080e50002f05da00000005063c74a True 10.11.15.100:3260,1 iqn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.16.101:3260,2 iqn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.15.101:3260,1 iqn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.15.101:3260,1 iqn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.17.101:3260,1 iqn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.17.101:3260,1 iqn.1992-01.com.151:23	10.11.17.103.3260,	2 1dn. 1992-01. com. 151:236	5.00080e50002T1e80000000005063ce77	True
10.11.16.102:3260,1 1qn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.15.103:3260,2 1qn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.17.102:3260,1 1qn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.15.102:3260,1 1qn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.15.102:3260,1 1qn.1992-01.com.151:2365.60080e50002f1e8600000005063ce77 True 10.11.17.104:3260,1 1qn.1992-01.com.151:2365.60080e50002f05da00000005063ce77 True 10.11.16.104:3260,1 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.16.104:3260,1 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.17.105:3260,2 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.14.105:3260,2 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.14.105:3260,1 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.15.104:3260,1 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,2 1qn.1992-01.com.151:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,1 1qn.1992-01.com.151:2365.60080e50002f488200000005063c74a True 10.11.16.101:3260,1 1qn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.16.101:3260,2 1qn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.15.101:3260,2 1qn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.15.101:3260,2 1qn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.15.101:3260,2 1qn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.17.101:3260,2 1qn.1992-01.com.151:2365.60080e50002f4e8200000005063c74a True 10.11.17.101:3260,2 1qn.1992-01.com.151:236	10.11.14.102:3260,	1 ign. 1992-01. com. 151:230	. 00080050002T1080000000005052ce77	True
10.11.14.103:3260,2 1qn.1992-01.com.15:2365.60080e50002f1e8600000005063ce77 True 10.11.15.103:3260,2 1qn.1992-01.com.15:2365.60080e50002f1e8600000005063ce77 True 10.11.16.103:3260,1 1qn.1992-01.com.15:2365.60080e50002f1e8600000005063ce77 True 10.11.17.104:3260,1 1qn.1992-01.com.15:2365.60080e50002f05da00000005063ce77 True 10.11.17.104:3260,1 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.14.104:3260,1 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.17.105:3260,2 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.17.105:3260,2 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,2 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.15.105:3260,2 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,2 1qn.1992-01.com.15:2365.60080e50002f05da000000005063cd82 False 10.11.16.105:3260,1 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,2 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.16.105:3260,1 1qn.1992-01.com.15:2365.60080e50002f05da00000005063cd82 False 10.11.14.100:3260,1 1qn.1992-01.com.15:2365.60080e50002f48200000005063c74a True 10.11.16.101:3260,2 1qn.1992-01.com.15:2365.60080e50002f488200000005063c74a True 10.11.16.101:3260,2 1qn.1992-01.com.15:2365.60080e50002f488200000005063c74a True 10.11.15.100:3260,1 1qn.1992-01.com.15:2365.60080e50002f488200000005063c74a True 10.11.15.100:3260,1 1qn.1992-01.com.15:2365.60080e50002f488200000005063c74a True 10.11.15.101:3260,2 1qn.1992-01.com.15:2365.60080e50002f488200000005063c74a True 10.11.17.101:3260,2 1qn.1992-01.com.15:2365.60080e50002f488200000005063c74a True 10.11.17.101:3260,1 1qn.1992-01.com.15:2365.60080e50002f488200000005063c74a True 10.11.17.101:3260,1 1q0.201.com.15:2365.60080e50002f48820000000506	10.11.10.102.3260,	1 1qn, 1992-01, com, 151:236	5.00080e50002T1e800000000000005052ce77	True
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10.11.15.100:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a True 10.11.15.101:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a True 10.11.17.101:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a True 10.11.17.100:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a True 	10.11.16.101:3260,	2 iqn. 1992-01. com. 1si:236	60080e50002f4e82000000005063c74a	True
10.11.15.101:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a True 10.11.17.101:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a True 10.11.17.100:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f4e82000000005063c74a True 	10.11.15.100:3260,	1 iqn.1992-01.com.lsi:236	60080e50002f4e82000000005063c74a	True
10.11.17.101:3260,2 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a True 10.11.17.100:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f4e8200000005063c74a True 	10.11.15.101:3260,	2 iqn. 1992-01. com. lsi:236	5.60080e50002f4e82000000005063c74a	True
10.11.17.100:3260,1 iqn.1992-01.com.lsi:2365.60080e50002f4e82000000005063c74a True 	10.11.17.101:3260,	2 iqn. 1992-01. com. 1si:236	60080e50002f4e82000000005063c74a	True
- Discovery][Log In][Deleve]	10.11.17.100:3260,	1 iqn.1992-01.com.lsi:236	5.60080e50002f4e82000000005063c74a	True
Discovery][Log In][Deleve]				
Discovery][Log In][Delete]				
	Discovery][Log In]	[Delete]		

False Connection

Note: Repeat step 5 until there are no more nodes with a connected "false" status.

Portal Address	Target Name		Connecte
10.11.17.103:3260,2	iqn.1992-01.com.	lsi:2365.60080e50002f1e86000000005063ce77	True
10.11.14.102:3260,1	iqn.1992-01.com.	lsi:2365.60080e50002f1e86000000005063ce77	True
10.11.16.102:3260,1	1qn. 1992-01. com.	ls1:2365.60080e50002f1e86000000005063ce77	True
10.11.14.103:3260,2	iqn.1992-01.com.	lsi:2365.60080e50002f1e86000000005063ce77	True
10.11.15.103:3260,2	iqn.1992-01.com.	lsi:2365.60080e50002f1e86000000005063ce77	True
10.11.17.102:3260,1	iqn. 1992-01. com.	lsi:2365.60080e50002f1e86000000005063ce77	True
10.11.16.103:3260,2	iqn.1992-01.com.	lsi:2365.60080e50002f1e86000000005063ce77	True
10.11.15.102:3260,1	iqn.1992-01.com.	lsi:2365.60080e50002f1e86000000005063ce77	True
10.11.14.100:3260,1	iqn.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c74a	True
10.11.14.101:3260,2	iqn.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c74a	True
10.11.16.100:3260,1	iqn.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c74a	True
10.11.16.101:3260,2	iqn.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c74a	True
10.11.15.100:3260,1	iqn.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c74a	True
10.11.15.101:3260,2	iqn.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c74a	True
10.11.17.101:3260,2	iqn.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c74a	True
10.11.17.100:3260,1	iqn.1992-01.com.	lsi:2365.60080e50002f4e82000000005063c74a	True
 Discovery][Log In][elp]	Delete]	[Abort]	fEini

Discovered Targets 2

6 Choose Finish and Quit.

Note: Repeat steps 2-6 on all the cache engines.

Removing the Faulty Storage Volumes

After the failed storage ISCSI connections have been removed from all the cache engines, clean all volumes from the cmdb.

- 1 From the management server enter to enable mode in the CLI.
- **2** Using CLI, enter the command *show volumes*.

console# show v	volumes	
Licensed volum	es : 72	
Volume name	State	Owner
/mnt/vol1	not mounted	
/mnt/vol2	not mounted	
/mnt/vol3	not mounted	
/mnt/vol4	not mounted	
/mnt/vol5	not mounted	
/mnt/vol6	not mounted	
/mnt/vol7	not mounted	
/mnt/vol8	not mounted	
/mnt/vol9	not mounted	
/mnt/vol10	not mounted	
/mnt/vol11	not mounted	
/mnt/vol12	not mounted	
/mnt/vol13	not mounted	
/mnt/vol14	not mounted	
/mnt/vol15	not mounted	
/mnt/vol16	not mounted	
/mnt/vol17	not mounted	
/mnt/vol18	not mounted	
/mnt/vol19	not mounted	
/mnt/vol20	not mounted	
/mnt/vol21	not mounted	
/mnt/vol22	not mounted	
/mnt/vol23	not mounted	
/mnt/vol24	not mounted	
/mnt/vol25	not mounted	
/mnt/vol26	not mounted	
/mnt/vol27	not mounted	
/mnt/vol28	not mounted	
/mnt/vol29	not mounted	
/mnt/vol30	not mounted	
/mnt/vol31	not mounted	
/mnt/vol32	not mounted	
/mnt/vol33	not mounted	
/mnt/vol34	not mounted	
/mnt/vol35	not mounted	
/mnt/vol36	not mounted	
/mnt/vol37	not mounted	
/mnt/vol38	not mounted	
/mnt/vol39	not mounted	
/mnt/vol40	not mounted	
/mnt/vol41	not mounted	
/mnt/vol42	not mounted	
/mnt/vol43	not mounted	
/mnt/vol44	not mounted	
/mnt/vol45	not mounted	
/mnt/vol46	not mounted	
/mnt/vol47	not mounted	
/mnt/vol48	not mounted	
/mnt/vol49	inactive	
/mnt/vol50	inactive	

/mnt/vol51	inactive
/mnt/vol52	inactive
/mnt/vol53	inactive
/mnt/vol54	inactive
/mnt/vol55	inactive
/mnt/vol56	inactive
/mnt/vol57	inactive
/mnt/vol58	inactive
/mnt/vol59	inactive
/mnt/vol60	inactive
/mnt/vol61	inactive
/mnt/vol62	inactive
/mnt/vol63	inactive
/mnt/vol64	inactive
/mnt/vol65	inactive
/mnt/vol66	inactive
/mnt/vol67	inactive
/mnt/vol68	inactive
/mnt/vol69	inactive
/mnt/vol70	inactive
/mnt/vol71	inactive
/mnt/vol72	inactive

3 For each volume that has inactive status perform the command using CLI: *cache volume remove_content* and when asked, enter each time, one of the number of the inactive volumes. Enter **yes** for "*Are you sure?*".

```
For example:
console# cache volume remove content
Licensed volumes : 72
Please enter volume number <1-72>
49
Are you sure? This will remove all hashes from volume 49.
[yes|no] no : yes
Removing all the content from volume 49...
Done.
. . .
console# cache volume remove_content
Licensed volumes : 72
Please enter volume number <1-72>
72
Are you sure? This will remove all hashes from volume 72.
[yes|no] no : yes
Removing all the content from volume 72...
Done.
```

Removing the Faulty Storage from the Storage Manager

From the Management Server,

1 Start vncserver:

```
rm /tmp/.X1-lock
rm /tmp/.X11-unix/X1
vncserver :1
```

2 Connect using VNC Management Server.

	ver:	192.168.0.234:1	
		(host:display or host::port)	
Quick Options			
O AUTO	(Aut	o select best settings)	Connec
O ULTRA	(>2M	lbit/s) - Experimental	
C LAN	(> 1	Mbit/s) - Max Colors	Cancel
MEDIUM (128 -	- 256Kbit/s) - 256 Colors	
MODEM (19 -	128Kbit/s) - 64 Colors	
© SLOW	(< 19	9kKbit/s) - 8 Colors	
◎ MANUAL	(Use	options button)	Ontions
View Only	A	uto Scaling 🔲 Confirm Exit	Options.
Use DSMPlug	in	SecureVNCPlugin64.dsm	- Config
Proxy/Repea	ter	?:0	
1, 1920 x 1080	00	.0 - 32-bit - 50 Hz	-

UltraVNC Viewer

3 Run the ISCSI Storage Manager

SMclient

- 4 From the *Devices* tab, locate the **faulty array**
 - Select Out-of-Band details

Devices Setup		Name	Tune	Status	Management Connections	Comment
- Imp-1 Discovered Storage Arrays (2)		PA-3-192_168_0_52	aa aa	Unresponsive	Out-of-Band(details 1)	comment
Storage Array PA-1-192_168_0_52	۲					
Storage Array PA-3 - 192_168_0_52						

Devices Tab

Note: The IP addresses: Those same IP addresses need to be assigned to the replacement storage.

Storage array: PA-3-192_168	1_0_52		
Management Connections		1	,
Connection	Туре	Status	IP Address
RAID Controller Module 0,1	Out-of-Band	Unresponsive	10.11.18.204 / 10.11.18.205
-			
	Remov	e Close Help	
	<u>-remo</u>		

Note the IP Addresses

- 5 Click Close
- 6 Right-click on the "faulty array" and choose **Remove > Storage Array.**

Devices Setup					
—– <mark>–</mark> , mg–1		Name		Туре	Status
🕂 🌆 Discovered Storage A	rrays (2)	PA-3-192_168_0_52		32 ***	5 Unresponsive
-Storage Array PA-1	-192_168_0_52 T				
— <mark>—</mark> Storage Array PA-2	-192_168_0_52				
	-192 168 0 52				
	<u>M</u> anage Storage Arr	ay			
	Blink Storage Array				
	Execute Script				
	Loa <u>d</u> Storage Array	Configuration			
	Upgrade RAID Contr	roller Module Firmware			
	Refresh				
	Remo <u>v</u> e		Þ	Storage	Array
	Configure Alerts			Manage	ement Connection
	Set Session Time Ou	t			
	Legacy Collect Supp	ort Data	Þ		
	Re <u>n</u> ame				
	<u>C</u> omment		-		

Remove Storage Array

- 7 From the *Confirm Remove Storage Array*
 - Click Yes



Confirm Remove Storage Array

The system now is back to operational state without the failed storage causing interference with IO operations.

Connecting a New Storage to an Existing System

In Order to Connect a New Storage Addition to an Existing System Use the Following Procedure:

From the Management Server,

1 Start the VNC Server, and enter,

```
rm /tmp/.X1-lock
rm /tmp/.X11-unix/X1
vncserver :1
```

- 2 Connect using VNC Management Server,
 - Run the ISCSI Storage Manager
- **3** From the *Devices* tab,
 - Right-Click and choose Add Storage Array



Add Storage Array

4 Follow the procedure in the installations manual that documents how to assign the appropriate IP addresses to a new storage from the factory by connecting to the default factory assigned IP addresses and changing them to the appropriate IP addresses in sequence be it an additional storage or filling a hole in the sequence

Up to 10 storages are supported - the IP addresses are assigned to each storage per the following table:

```
 \begin{array}{l} [1]="10.11.18.200 \ 10.11.18.201" \\ [2]="10.11.18.202 \ 10.11.18.203" \\ [3]="10.11.18.204 \ 10.11.18.205" \\ [4]="10.11.18.206 \ 10.11.18.207" \\ [5]="10.11.18.208 \ 10.11.18.209" \\ [6]="10.11.18.210 \ 10.11.18.211" \\ [7]="10.11.18.212 \ 10.11.18.213" \\ [8]="10.11.18.214 \ 10.11.18.215" \\ [9]="10.11.18.216 \ 10.11.18.217" \\ [10]="10.11.18.218 \ 10.11.18.218" \\ \end{array}
```

- **5** Enter the IP addresses (in the example this is Storage #3so the IPs are 10.11.18.204 & 10.11.18.205),
 - Click Add.

What are in-band and out-of-band management connections? What if my system only has one RAID controller module?	
Select a management method:	
Out-of-band management: Manage the storage array using the RAID controller module Ethernet connections.	
RAID Controller Module (DNS/Network name, IPv4 address, or IPv6 address):	
10.11.18.204	
RAID Controller Module (DNS/Network name, IPv4 address, or IPv6 address):	
10.11.18.205	
In-band management: Manage the storage array through an attached host.	
Hogt (DNS/Network name, IPv4 address, or IPv6 address):	
<u>A</u> dd Cancel <u>H</u> elp	

Add New Storage Array

- 6 From the *Storage Array Added*,
 - Click No.
- 7 Manage the Added Storage Array by right-clicking,
 - Choose Manage Storage Array
- 8 From the *Managing* window,
 - Choose the **Setup** tab
 - Select Configure the iSCSI Host Ports

Summary Storage & Copy Services Host Mappings Hardware Setup
Initial Setup Tasks
Storage Array Configuration
Bink Storage Array Turn on the indicator lights for the storage array to identify it physically.
Rename Storage Array Rename the storage array so it can be easily identified in the MD storage management software.
Change Hardware View Order Change the order in which the enclosures are shown in the Hardware View to match the actual physical arrangement.
Set a Storage Array Password Set a password for the storage array to prevent unauthorized users from making configuration changes.
Wanage Premium Features View available premium features. Some premium features can be enabled on a trial basis, while others can only be enabled with a feature key file.
Configure ISCSI Host Ports Configure network parameters for the ISCSI host ports on the RAID controller module(s) such as IP configuration and other advanced settings.
Create Storage Provision physical disks into appropriate storage elements.
Save Configuration Save configuration parameters in a file to replicate the configuration on another storage array.
Optional Tasks
The Manually Define Hosts Define Hosts Define Hosts and Host Port Identifiers connected to the storage array. Use this option only if the host is not automatically recognized and displayed in the Mappings tab.
The Map Virtual Disks Map Virtual disks to hosts so that the virtual disks can be used for I/O operations.
Configure Ethemet Management Ports
Manage ISCSI Settings

Configure the iSCSI Host Ports

9 Assign the ISCSI IP addresses and the settings (*Enable ICMP PING responses, disable IPv6* and in Advanced Port Settings, *enable Jumbo frame of MTU size 9000*) - for more instructions, see the Grid Installation Guide.

To assist with the configuration of the IP addresses, use the following IP address table for the storages with the 1G ISCSI connections. For the 10G ISCI connections, use only the addresses in **bold**:

Storage # 01 [1]="10.11.14.100" [2]="10.11.15.100" [3]="10.11.16.100" [4]="10.11.17.100" [5]="10.11.14.101" [6]="10.11.15.101" [7]="10.11.16.101" [8]="10.11.17.101" Storage # 02 [9]="10.11.14.102" [10]="10.11.15.102" [11]="10.11.16.102" [12]="10.11.17.102" [13]="10.11.14.103" [14]="10.11.15.103" [15]="10.11.16.103" [16]="10.11.17.103" Storage #03 [17]="10.11.14.104" [18]="10.11.15.104" [19]="10.11.16.104" [20]="10.11.17.104" [21]="10.11.14.105" [22]="10.11.15.105" [23]="10.11.16.105" [24]="10.11.17.105" Storage #04 [25]="10.11.14.106" [26]="10.11.15.106" [27]="10.11.16.106" [28]="10.11.17.106"

[29]="10.11.14.107" [30]="10.11.15.107" [31]="10.11.16.107" [32]="10.11.17.107" Storage #05 [33]="10.11.14.108" [34]="10.11.15.108" [35]="10.11.16.108" [36]="10.11.17.108" [37]="10.11.14.109" [38]="10.11.15.109" [39]="10.11.16.109" [40]="10.11.17.109" Storage #06 [41]="10.11.14.110" [42]="10.11.15.110" [43]="10.11.16.110" [44]="10.11.17.110" [45]="10.11.14.111" [46]="10.11.15.111" [47]="10.11.16.111" [48]="10.11.17.111" Storage # 07 [49]="10.11.14.112" [50]="10.11.15.112" [51]="10.11.16.112" [52]="10.11.17.112" [53]="10.11.14.113" [54]="10.11.15.113" [55]="10.11.16.113" [56]="10.11.17.113" Storage #08 [57]="10.11.14.114" [58]="10.11.15.114" [59]="10.11.16.114" [60]="10.11.17.114" [61]="10.11.14.115" [62]="10.11.15.115" [63]="10.11.16.115" [64]="10.11.17.115" Storage # 09 [65]="10.11.14.116" [66]="10.11.15.116" [67]="10.11.16.116" [68]="10.11.17.116" [69]="10.11.14.117" [70]="10.11.15.117" [71]="10.11.16.117" [72]="10.11.17.117" Storage #10 [73]="10.11.14.118" [74]="10.11.15.118" [75]="10.11.16.118" [76]="10.11.17.118" [77]="10.11.14.119" [78]="10.11.15.119" [79]="10.11.16.119" [80]="10.11.17.119"

Configure the New Storage

- **1** From the *Management*,
 - **Running the Configure Storages Script** using the commands:

```
cd /opt/pang/useful/configure_storages/
```

 $/configure_storages.py -s < the number of the storages in the system> -n < the number of the replaced storage> -b < the number of the CEs in the system>$

For example, for a system with 8 cache engines and 3 storages (when the 3rd one is the new added one):

./configure storages.py -s 3 -n 3 -b 8

A warning message about the disk format will be shown, to continue the storages configuration enter y.

```
********* WARNING! *********
```

The selected storage is about to be reconfigured. All data on that storage will be lost. You'll need to format disks manually. Do you want to continue? (y/n) y

2 In order to begin using the new volumes, start the Service for Pang.

Chapter 5: Replacing the Management Server Procedure

Overview

The following chapter details the procedure for replacing the management server.

Prerequisites

Before Replacing the Management Server, you must possess the following:

- Disk-on-key with the ISO image
- The software version that is running on the Cache Engines

Note: For further information, refer to the installation manual (Chapter 1: Rack Mounting).

Backup Files

IMPORTANT! The following procedure for backing up files apply only if the Management Server is still accessible. If the management Server is not accessible, please contact customer support for the License and cluster_conf.xml files.

- 1 Use WinSCP to the management server.
- **2** Copy and backup these files to a place that is not the management server:
 - /opt/pang/mgmt/config/PALicense.xml
 - /opt/pang/mgmt/config/cluster_conf.xml

Replacing the Management Server

First disconnect the old Management Server and replace it with the new Management Server. Next, connect the new Management Server to the Cache Engines.

Note: For more information, refer to the installation manual (Chapter 2: Cabling - Management Server).

Installing the Management Server

1 Configure the BIOS of the server, and install the ISO.

Note: For more information, refer to the installation manual (Chapter 4: Configuring the Management Server).

2 After the ISO installation is completed.

Note: When requested, use the old Management Server Network parameter and address values.

- 3 Using a PuTTy session, connect as a root user to the management IP.
- **4** From the management, update the grid ssh keys by running:
 - cd /opt/pang/useful/
 - ./replace_server_keys.sh -servers < number of blades in the grid>

IMPORTANT! (For example) For a Grid with 4 blades run: ./replace_server_keys.sh -servers 4

- **5** Refer to the Installation Guide (Chapter 6: Configuring the Cache Storage), and configure the Storages.
- **6** Obtain a copy of the UltraBand 6000 Grid software package (FI) with the same version number as the Cache Engines.
- **7** From the management run:
 - cd /tftpboot/
 - mkdir Installer ver<version #>
 - cd Installer ver<version #>
- 8 Copy the Software Package installer to Installer ver<version #>
- **9** On the archive, run:
 - tar -zxvf <FI_installer_name>

Note: If you are connected remotely to the server, use the screen command. This ensures that if the session is disconnected during the installation as result of a Management IP set operation, you will be able to reconnect and resume the session with the screen -r command.

10 Edit GA_installer.rc - Edit the line "UPGRADE CACHE SOFTWARE" to be none.

For example: vi GA_installer.rc

#MANAGEMENT_SOFTWARE {no, yes} MANAGEMENT_SOFTWARE=yes

#UPGRADEL_CACHE_SOFTWARE {all, none, space separated list(ce-1 ce-2 ce-3 ce-4 ce-5 ce-6 ce-7 ce-8 ce-9 ce-10 ce-11 ce-12 ce-13 ce-14 ce-15 ce-16)} UPGRADEL_CACHE_SOFTWARE=none

UPGRADE_TAR_BALL=<filename>.tar.gz MANAGEMENT_ENVIRONMENT=yes GRACE_UPGRADE=no FIRST_INSTALL=yes

11 Run the ./*GA_installer.sh*

Note: Refer to the Installation Manual (Chapter 7: Installing and Configuring the Software - Installing the Management Environment and Software section).

- **12** From the Management (root permissions),
 - run the command: cd /opt/pang/useful
 - Run the script management_machine_replacement.sh with the parameters list, denoting all the existing cache blades, as follows: For a Grid of 8:
 - ./management_machine_replacement.sh ce-1 ce-2 ce-3 ce-4 ce-5 ce-6 ce-7 ce-8

Post Installation

Note: This procedure is used for restoring the previously backed up files. If the backup files are not available, skip step 1, and proceed to step 2 to install the License and cluster_conf.xml files obtained from customer support.

- 1 Use WinSCP to the management server and import the backup files PALicense.xml and cluster_conf.xml to the folder /*tftpboot*
- 2 Import the cluster_conf.xml and PALicense.xml

Note: Refer to the Installation Guide (Chapter 7: Installing and Configuring the Software - Post Installation Steps).

IMPORTANT! If step 2 fails - Run the following from the Management Server: -/opt/pang/mgmt/bin/pang_rescue -Type: passwords -Exit -Repeat step 2

3 Exit from the CLI, (still) as the root user enter the following commands:

cd /etc

scp root@ce-1:/etc/hosts .

sed -i 's/mg-1/mg-1.cosco.com mg-1/g' hosts
Chapter 6: Connecting an External Storage to an Existing System

Overview

The following chapter details the procedure for connecting a new storage addition to an existing system.

Connecting a Server Storage

In Order to Connect a New Storage Addition to an Existing System Use the Following Procedure:

From the Management Server,

1 Start the VNCServer, and enter,

rm /tmp/.X1-lock rm /tmp/.X11-unix/X1 vncserver :1

2 Connect to the Management Server using VNC and run:

SMclient

- 3 From the *Devices* tab,
 - Right-Click and choose Add Storage Array

Devices Setup	9.
🚍 🖳 mg-1	
🚽 🛅 Discovered St	torage Arrays (2)
— <mark>—</mark> Storage Ar	ray PA-1-192_168_0_52
🗕 🗹 🗠 🗠 🗠	ray PA-2-192_168_0_52
	Automatic Discovery
	Add Storage Array
	Configure Alerts
	Set Session Time Out
2	

Add Storage Array

4 Follow the procedure in the installations manual that documents how to assign the appropriate IP addresses to a new storage from the factory by connecting to the default factory assigned IP addresses and changing them to the appropriate IP addresses in sequence be it an additional storage or filling a hole in the sequence

Up to 10 storages are supported – the IP addresses are assigned to each storage per the following table:

[1]="10.11.18.200 10.11.18.201" [2]="10.11.18.202 10.11.18.203" [3]="10.11.18.204 10.11.18.205" [4]="10.11.18.206 10.11.18.207" [5]="10.11.18.208 10.11.18.209" [6]="10.11.18.210 10.11.18.211" [7]="10.11.18.212 10.11.18.213" [8]="10.11.18.214 10.11.18.215" [9]="10.11.18.216 10.11.18.217" [10]="10.11.18.218 10.11.18.218"

- **5** Enter the IP addresses (in the example this is Storage #3 so the IPs are 10.11.18.204 & 10.11.18.205),
 - Click Add.

What are in-band and out-of-band management connections?	
What if my system only has one RAID controller module?	
Select a management method:	
Out-of-band management: Manage the storage array using the RAID controller module Ethernet connections.	
RAID <u>C</u> ontroller Module (DNS/Network name, IPv4 address, or IPv6 address):	
10.11.18.204	
RAID Controller Module (DNS/Network name, IPv4 address, or IPv6 address):	
10.11.18.205 <u></u>	
 ○ In-band management: Manage the storage array through an attached host. Hogt (DNS/Network name, IPv4 address, or IPv6 address): 	
Add Cancel Help	
Add New Storage Array	

- 6 From the Storage Array Added screen,
 - Click No



Storage Array Added

- 7 Manage the Added Storage Array by right-clicking it,
 - Choose Manage Storage Array
- 8 From the *Managing* window,
 - Choose the **Setup** tab
 - Select the Configure ISCSI Host Ports.

Summary Storage & Copy Services Host Mappings Hardware Set

Initial Setup Tasks
Storage Array Configuration
Bink Storage Array
Rename Storage Array Rename the storage array so it can be easily identified in the MD storage management software.
Change Hardware View Order Change the order in which the enclosures are shown in the Hardware View to match the actual physical arrangement.
Set a Storage Array Password Set a Storage Array Password Set a password for the storage array to prevent unauthorized users from making configuration changes.
Wanabe Premium Features View available premium features. Some premium features can be enabled on a trial basis, while others can only be enabled with a feature key file.
Configure 6CSI Host Ports Configure network parameters for the 6CSI host ports on the RAID controller module(s) such as IP configuration and other advanced settings.
Create Storage Provision physical disks into appropriate storage elements.
A save Configuration Save configuration parameters in a file to replicate the configuration on another storage array.
Optional Tasks
Anvaliv Define Hosts Define the hosts and Host Port Identifiers connected to the storage array. Use this option only if the host is not automatically recognized and displayed in the Mappings tab.
Map Virtual Disks Map virtual disks to hosts so that the virtual disks can be used for I/O operations.
Configure Element Management Ports Configure network parameters for the Ethernet management ports on the RAID controller module(s) if you want to manage the storage array using out-of-band management connections.
Manace ISCSI Settings Configure ISCSI for authentication, identification, and discovery

Initial Setup Tasks

9 Assign the iSCSI IP addresses and the settings (enable *ICMP PING responses, jumbo & disable IPv6* and in Advanced Port Settings enable *Jumbo frame of MTU size 9000*) - as per the for more instructions use in the installation manual.

To assist with the configuration of the IP addresses, use the following IP address table for the storages with the 1G ISCSI connections. For the 10G ISCI connections, use only the addresses in **bold**:

```
Storage # 01
[1]="10.11.14.100"
[2]="10.11.15.100"
[3]="10.11.16.100"
[4]="10.11.17.100"
[5]="10.11.14.101"
[6]="10.11.15.101"
[7]="10.11.16.101"
[8]="10.11.17.101"
```

Storage # 02 [9]="10.11.14.102" [10]="10.11.15.102" [11]="10.11.16.102" [12]="10.11.17.102" [13]="10.11.14.103" [14]="10.11.15.103" [15]="10.11.16.103" [16]="10.11.17.103" Storage #03 [17]="10.11.14.104" [18]="10.11.15.104" [19]="10.11.16.104" [20]="10.11.17.104" [21]="10.11.14.105" [22]="10.11.15.105" [23]="10.11.16.105" [24]="10.11.17.105" Storage #04 [25]="10.11.14.106" [26]="10.11.15.106" [27]="10.11.16.106" [28]="10.11.17.106" [29]="10.11.14.107" [30]="10.11.15.107" [31]="10.11.16.107" [32]="10.11.17.107" Storage #05 [33]="10.11.14.108" [34]="10.11.15.108" [35]="10.11.16.108" [36]="10.11.17.108" [37]="10.11.14.109" [38]="10.11.15.109" [39]="10.11.16.109" [40]="10.11.17.109" Storage #06 [41]="10.11.14.110" [42]="10.11.15.110" [43]="10.11.16.110" [44]="10.11.17.110" [45]="10.11.14.111" [46]="10.11.15.111" [47]="10.11.16.111" [48]="10.11.17.111" Storage #07 [49]="10.11.14.112" [50]="10.11.15.112" [51]="10.11.16.112" [52]="10.11.17.112" [53]="10.11.14.113" [54]="10.11.15.113" [55]="10.11.16.113" [56]="10.11.17.113" Storage #08 [57]="10.11.14.114" [58]="10.11.15.114" [59]="10.11.16.114" [60]="10.11.17.114" [61]="10.11.14.115" [62]="10.11.15.115" [63]="10.11.16.115"

```
[64]="10.11.17.115"
Storage # 09
[65]="10.11.14.116"
[66]="10.11.15.116"
[67]="10.11.16.116"
[68]="10.11.17.116"
[69]="10.11.14.117"
[70]="10.11.15.117"
[71]="10.11.16.117"
[72]="10.11.17.117"
Storage #10
[73]="10.11.14.118"
[74]="10.11.15.118"
[75]="10.11.16.118"
[76]="10.11.17.118"
[77]="10.11.14.119"
[78]="10.11.15.119"
[79]="10.11.16.119"
[80]="10.11.17.119"
```

Configure the New Storage

- 1 To stop the *Pang Service*, from the CLI,
 - Use *Oper Service Stop* from the CLI

Note: Repeat the following steps for each new storage enclosure

- **2** From the *Management*,
 - Run the configure storage script:

cd /opt/pang/useful/configure_storages

```
./configure_storages.py -s <the number of the storages in the system> -n < the number of the new storage> -b <the number of the CEs in the system>
```

For example, for a system with 8 cache engines, and 3 storages (when the 3rd one is the new added one):

./configure storages.py -s 3 -n 3 -b 8

A warning message about the disk format will be shown, to continue the storages configuration enter y.

```
********* WARNING! ********
The selected storage is about to be reconfigured. All data on that storage
will be lost. You'll need to format disks manually.
Do you want to continue? (y/n) y
```

Note: Repeat <u>Step 2</u> for each new storage enclosure

- **3** Reboot all of the cache engines in the grid (except ce-1) allowing the re-reading of formatted disks (by using the command reboot *-f*).
- 4 Update the cluster_conf.xml with the new controller addresses (for more information, contact customer support)
- **5** In order to begin using the new volumes, start the Service for Pang.

Chapter 7: External Storage Disk Replacement Procedure

Overview

As soon as a disk failure is detected, delete the faulty Disk Group in the storage to cease the I/O errors and restore the system nominal operation.

Replacing an External Storage Disk

To Replace the External Storage Disk:

From the Management Server,

1 Start the VNC Viewer, and enter

rm /tmp/.X1-lock rm /tmp/.X11-unix/X1 vncserver :1

2 Connect using VNC the Management to the server

NANC .	Canvar	102 168 0 234-1	
VNC Server:		(hartidizably or hartimart)	•
Quick Option	s	(noscuspiay of noscupore)	
O AUTO	(Aut	to select best settings)	Connect
O ULTRA	(>21	Ibit/s) - Experimental	
C LAN	(> :	LMbit/s) - Max Colors	Cancel
MEDIUM	(128	- 256Kbit/s) - 256 Colors	
O MODEM	(19 -	128Kbit/s) - 64 Colors	
◎ SLOW	(< 1	9kKbit/s) - 8 Colors	
O MANUAL	(Use	options button)	Ontinne
View Onl	y 🗖 A	uto Scaling 🔲 Confirm Exit	Opcions
Use DSMI	Plugin	SecureVNCPlugin64.dsm	- Config
Proxy/Re	peater	?:0	
1. 1920 x 1	080 @ 0	,0 - 32-bit - 50 Hz	•

VNC Viewer

3 Run the MD Storage Manager

- 4 From the storage tab,
 - Locate the faulty Disk Group
 - Click + to verify that there is a faulty Virtual Disk

Note: If the LUN is 0. You cannot delete it. You must contact customer support for further assistance. If the LUN is any other number, you can delete the disk by using the procedure detailed below.

Note: By clicking the + and then clicking the Virtual Disk, a summary of the drive specifications is displayed on the right pane. Look under the LUN designation for the LUN number.



Disk Group 4

PA-2-192_168_0_52 Attention			
Summary Performance Storage & Copy Servi	ces Host Mannings Hardware Setur		
Find object in tree	🔋 🖳 Virtual Disk "4"		
	View Associated Physical Components		
EH Disk Groups	Virtual Disk status:	😡 Failed	
🕂 🗳 0 (RAID 0) (278.896 GB)	Thin provisioned:	No	
🕂 🔓 1 (RAID 0) (278.896 GB)			- 1
+- 🔓 2 (RAID 0) (278.896 GB)	Capacity:	278.896 GB	-1
+- 🗳 3 (RAID 0) (278.896 GB)	Subsystem ID (SSID):	4	- 1
	RAID level:	0	- 1
			_
4 (278.890 GB)	LUN:	4	- 1
+- 9 5 (RAID 0) (278.896 GB)	Accessible By:	Host Group PA	
🕂 🖕 6 (RAID 0) (278.896 GB)			- 1
🗄 🙀 7 (RAID 0) (278.896 GB)	Physical Disk media type:	🞴 Physical Disk	
🕂 🔓 8 (RAID 0) (278.896 GB)	Physical Disk interface type:	Serial Attached SCSI (SAS)	- 1
+- 🔓 9 (RAID 0) (278,896 GB)	Logical sector size:	512 bytes	
±- 🔓 10 (RAID 0) (278.896 GB)	Enclosure loss protection:	No	- 1
🕂 🔓 11 (RAID 0) (278.896 GB)	Secure:	No	- 1
🕂 🔓 12 (RAID 0) (278.896 GB)			_ 1
+- 🔓 13 (RAID 0) (278.896 GB)	Preferred owner:	RAID Controller Module in slot 1	- 1
14 (RAID 0) (278 896 CP)	Current owner:	RAID Controller Module in slot 1	_
Premium Features: 😰 😳 🗊 🗐 👀			100

Disk Group 5

5 Right click on the faulty Disk Group (not the Virtual Disk)

■ Click **Delete**

PA-2-192_168_0_52 🔥 Needs Attention	
Summary Performance Storage & Copy Services H	iost Mappings Hardware Setup
Find object in tree	Disk Group "4"
	Associated Physical Components
EH Disk Groups St	atus: 😡 Failed
🕂 🔓 0 (RAID 0) (278.896 GB) 🛛 🔤	apacity: 278.896 GB
🕂 🔓 1 (RAID 0) (278.896 GB)	urrent owner: RAID Controller Module in slot 1
1- 🔓 2 (RAID 0) (278.896 GB)	ata Service (DS) Attributes
🛨 🔓 3 (RAID 0) (278.896 GB)	RAID level: 0
- 🔀 👇 4 (RAI <u>D 0) (278.896 GB)</u>	Physical Disk media type: 🛛 📓 Physical Disk
4 (2 Blink	Disk interface type: 385 Serial Attached SCSI (SAS)
+ C (RAID View Associated Physical Compo	nents reloss protection: No
E Grand Secure Physical Disks	apable: No
Add Physical Disks (Capacity)	No
+- 9 7 (RAID <u>R</u> eplace Physical Disks	
🛨 🍟 8 (RAID C <u>h</u> ange	al Disks: 1
🛨 🔓 9 (RAID 🛛 Rena <u>m</u> e	i virtual disks: 1
+- Call Delete	acity 0,000 MB
+- C 11 (RAI Advanced	> Store in the store is a s
A: 12 (RAID 0) (278.896 GB) To	ssociated physical disks - present (in piece order) otal physical disks present: 1
🛨 🔓 13 (RAID 0) (278.896 GB)	Enclosure Slot
+ - 🔓 14 (RAID 0) (278.896 GB)	0 4
Premium Festures: IN CA THE III III III	

Faulty Disk Group

- 6 From the Delete Disk Groups window
 - Click Delete

Select disk groups for delet disk group.	tion. Hold down the control key to select more than one
Note: All virtual disks on se	lected disk groups will also be deleted
Deletable disk groups:	
Disk Group 4 Standard Virtual Disk 4	278.896 GB
Disk Group 5	
Standard Virtual Disk 5	278.896 GB
Disk Group 6	_
Standard Virtual Disk 6	278.896 GB
Disk Group 7	
Standard Virtual Disk 7	278.896 GB
Disk Group 8	
Standard Virtual Disk 8	278.896 GB
Disk Group 9	III III III III III III III III III II
	Delete Cancel Help

Delete Disk Group

- 7 From the Confirm Delete Disk Groups window,
 - Enter "Yes"
 - Click OK
 - Click **OK** (process completed)

2 200	You have chosen to delete the disk groups listed below.
	Deleting a disk group will delete all data on its virtual disks, if any, and return its physical disks to an unassigned state. Stop all I/O and unmount any file systems before proceeding.
	Disk groups and any associated virtual disks marked for deletion:
	Disk Group 4
	Standard Virtual Disk. 4: 278.896 GB
	Are you sure you want to continue?
	Type "yes" to confirm that you want to perform this operation:
	Ves
	OK Cancel Help



8 Using CLI, use this procedure to remove the faulted volume:

console# cache volume remove Searching volume(s) to remove... Volume 43(/dev/sdu1) is going to be removed from CMDB. Are you sure? [y|N] : y Done. Volume 43 is removed.

Note: Wait until the physical device is repaired

- 9 From the Storage Manager, select the Storage &Copy Services tab,
 - Right-click the Total Unconfigured Capacity
 - Click Create Disk Group

PA-2-192_168_0_52 🔽 Optimal			
Summary Performance Storage & Copy Service	es Host Mappings Hardware Setup		
Find object in tree	Total Unconfigured Capacity		
All Logical Objects	View Associated Physical Components		
🗕 🖥 Total Unconfigured Capacity (2 <u>78.896</u>	Capacity: 278.896 GB		
Since View Assoc	iated Physical Components erial Attached SCSI (SAS)		
++ G 0 (RAID 0) (278.896 GB)	(Group pytes		
Create Disk +- 4 1 (RAID 0) (278.896 GB)	<pre>\$Pool</pre>		
T CIERCE 300	Enclosure Slot		
	0 4		
T 6 (RAID 0) (278.896 GB)			
+- • • 7 (RAID 0) (278.896 GB)			
+- 5 8 (RAID 0) (278.896 GB)			
+- 🍟 9 (RAID 0) (278.896 GB)			
🛨 🔓 10 (RAID 0) (278.896 GB)			
🕂 🔓 11 (RAID 0) (278.896 GB)			
🛨 🔓 12 (RAID 0) (278.896 GB)			
🛨 🔓 13 (RAID 0) (278.896 GB)			
🛨 🔓 14 (RAID 0) (278.896 GB)			
Premium Features: 😰 🚱 📑 🗐 🗊			

Create Disk Group

10 From the Wizard,

Click Next



Wizard

- **11** From the Disk Group Name window,
 - **Do Not Change the Disk Group Name** (Leave the Default Name)
- **12** From the Raid Level window,
 - Click Manual,
 - Click Next

Disk group name (30 characters maximum): 24				
Caution: Once a disk group is secured, the only way to remove security is to delete the disk group and disks. Secure enabled physical disks must be secure enabled before they can be used for a disk group and the secure enabled physical disks must be secure enabled before they can be used for a disk group and the secure enabled physical disks must be secure enabled before they can be used for a disk group and the secure enabled before e				
hysical Disk selection choices:				
Automatic (Recommended): Choose from a list of automatically generated physical disk and capacity	options.			
ightarrow Manual (Advanced): Choose specific physical disks to obtain capacity for the new disk group.				
	< <u>B</u> ack	<u>N</u> ext >	Cancel	<u>H</u> elp

Disk Group Name

- **13** From the Raid Level window,
 - Select Raid Level 0,
 - Click the Unassigned Drive,
 - Click Add,
 - Click Calculate Capacity,
 - Click Finish



Raid Level 0

- 14 From the Disk Group was Successfully Created window,
 - Click Yes

ŗ	The disk group was successfully created.		
	You must create at least one virtual disk before you can use the capacity of the new disk group.		
	Learn about virtual disks and disk groups		
	Would you like to create a virtual disk using the new disk group now?		
	<u>Y</u> es <u>N</u> o		

Disk Group Successfully Completed

- 15 From the New Virtual Disk Capacity,
 - Enter the number shown in the free capacity as displayed below,
 - Do Not Change the Virtual Disk Name (Leave the Default)
- **16** In the map to host field,
 - Choose Map Later
- **17** In the Virtual Disk Characteristics,
 - Choose Custom
 - Clear (disable) the Dynamic Cache Read Prefetch
- 18 In segment size,
 - Select 256KB
 - Click Finish and OK

Tips on storage provisioning
Virtual Disk Parameters
Disk group name: 24 Disk group RAID level: 0 Free capacity: 278.896 GB
New virtual disk capacity: Units:
278.896 🛨 GB 🗸
⊻irtual Disk name: 2
4
Map to host: 2
Map Later
Data Service (DS) Attributes
🗌 Uge SSD cache 🖬 🛛 💽
Virtual Disk I/O <u>c</u> haracteristics type:
Custom
Enable dynamic cache read prefetch 2
Segment si <u>z</u> e:
256 KB 🔽
<u>Finish</u> Cancel <u>H</u> elp

Create Virtual Disk

19 From the Storage & Copy Services,

- Right-click the newly added Virtual Disk (Virtual Disk 5 in the example)
- Select Change
 - Select Cache Settings

PA-2-192_168_0_52 🔽 Optima	al			
Summary Performance Storag	e & Copy Services Host Map	opings Hardware Setup		
Find object in tree	🗧 📔 Virt	ual Disk "4"		
+- 🔓 15 (RAID 0) (278.896	GB)	ed Physical Components		
T = 17 (RAID 0) (278 896	GB) Virtual D	isk status:	🗹 Optimal	
T 18 (RAID 0) (278 896	GB) Thin pro-	visioned:	No	
H- 19 (RAID 0) (278.896	GB) Capacity	: ich world-wide identifie	278.896 GB	0.85
	Subsyste	m ID (SSID):	4	0.0a
	RAID leve	el:	0	
	(CP) LUNI		NetMorred	
	Accessibl	le Bv:	Not Mapped NA	
	((6))			
4 (270.090 Create		> modio tuno:	Dhweicht Diele	
Increas	e Capacity			
Increas				
<u>SD</u> Ca	che			
Change	2	Modification Priority		
Vie <u>w</u> A	ssociated Physical Components	Cache Settings		
Renam	e	Me <u>d</u> ia Scan Settings	direction of the second s	
<u>D</u> elete.		Ere-Read Consistency (Check	
Launched Array Maragemen	ed	Sogmont Sizo	ram	
System H	łost Name	Repository Settings	View Logs	

Cache Settings

20 Configure the following cache settings to match exactly as specified in the example above.

For Dell Platform:

0	PA-1-192_168_0_150 Change Cache Settings	• ×
DØLL		
Select virtual o	tisks:	_ Select <u>a</u> ll
Disk Group (Standard Vi Disk Group 1) rtual Disk. 0: 278.896 GB	
Disk Group 2 Standard Vi Disk Group 3	rual Disk 1 278.896 GB 2 rtual Disk 2 278.896 GB	
Cache Prope	rties e read caching	la.
🛄 Ena	able dynamic cache read prefetch	
♥ Enabl	e <u>w</u> rite caching able write caching without batteries able write caching with <u>m</u> irroring	
	OK Cancel Help	

For IBM Platform:



Cache Settings Match

- **1** From the Host Mappings tab
 - Open the Undefined Mapping,
 - Right-click to the Unmapped LUN
 - Click Add Lun Mapping

PA-2-192_168_0_52 📝 Optimal					
Summary Performance Storage & Copy Serv	ices Host P	Mappings Hardw	/are Setup		
Find object in tree	Defined Virt	Mappings ual Disk Name	Accessible By 🔺	Virtual Disk Capacity	Type
Undefined Mappings					
Add LUN Mapping					
Hend Unassociated Host Port Identifiers					

Hosts Mappings tab

- 2 In Host Group
 - Choose Host Group PA
- **3** In the logical unit number
 - Choose a LUN number that was NEVER assigned to any disk before

Note: Do not choose the same LUN number that was previously assigned to the disk (or any disk).

- Click Add,
- Click Close

Use this option to define an additional virtual disk-to-LUN mapping. You can map the virtual disk to the default group or to a host group or a host in an existing storage partition. If you want to create a new storage partition, use the Define Storage Partition option instead. For more information, refer to the online help.				
Host group or host:				
Host Group PA				
Logical unit number (LUN) (0 to 255):				
Virtual Disk Name A Virtual Disk Conesity				
Add <u>Close</u> Help				

Host Group

4 Using CLI, add the volume as follows:

console# cache volume insert Searching for new disks.... Insert disk /dev/sdaw? [y/n] y

disk /dev/sdaw is inserted at index 43 Updating blades... ce-1 is updated ce-2 is updated ce-3 is updated ce-4 is updated

Procedure complete

Chapter 8: Hot Swap HDD Replacement for DAS

The following procedure is intended for the replacement of a hard disk drive using "Hot Swap".

This procedure requires using the UltraBand CLI commands. For more information about the CLI, see UltraBand CLI Commands in the UltraBand Administration Guide.

Prerequisite

■ In the storage array, replace the old hard drive with the new hard drive.

Create the New Virtual Disk (LUN)

Installing the LSI Storage Manager

Note: Download the LSI Storage Manager from: http://www.lsi.com/support. Use the *WinSCP* to copy the utility file to the server. On the server installed with ISO 5.6, the utility is located in /opt/pang/utilities/CE/RAID

- **1** From the server, login as **root**.
- 2 Install the LSI Storage Manager by using the following commands:

```
tar -zxvf 13.04.03.01 Linux(x64) MSM.tar.gz
cd disk
find . -name "*snmp*" -exec rm -v \{\} \setminus;
./install.csh
```

- **3** From the *License Agreement*,
 - Read the License Agreement
 - Press Y to continue



License Agreement

- 4 From the Setup Menu,
 - Choose 4 from the Setup Type

ress 0 to exit from installation	
hoose[1-5]:	
 Complete This option will install all program features. 	
(2) - Client This option will only install components required to remotely view and configure servers.	
(3) - StandAlone This option will only install components required for local server management	
(4) - Local This option will only install components required for local configuration	
(5) - Server This option will only install components required for remote server management	
Note : Installer can also be run in a command line mode	
sage : install.sh [-option]	
The options are :	
The Complete Installation of MegaRAID Storage Manager (MSM)	
The Client components only program of MSM	
The StandAlone component of MSM	
1	
The Local component of MSM	
d	
The Sever component of MSM	
etup Type :4	

Setup Menu

Wait for the installation to complete.

5 Start the Storage Manager Agent with the following commands:

echo 1 > /proc/sys/vm/overcommit_memory

/etc/init.d/vivaldiframeworkd start

Starting a VNC

6 Start the VNCServer

rm /tmp/.X1-lock rm /tmp/.X11-unix/X1 vncserver :1

- **7** Using the VNC Viewer
- Connect to the server using the VNC Viewer

VNC Server:	192.168.0.234:1	
lick Options	(host:display or host::port)	
AUTO (Au ULTRA (>21) LAN (> MEDIUM (128) MODEM (19 - SLOW (<1) MANUAL (Use	to select best settings) Ibit/s) - Experimental IMbit/s) - Max Colors - 256Kbit/s) - 256 Colors 128Kbit/s) - 64 Colors 9kKbit/s) - 8 Colors e options button)	Conne
View Only	uto Scaling 🔲 Confirm Exit	Option
Use DSMPlugin	SecureVNCPlugin64.dsm	- Confi
Proxy/Repeater	?:0	

UltraVNC Viewer

- 8 Start the Megaraid Storage Manager by using the following commands:
 - cd /usr/local/MegaRAID\ Storage\ Manager/ ./startupui.sh



Megaraid Storage Manager

- **9** From the LSI Login page,
 - Login as root user.



- **10** Replace the faulty disk (containing the errors) by applying the instructions from the Hardware Vendor.
- **11** After the disk has been replaced, it will be displayed as an "*Unconfigured Good*" in the Storage Manager "Physical" tab.



Storage Manager Physical tab

12 Re-create the LUN by right-clicking on the raid controller and choosing **Create Virtual Drive**

ce-1	Properties
P SI MegaRAID SAS 9266-8i (Bus 13) UCS240 (32) Connector: Port 0 Create Virtual E	Drive

Create Virtue Drive

Note: If the option "Create Virtual Drive" is not available, try the following steps:

- Right-click the raid controller and choose Scan Foreign Configuration and clear it.
- Right-click on the raid controller and choose Preserved Cache and clean it (follow the instructions on the screen).
- Check if there are any unnecessary processes running (if there is -cancel it).
- **13** From the next LSI screen,
 - Choose Advanced
- **14** From the LSI Raid screen,
 - Select Raid Level Raid 0
 - Select the Unconfigured Drive and click Add

30	Create Drive Group - Drive Group Settings	+ ×
		LSI
Create the drive group by specifying the RAI RAID level: RAID 0 Drive security method: Select	ID level and Drive security method. This RAID level is suitable for high performance with zero data redundancy.Choose this option only for non-critical dat: Drive security will make the virtual drive secure by applying e underlying data in the drive.	encryption logic to
Select unconfigured drives: Drive Type Capacity Enclosure: UCS240 SAS 558	Add > Add Spare > < Remove	30,Di
	Create Drive Group Cre Cancel Back 1	ate <u>S</u> pan Jext <u>H</u> elp

Raid Level - Raid 0

15 Continuing from the LSI screen,

- Click Create Drive Group
- Click Next.

a 0		Create Drive Group - Drive Gr	oup Settings	+ X
				LSI
Create the drive gr RAID level: RAID 0 Drive security methods Select	oup by specifying the RA out not:	ID level and Drive secur This RAID level is suit data redundancy.Choo Drive security will mal underlying data in the	ity method. able for high performance with ze se this option only for non-critica ke the virtual drive secure by apply drive.	ro I data. /ing encryption logic to
Select unconfigur Drive	ed drives: Type Capacity	<u>A</u> dd > Add H <u>o</u> t Spare > < Remo <u>v</u> e	Drive groups: SI MegaRAID SAS 9266-8i (P Drive Group13 Contraction of the second s	Bus 130,D+ 2), Slot: 13
			<u>C</u> reate Drive Group Cancel <u>B</u> ack	Create <u>S</u> pan

Create Drive Group

16 From the Parameters Configuration screen,

- Configure the parameters **EXACTLY** as specified below: (Except for the following fields: *"Virtual Drive Name" and "Capacity"*)
- Click Create Virtual Drive

Specify parameters	for the new virtual drive.
Virtual drive name:	VD_11
Capacit <u>y</u> :	557.861 🕂 Units: GB 💌
Initialization state:	Fast Initialization 🔽
Strip si <u>z</u> e:	256 KB 🔫
R <u>e</u> ad policy:	No Read Ahead 🔻
<u>W</u> rite policy:	Always Write Back 🔻
I/O <u>p</u> olicy:	Direct 10 🔻
Access policy:	Read Write 👻
<u>D</u> isk cache policy:	Enabled 👻
<u>U</u> pdate Virtual	Drive <u>Create Virtual Drive</u>

Parameter Configuration

- From the Always Write Back screen,
- Click Yes
- Click Next

ہ 🎍	Always Write Back Selected 🔶 🛧 🗙
	Always Write Back mode provides optimal performance, but data loss will occur if there is a power failure and no cache battery installed or the battery is failed or discharged.
	Are you sure you want to select Always Write Back mode?
	<u>Yes</u> <u>N</u> o

- **17** From the LSI Main screen,
 - Click Finish

1

3 0	Create Virtual Drive - Summary	+ ×
		LSI
Review the summary and go <u>S</u> ummary:	back if you need to make corrections. The virtual drive(s) will be created	l when you click finish.
Drive group name: RAID level: Number of drives used: Drive security method: Total capacity: Free capacity:	Drive Group13 RAID 0 1 No Encryption 557.861 GB 0 Bytes	
Virtual drive 1 name: Capacity:	VD_11 557.861 GB	
•	1	
	Cancel <u>B</u> ack	<u>F</u> inish <u>H</u> elp

LSI

18 Stop the Storage Manager Agent with the following commands:

```
/etc/init.d/vivaldiframeworkd stop
chkconfig vivaldiframeworkd off
echo2>/proc/sys/vm/overcommit_memory
```

IMPORTANT! If the SMagent service exists, you will need to stop it by running the following commands:

```
/etc/init.d/SMagent stop
chkconfig SMagent off
```

19 Find the volume number of the drive that failed (using the script /opt/pang/bin/fdish.sh)

for example:

```
ce-1:/opt/pang/bin # cd /opt/pang/bin/
ce-1:/opt/pang/bin # ./fdisk.sh
PeerApp,0001,U /dev/sdb1
PeerApp,0002,U /dev/sdc1
PeerApp,0005,U /dev/sde1
PeerApp,0006,U /dev/sdf1
PeerApp,0006,U /dev/sdg1
PeerApp,0007,U /dev/sdg1
PeerApp,0008,U /dev/sdi1
PeerApp,0009,U /dev/sdj1
PeerApp,0010,U /dev/sdk1
```

In the example the missing volume is volume #3 because PeerApp,0003,U is missing.

20 The new device should be seen on the Linux as follows:

[192.168.0.90]:root@ce-1:~> fdisk -l

Disk /dev/sdb: 119.4 GB, 119453777920 bytes 255 heads, 63 sectors/track, 14522 cylinders Units = cylinders of 16065 * 512 = 8225280 bytes

Disk identifier: 0x0000000

Device Boot	Start	End	Blocks Id System
/dev/sdb1	1	1 8	8001 83 Linux
/dev/sdb2	2	2050 1	6458592+ 83 Linux
/dev/sdb3	2051	2573	4200997+ 83 Linux
/dev/sdb4	2574	14522	95980342+ 83 Linux

Disk /dev/sdc: 299.4 GB, 299439751168 bytes 255 heads, 63 sectors/track, 36404 cylinders Units = cylinders of 16065 * 512 = 8225280 bytes Disk identifier: 0x96c1d735

Device Boot	Start	Enc	i Bloc	ks Io	d System
/dev/sdc1	1	1	8001 8	3 Lii	nux
/dev/sdc2	2	2091	1678792	25 83	3 Linux
/dev/sdc3	2092	4181	16787	925	83 Linux
/dev/sdc4		4	182		36404

258831247+83 Linux

Disk /dev/sda: 146.1 GB, 146163105792 bytes 255 heads, 63 sectors/track, 17769 cylinders Units = cylinders of 16065 * 512 = 8225280 bytes Disk identifier: 0x00045b2d

Device Boot	Start	End	Blocks Id	l System
/dev/sda1	1	262 2	104483+ 82	Linux swap / Solaris
/dev/sda2 *	263	5483	41937682+	83 Linux
/dev/sda3	5484	10051	36692460	83 Linux
/dev/sda4	10052	17769	61994835	83 Linux

(Single Volume)

Disk /dev/sdd: 299.4 GB, 299439751168 bytes 255 heads, 63 sectors/track, 36404 cylinders Units = cylinders of 16065 * 512 = 8225280 bytes Disk identifier: 0x0000000 Disk /dev/sdd doesn't contain a valid partition table

21 Format the volume using the "single volume" option with the correct device name and the volume number needed:

ce-1:/opt/pang/useful # ./format_disks.sh -format_one /dev/sdd 3 format_disks.sh: 4.4 finished, see /opt/pang/useful/installog.txt for details

22 You should now be able to see the new formatted volume:

[192.168.0.90]:root@ce-1:/opt/pang/useful> ./bin/fdisk.sh PeerApp,0001,U /dev/sdb1 PeerApp,0002,U /dev/sdc1 PeerApp,0003,U /dev/sdd1

23 Run the following command to remove the old volume from the PANG volume table:

Note: The last number is the volume id

[192.168.0.90]:root@ce-1:/opt/pang/bin> ./cmdbutils_rt -I lo -e 3 getopt returned c=I optarg= lo

```
getopt returned c=e optarg= 3
14549 pang
spread_interface lo is in ip 127.0.0.1
connect to spread name 4803@127.0.0.1, with private group #cmdb_rt#ce-1
DEBUGG: m_system_update->init() rv=0
delete_volume
delete Volume 3
Deleting Volume 3
```

Bye.

24 Now for the fun part. Run this command to insert the new volume to the PANG volume table:

Note: The last number is the volume id.

```
[192.168.0.90]:root@ce-1:/opt/pang/bin> ./cmdbutils_rt -I lo -b 3
getopt returned c=I optarg= lo
getopt returned c=b optarg= 3
15408 pang
spread_interface lo is in ip 127.0.0.1
connect to spread name 4803@127.0.0.1, with private group #cmdb_rt#ce-1
DEBUGG: m_system_update->init() rv=0
insert_volume
insert Volume 3
Bye.
```

25 Completed! You can see that the volume exists and is available on the CLI as mounted:

console# show	volumes	
Licensed volun	nes : 15	
Volume name	State	Owner
/mnt/vol1	mounted	ce-1
/mnt/vol2	mounted	ce-1
/mnt/vol3	mounted	ce-1

Note: You can see the attached pang.log file to understand the mounting procedure. You can use it to check the log if you need to verify your results.

Chapter 9: UltraBand Clear Caching Content

Overview

The following chapter details the procedure for clearing all cache content in a system.

IMPORTANT! *The following procedure entails formatting the storage and deleting the database.*

Grid

Clearing the Cache Content for a Grid platform:

- **1** Stop the UltraBand service using the following:
 - a From the CLI, Stop the service using the command "oper service stop".
 - **b** From the CLI, make sure the service is stopped using the command "show status".
- 2 From the *Management*, login as a root user and run the Configure Storages Script using the commands:

cd /opt/pang/useful/configure_storages/

/configure_storages.py -s <the number of the storages in the system> -b <the number of the CEs in the system> For example, for a system with 8 cache engines and 3 storages:

./configure storages.py -s 3 -b 8

A warning message about the disk format will be shown, to continue the storages configuration enter y.

```
********** WARNING! *********
The selected storage is about to be reconfigured. All data on that storage
will be lost. You'll need to format disks manually.
Do you want to continue? (y/n) y
```

Wait until the configure_storages.py script is completed

3 Using the CLI, start the service using the "oper service start" command.

Standalone

Clearing the Cache Content for a Standalone platform:

1 Stop the UltraBand service using the following:

- a From the CLI, Stop the service using the command "oper service stop".
- **b** From the CLI, make sure the service is stopped using the command "show status".
- **2** Login as a root user
- **3** Run the Format Disk script using the commands:

cd /opt/pang/useful/ ./format disks.sh -format all

Wait until the format_disks.sh is completed

4 Run the Format SSD script using the commands:

cd /opt/pang/bin/ ./ssd_auto_install.sh -f

Wait until the ssd_auto_install.sh script is completed

5 Using the CLI, start the service using the "oper service start" command.

Chapter 10: Upgrade Procedure from 5.6 to 5.7 for UB5000

The following procedure is intended for upgrading version 5.6 to version 5.7 for UB5000.

IMPORTANT! If you are using a version lower than 5.6, you must first upgrade the system to 5.6 before upgrading to 5.7.

Prerequisites

- 1 Make sure the previous software version file still exists on /tftpboot in case of Rollback requirement.
- **2** Optionally, it's recommended to disable the traffic redirection towards the UltraBand system. However, the UltraBand solution capable to forward the live traffic without affecting it, using the bypass mechanism. The bypass mechanism takes an effect immediately when the caching service is stopped

Upgrading the UltraBand Software

To Upgrade the UltraBand Software:

- **1** Upgrade the system to version 5.7 by running the following CLI commands:
 - Grid: upgrade all 127.0.0.1 filename".
 - Standalone: upgrade 127.0.0.1 filename".

Note: The filename is the ".tar.gz" upgrade package.

The output pattern for the Grid upgrade should resemble the following:

console# upgrade all 127.0.0.1 PeerApp_GA_5.7.0b114_grid.tar.gz

Log file: /var/log/peerapp/GA_installer_14-10-20-09.59.20.log

Checking for network connectivity... Contacting ce-2 machine ... Ok Contacting ce-1 machine ... Ok

Testing for a need to backup existing configuration...

Detected major version upgrade (to 5.7) Upgrading to version 5.7 requires a new license file to be activated on the platform once the upgrade process is over. Without this 5.7 license file, the platform will NOT start. If you do not have a new license file for version 5.7 - please do not proceed with the upgrade !! Do you want to proceed with the upgrade [Y/N]Y? Are you sure? [Y/N]Y Please provide license file location information (on an accessible TFTP server): TFTP server address: 127.0.0.1 Path to 5.7 license file: PALicense-5.7.xml File found, validating ... Valid 5.7 license found, proceeding with this upgrade... Checking free space for upgrade.. Ok Checking enough available space on /var for upgrade.. Ok Install management software might disconnect current session and require reconnect. Continue installation of management software? [Y/n]y Will install snmp management Checking for valid chassis id ... Chassis id test passed ok Installing SPREAD environment Installing SPREAD files Installing SNMP agent (+PeerApp subagent) Upgrade net-snmp packages Preparing packages for installation... libsensors4-3.0.3-3.6 python-tk-2.6.0-2.19 snmp-mibs-5.7.2-9.1.2 libsnmp30-5.7.2-9.1.2 OpenIPMI-2.0.16-7.1 Updating etc/sysconfig/ipmi... perl-SNMP-5.7.2-9.1.2 net-snmp-5.7.2-9.1.2 Updating etc/sysconfig/net-snmp... Stopping any running daemons .. Installing SNMP agent in /etc/inittab Installing SNMP trap daemon in /etc/inittab Installing smartfilter crontab... starting bpctl Installing dnsmasq (replacing nscd for dns only) Starting name service masq caching server - Warning: dnsmasq already running! ..done Failed installing analyzer files ... Installing monitoring daemon in crontab Installing Serial Over Lan *** Serial Over Lan cannot be autoconfigured on this platform. Make sure it's configured correctly. *** Starting SOL .. done Upgrade existing web installation ... Web installation finished successfully installing policy manager Backing up PolicyManager ver. 5.7.0.37 database... Installing tacacs support Succeeded Starting upgrade on ce-2.. Checking for valid chassis id ... Chassis id test passed ok

Stopping watchdog daemons ..

Done ...

Stopping running daemons .. Installing SPREAD environment Installing SPREAD files Installing SNMP agent (+PeerApp subagent) Stopping any running daemons . Installing SNMP agent in /etc/inittab starting bpctl Installing Storage Monitor Cannot find last driver! Upgrading caching engine Backing up existing configuration Done Installing File system Snapshot at Boot Shutting down irqbalance .. done Cannot update snmp links! Installing watchdogs ... Done ...

Succeeded

Starting upgrade on ce-1.. Checking for valid chassis id ... Chassis id test passed ok

Stopping watchdog daemons .. Done ... Stopping running daemons .. Installing SPREAD environment Installing SPREAD files Installing SNMP agent (+PeerApp subagent) Stopping any running daemons .. Installing SNMP agent in /etc/inittab starting bpctl Installing Storage Monitor Cannot find last driver! Upgrading caching engine ... Backing up existing configuration Done Installing File system Snapshot at Boot Shutting down irqbalance .. done Cannot update snmp links! Installing watchdogs ... Done ...

Succeeded

Starting database and configuration backup , please hold on... All done Please remember to import and activate the 5.7 license before starting service. console#

The output pattern for the Standalone upgrade should resemble the following:

console# upgrade 127.0.0.1 PeerApp_GA_5.7.0b113_standalone.tar.gz

Log file: /var/log/peerapp/GA_installer_14-10-20-08.35.55.log Testing for a need to backup existing configuration... Detected major version upgrade (to 5.7) Upgrading to version 5.7 requires a new license file to be activated on the platform once the upgrade process is over. Without this 5.7 license file, the platform will NOT start. If you do not have a new license file for version 5.7 - please do not proceed with the upgrade !! Do you want to proceed with the upgrade [Y/N]Y? Are you sure? [Y/N]Y Please provide license file location information (on an accessible TFTP server): TFTP server address: 127.0.0.1 Path to 5.7 license file: PALicense.xml File found, validating ... Valid 5.7 license found, proceeding with this upgrade... Checking free space for upgrade.. Ok Checking enough available space on /var for upgrade.. Ok Starting system installation Starting software installation ... Doing pre-installation sanity tests Storage consistency OK Done Installing SPREAD environment Installing SPREAD files Shutting down CRON daemon..done Starting CRON daemon..done Installing SNMP agent (+PeerApp subagent) Upgrade net-snmp packages Preparing packages for installation... libsensors4-3.0.3-3.6 python-tk-2.6.0-2.19 snmp-mibs-5.7.2-9.1.2 libsnmp30-5.7.2-9.1.2 OpenIPMI-2.0.16-7.1 Updating etc/sysconfig/ipmi... perl-SNMP-5.7.2-9.1.2 net-snmp-5.7.2-9.1.2 Updating etc/sysconfig/net-snmp... Backing up old logs Stopping any running daemons .. Installing SNMP agent in /etc/inittab Installing SNMP trap daemon in /etc/inittab Installing smartfilter crontab... Installing monitoring daemon in crontab Installing dnsmasq (replacing nscd for dns only) Starting name service masq caching server - Warning: dnsmasq already running! ..done Installing Analyzer Backing up analyzer configuration ... Failed installing analyzer files ...

Upgrade existing web installation ...

Web installation finished successfully installing policy manager Backing up PolicyManager ver. 5.7.0.37 database... Installing tacacs support Succeeded Starting upgrade... Starting database and configuration backup , please hold on... All done Starting software installation... Doing pre-installation sanity tests

Storage consistency OK Done Stopping watchdog daemons .. Installing SPREAD environment Installing SPREAD files Shutting down CRON daemon..done Starting CRON daemon..done

Installing SNMP agent (+PeerApp subagent) Backing up old logs Stopping any running daemons .. Installing SNMP agent in /etc/inittab Installing monitoring daemon in crontab Installing standalone caching engine... Upgrading caching engine ... Installing Storage Monitor starting boctl insmod /lib/modules/2.6.27.19-llpf_10-5-default/kernel/drivers/net/bpctl_mod.ko Done Installing File system Snapshot at Boot Shutting down irqbalance ..done Shutting down CRON daemon..done Starting CRON daemon..done

Succeeded

enable patrol on raid controllers Please remember to import and activate the 5.7 license before starting service.

Post upgrade

1 Verify that the version was installed properly by using the command "show version".

Note: The user must login again to access the CLI prompt.

2 Import and activate the 5.7 license using the following CLI commands:

```
license import 127.0.0.1 ***.xml
```

license activate

- **3** From the enable mode, start PANG by using the "oper service start" command.
- 4 Enable the traffic redirection (if it was disabled before the upgrade).

The upgrade procedure is completed.

IMPORTANT! Only if the upgrade fails, use <u>The Rollback Procedure from 5.7 to 5.6 for</u>. <u>UB5000</u>.

Chapter 11: The Rollback Procedure from 5.7 to 5.6 for UB5000

IMPORTANT! This chapter is **Only** used in case that the upgrade procedure from 5.6 to 5.7 for UB5000 fails.

The UltraBand Rollback Procedure:

1 From the Management Server, run:

/opt/pang/mgmt/config/downgrade_proc.sh

Note: If the rollback failed with the following message:

```
"Not found suitable backup files, cannot restore version 5.6
on this system. Please refer to the manual downgrade proce-
dure or contact support." Stop the UltraBand Rollback Procedure and See
chapter 12 to perform the manual rollback from 5.7 to 5.6.
```

- **2** Upgrade the system to the version 5.6, by running either of the following CLI commands:
 - Grid: upgrade all 127.0.0.1 filename".
 - Standalone: upgrade 127.0.0.1 filename".

Note: The filename is the ".tar.gz" upgrade package.

- **3** Verify the version is installed properly using the command "show version". You must be logged in to access the CLI prompt for this action.
- 4 From the enable mode, start PANG by using the "oper service start" command.
- **5** Enable the traffic redirection (if it was disabled before the procedure).

Chapter 12: Manual UltraBand Rollback Procedure from 5.7 to 5.6 for UB5000

IMPORTANT! Use the following procedure **only** if the UltraBand Rollback Procedure has failed with the message, "*Not found suitable backup files, cannot restore version 5.6 on this system. Please refer to the manual downgrade procedure or contact support*".

IMPORTANT! Running the Manual Rollback Procedure will remove all existing cache data storage and version 5.7 cmbd (the storage will be formatted).

How to Manually Rollback the UltraBand from 5.7 to 5.6:

- **1** Stop the UltraBand service by running:
 - oper service stop
- **2** Login to management server as root.
- 3 Clean up storage and local disks from any 5.7 cmdb copies, using the following commands:

Standalone Server:

/opt/pang/mgmt/config/wipe_old_database.sh

Grid:

- ∎su install
- scp /opt/pang/mgmt/config/wipe_old_database.sh admin@ce-1:~
- ■ssh -l admin ce-1 'sudo ~/wipe old database.sh'
- ∎ exit
- **4** Format the storage, using the following command:

Standalone server:

- /opt/pang/useful/format_disks.sh -format_all
- /opt/pang/bin/ssd_auto_install.sh -f

Grid:

- cd /opt/pang/useful/configure_storages
- ./configure_storages.py -s <the number of the storages in the system> -b <the number of the CEs in the system>
- For example, for a system with 8 cache engines and 3 storages:
- ./configure_storages.py -s 3 -b 8
A warning message about the disk format will be shown, to continue the storages configuration enter y.

```
********* WARNING! ********
The selected storage is about to be reconfigured. All data on that storage
will be lost. You'll need to format disks manually.
Do you want to continue? (y/n) y
```

- **5** Restore previous configurations, using the following commands:
 - cd /opt/5.6_backup
 - cp -vf *.xml *.xsd *.xsl *.conf /opt/pang/mgmt/config
 &>/dev/null

Note: Please pay attention: any changes done to the cluster configuration during a period when 5.7 was installed - **will be lost**.

- 6 Uninstall *dnsmasq* and replace it with *nscd*, using the following commands:
 - service dnsmasq stop &> /dev/null
 - ■/sbin/chkconfig dnsmasq off &> /dev/null
 - cat /etc/dnsmasq.conf|grep "^server=" |sed 's/server=/nameserver /g' > /etc/resolv.conf
 - rpm -e dnsmasq &> /dev/null
 - sed -i 's/^#nsc/nsc/' /etc/inittab
 - ∎init q
 - ■/sbin/chkconfig nscd on &>/dev/null
- 7 Rename the backup directory, using the following command:
 - cp -r /opt/5.6_backup /opt/5.6_backup.bak &>/dev/null
- 8 Upgrade the system to the version 5.6, by running either of the following CLI commands:
 - Grid: upgrade all 127.0.0.1 filename".
 - Standalone: upgrade 127.0.0.1 filename".

Note: The filename is the ".tar.gz" upgrade package.

- **9** Verify the version is installed properly using the command "show version". You must be logged in to access the CLI prompt for this action.
- **10** From the enable mode, start PANG by using the "oper service start" command.
- **11** Enable the traffic redirection (if it was disabled before the procedure).

Chapter 13: UBWeb Installation

The UBWeb is an additional tool integral to the UBView which was developed by PeerApp. The UBWeb is a web monitoring application for both Standalone and Grid configurations. The UBWeb uses graphs and statistics to help you monitor the UltraBand HTTP and P2P caching performance.

UBWeb provides an immediate presentation of the system overall operational performance, logical and cache statuses, and information regarding browsing, speed, time and activity.

Prerequisites

Pre-Installation Verification

In order for the UBWeb to be properly installed, the user must verify that the system contains the following:

- 1 A minimum of 24 GB RAM for each cache engine (including standalone).
- 2 Installing the required SSD drives compatible to the UltraBand product model.
- **3** A request for a new license file for the specific platform which includes the UBWeb.

Make sure the expected amount of cache out is not limited by the cache out license.

Installation

Note: Using Standalone and Grid-Ready platform, Management and Cache Engine refer to the same server.

IMPORTANT! For Grid, repeat the following procedure on each Cache Engine.

Installing the LSI Storage Manager on the Cache Engine:

Note: Download the LSI Storage Manager from: <u>http://www.lsi.com/support</u>. First use the *WinSCP* to copy the utility file to the Management server, and then copy the file to the Cache Engine using the SCP command. On the server installed with ISO 5.7, the utility is located in /opt/pang/utilities/CE/RAID.

- 1 From the Cache Engine, login as root.
- **2** Install the LSI Storage Manager by using the following commands:
 - tar -zxvf 13.04.03.01_Linux\(x64\)_MSM.tar.gz
 - cd disk

- find . -name "*snmp*" -exec rm -v {} \;
- ./install.csh
- **3** From the *License Agreement*,
 - Read the *License Agreement*
 - Press Y to continue



- 4 From the Setup Menu,
 - Choose 4 (Setup Type)

Wait for the installation to complete.

Press 0 to exit	from installation
Choose[1-5]:	
(1)	- Complete This option will install all program features.
(2)	 Client This option will only install components required to remotely view and configure servers.
(3)	- StandAlone This option will only install components required for local server management
(4)	- Local This option will only install components required for local configuration
(5)	- Server This option will only install components required for resola server management
Note · Installer	and so he run in a command line mode
Usage : install.	sh [aption]
The options are	: .
a	
	The Complete Installation of MegaRAID Storage Manager (MSM)
c	
	The Client components only program of MSM
3	
7	The StandAlone component of MSM
1	
1	The Local component of MSM
d	
	The Sever component of MSM
Setup Type :4	

- **5** Start the Storage Manager Agent with the following commands:
 - echo 1 > /proc/sys/vm/overcommit memory
 - /etc/init.d/vivaldiframeworkd start

Starting a VNC

1 From the Management Server,

Start the VNCServer using the commands:

rm /tmp/.X1-lock rm /tmp/.X11-unix/X1 vncserver :1

- **2** Using the VNC Viewer
- Connect to the server using the VNC Viewer

VNC Server:	192.168.0.234:1	
-	(host:display or host::port)	
uick Options		
🔿 AUTO (Au	to select best settings)	Connec
ULTRA (>2	Mbit/s) - Experimental	
OLAN (>	1Mbit/s) - Max Colors	Cancel
MEDIUM (128	- 256Kbit/s) - 256 Colors	A Constant & Constant
MODEM (19	- 128Kbit/s) - 64 Colors	
SLOW (<	19KKDI(/S) - 8 Colors	
MANUAL (US		Options.
View Only	Auto Scaling 🔄 Confirm Exit	
Use DSMPlugin	SecureVNCPlugin64.dsm	- Config
Proxy/Repeater	?:0	
1. 1920 x 1080 @	0,0 - 32-bit - 50 Hz	•

IMPORTANT! For the Grid platform, connect to the Cache Engine using ssh -X For example: ssh - X ce - 1

- **3** Start the Megaraid Storage Manager on the Cache Engine using the following commands:
 - cd /usr/local/MegaRAID\ Storage\ Manager/
 - ./startupui.sh



- 4 From the LSI Login page,
 - Login as root user.



5 After the SSD disk has been physically added, it is displayed in the Storage Manager "Physical" tab as "*Unconfigured Good*".

	TAD MINURUS 2 Day OF
FERC H	(TOP MINI(BUS 3, DEV 0)
P BP 12	UEAF (32)
9 P	IOT: 0, SSD (SALA), 186.311 GB, Unconfigured Good, (S12 B)
	lot: 1, SAS, 465.762 GB, Online, (512 B)
-\$5	ot: 2, SAS, 465.762 GB, Online, (512 B)
- 🗢 S	ot: 3, SAS, 465.762 GB, Online,(512 B)
- 🗢 S	ot: 4, SAS, 465.762 GB, Online,(512 B)
-@\$	iot: 5, SAS, 465.762 GB, Online,(512 B)
- 🗢 S	iot: 6, SAS, 465.762 GB, Online,(512 B)
- 🗢 S	iot: 7, SAS, 465.762 GB, Online,(512 B)
- @ S	iot: 8, SAS, 465.762 GB, Online,(512 B)
-95	lot: 9, SAS, 465.762 GB, Online,(512 B)
-@s	lot: 10, SAS, 465.762 GB, Online,(512 B)
-@\$	lot: 24, SAS, 279.397 GB, Online, (512 B)
-05	lot: 25, SAS, 279.397 GB, Online, (512 B)
E C RE	

6 Create the LUN by right-clicking on the raid controller and choose Create Virtual Drive.

PERC H/ IOP MINI(BUS 3,1	Create Virtual Drive
Slot: 0. SSD (SATA	Create CacheCade™ - SSD Caching
- Slot: 1, SAS, 465.7	Start <u>P</u> atrol Read
- 🗢 Slot: 2, SAS, 465.7	Set Patrol Read Properties
- Slot: 3, SAS, 465.7	Enable SSD <u>G</u> uard
- Slot: 5, SAS, 465.	Scan Foreign Configuration
- Slot: 6, SAS, 465.7	Load Configuration
- 🗢 Slot: 7, SAS, 465.7	Save Configuration
- Slot: 8, SAS, 465.7	Clear Configuration
- Slot: 9, SAS, 465.	Set Consistency Check Properties
- Slot: 24, SAS, 279	Set Adjustable Task Rates
- Slot: 25, SAS, 279	Preserved Cache
BBU:	Manage Power Save Settings
	Enable Drive Security
	Update Controller Firmware
	Save TTV Log

Notes: If the Create Virtual Drive option is not available, use the following steps:

- Right-click the raid controller and choose Scan Foreign Configuration and clear it.
- Right-click on the raid controller and choose **Preserved Cache** and clean it (follow the instructions on the screen).
- Check if there are any unnecessary processes running (if there is -cancel it).
- 7 From the LSI screen,
 - Choose Advanced
- **8** From the LSI Raid screen,
 - Select Raid Level Raid 0
 - Select the Unconfigured Drive and click Add

0		Create Drive Group - Drive Gro	oup Settings	◆ ×
				LSI
Create the drive group by RAID level:	specifying the RA	ID level and Drive securit	ty method.	
RAID 0	T MIDO	This RAID level is suita	ble for high performance with z	oto at data
Drive security method:	~	Drive security will mak	e the virtual drive secure by app	lying encryption logic t
		underlying data in the i	Orive.	
Drive	Type Capacity	(and the second s	PERC H710P Mini(Bus 3,De	v 0)
Sectors BP12GE	SSD (S 186	<u>A</u> dd >	- Image: Drive Group11	
		Add H <u>o</u> t Spare >		
•	•	< Remo <u>v</u> e		
			<u>C</u> reate Drive Group	Create <u>Span</u>
			Cancel Back	Next Help
			and and a second second	ALC: P

9 From the LSI screen,

■ Click Create Drive Group

■ Click Next

•		Create Drive Group - Drive G	roup Settings 🔶 🛧 🗙
			LSI 🎇
Create the drive group RAID level:	by specifying the RAI	D level and Drive secur	ity method.
RAID 0		This RAID level is suit	able for high performance with zero
Drive security method:		uata redundanty.cnoo	se this option only for non-critical data.
Select	*	Drive security will mal	ke the virtual drive secure by applying encryption logic t drive
Select unconfigured d	rives: Type Capacity	<u>A</u> dd >	Drive groups: PERC H710P Mini(Bus 3,Dev 0) Prive Group11
		Add H <u>o</u> t Spare >	Enclosure: BP12GEXP (32), Slot:
• n		< Remo <u>v</u> e	
			<u>Create Drive Group</u> Create Span
			Cancel Back Next Help

10 From the Parameters Configuration screen,

- Configure the parameters **EXACTLY** as specified below: (Except for the fields: "*Virtual Drive Name*" and "*Capacity*")
- Click Create Virtual Drive

•	Greate Vittual Drive	• Virtual drive settings 🔶
		LSI
Specify parameters	for the new virtual drive.	Drive groups:
Virtual drive name:	VD_11	PERC H710P Mini(Bus 3, Dev 0) Drive Group11: RAID 0: Available Capacity: 185.
Capacit <u>y</u> :	185.75 - Units: GB 💌	
Initialization state:	Fast Initialization 👻	
Strip si <u>z</u> e:	64 KB 👻	
Read policy:	No Read Ahead 👻	
Write policy:	Write Through 🗾 💌	
I/O policy:	Direct 10 🔻	
Access policy:	Read Write 🔻	
Disk cache policy:	Enabled 💌	I III III III III IIII IIII IIII IIII
<u>U</u> pdate Virtual D	rive <u>Create Virtual Drive</u>	<u>R</u> emove Virtual Drive
		Cancel <u>B</u> ack <u>N</u> ext <u>H</u> elp

- **11** From the Write Through Selected screen,
 - Click Yes

Click Next



12 From the LSI Main screen,

■ Click Finish

•	Create Virtual Drive - Summary	↑ ×
		LSI
Review the summary and go bac Summary:	k if you need to make corrections. The virtual drive(s) will b	e created when you click finish
Drive group name: RAID level: Number of drives used: Drive security method: Total capacity: Free capacity: Virtual drive 1 name: Capacity:	Drive Group11 RAID 0 1 No Encryption 185.750 GB 0 Bytes VD_11 185.750 GB	
1	II.	•
	Cancel	Back Finish Help

13 Stop the Storage Manager Agent with the following commands:

- /etc/init.d/vivaldiframeworkd stop
- chkconfig vivaldiframeworkd off
- echo 2 > /proc/sys/vm/overcommit_memory
- **14** Format the SSD device using the command:
 - /opt/pang/bin/ssd_auto_install.sh -f
- **15** Verify using the following command: /opt/pang/bin/fdisk.sh:

The following, *PeerSSD*,024x,u is displayed below:

ce-1:~ # /opt/p	ang/bin/fdisk.sh
PeerApp,0001,U	/dev/sdb1
PeerApp,0002,U	/dev/sdc1
PeerApp,0003,U	/dev/sdd1
PeerApp,0004,U	/dev/sde1
PeerApp,0005,U	/dev/sdf1
PeerApp,0006,U	/dev/sdg1
PeerApp,0007,U	/dev/sdh1
PeerApp,0008,U	/dev/sdi1
PeerApp,0009,U	/dev/sdj1
PeerApp,0010,U	/dev/sdk1
PeerSSD,0241,U	/dev/sdl1



Post Installation

1 From the management, verify the cluster_conf.xml that *enable-web-cache* (protocol) is enabled. The value must be 1 (displayed below)

Cluster_conf.xml:

```
<protocols>
<enable-bittorent>0</enable-bittorent>
enable-edk>1</enable-edk>
<enable-http>1</enable-http>
<enable-ares>1</enable-ares>
<enable-smartfilter>1</enable-smartfilter>
<enable-web-cache>1</enable-smartfilter>
<enable_cache_out_port>1</enable_cache_out_port>
</protocols>
```

If the value is 0

OR

There is no enable-web-cache at the protocols,

- Edit the cluster_conf.xml and insert the changes,
- Import and apply the new configuration via CLI
- 2 Import and activate the new License via CLI
- **3** Restart the service via CLI using the commands:
 - oper service stop
 - oper service start

Chapter 14: Upgrade Procedure to 5.7 for UB6000 and above

The following procedure is intended for checking the Firmware versions and upgrading both, the Operation System and UltraBand Software to version 5.7.

IMPORTANT! If you are using a version lower than 5.6, you must first upgrade the system to 5.6 before upgrading to 5.7.

Note: In order to update the Firmware, make sure that you have the Dell Server Update Utility version:14.12.200.69 before starting the procedure. The Utility can be found at http://www.dell.com/support/home/us/en/19/Drivers/DriversDetails?driverId=9CXFR

The process includes the following:

- Checking the Firmware version
- Operation System Upgrade
- Software Upgrade

IMPORTANT! There is no rollback to the old Firmware, Operation System or Software.

Pre-Requisites

It's recommended to disable the traffic redirection towards the UltraBand system.

IMPORTANT! An important thing to remember is that the UltraBand solution is capable to forward the live traffic without affecting it by using the bypass mechanism. The bypass mechanism is automatic when the cache service is stopped.

Note: In order to save backup time and space in the upgrade process, it is recommended to remove irrelevant files from the /tftpboot directory.

- 1 Check that the grid has stopped.
- **2** Check that you have a valid license.

Upgrading the Firmwares, OS and UltraBand Software

Downloading the Files:

1 Download to the /tmp directory the following files:

Installer-ISO-5.7.0bx-Application-5.7.0by.iso Installer-ISO-5.7.0bx-Application-5.7.0by.iso.md5 prepare_iso.sh

2 Prepare for installation by executing:

```
cd /tmp
./prepare_iso.sh Installer-ISO-5.7.0bx-Application-5.7.0by.iso Installer-ISO-5.7.0bx-Application-
5.7.0by.iso.md5
```

3 In order to survive network disconnect, run the command:

screen

Note: During the installation process, if the SSH session disconnects, reconnect to the server via SSH and run the command:

screen -x

4 Load the Upgrade Tool by running the command:

/opt/iso_upgrade/install-tools/upgrade.py

Grid Upgrade:

The following menu options are displayed:



- Firmwares-Checks-Grid: Checks the firmware version.
- Management-ISO-Upgrade: Upgrades the Operation System for the Management server.
- Cache-Engines-ISO-Upgrade: Upgrades the Operation System for the Cache Engines servers.

- Ultraband-Software-Upgrade: Upgrades the software.
- Show Installed Versions: Determines the Grid system status.
- **1** To start the upgrade process, enter 1

The Upgrade tool starts by checking and confirming the Firmware versions. If the Firmwares are not up-to-date, a message is displayed informing, that you should upgrade firmwares before continuing.

Note: If your Firmware needs to be updated, upgrade the Firmware using SUU 14.12.200.69. If there are any questions, please contact Customer Support.

2 After the Firmware is confirmed, enter 2 for the Management-ISO-Upgrade.

The management server reboots itself to perform the upgrade. In order to confirm the network connectivity you must ping the management server. When the system is back Online, login to the system using ssh, run the screen command and load the Upgrade Tool using the following command:

/opt/iso_upgrade/install-tools/upgrade.py When the 2nd step is completed, the menu is displayed again,

3 Continue by entering 3, to upgrade all Cache Engines.

The upgrade.py waits for all Cache-engine to go back online.

4 Enter 4 to run the UltraBand-Software-Upgrade.

Note: If you do not have a valid license, after the upgrade is completed, the grid will not work.

5 Enter 5 and run the *Show Installed Versions*, confirm that the output is equivalent to the version you just installed.

Standalone/Grid-Ready Upgrade:

<pre>ce-1:/opt/iso_upgrade/install-tools # ./upgrade.py WARNING: This program should run under 'screen manager', to survive network disconnection</pre>	
Select phase to run: 1) Firmwares-Checks-Single : Didn't Run 2) Single-Server-ISO-Upgrade : Didn't Run 3) Ultraband-Software-Upgrade: Didn't Run 4) Show Installed Versions : Didn't Run X) to delete persistent data if upgrade was already performed of this system 0) to quit	
Enter phase to upgrade:	

The following menu options are displayed:

Firmwares-Checks-Grid: Checks the firmware version.

Note: If your Firmware needs to be upgraded, please contact Customer Support.

- Single-Server-ISO-Upgrade: Upgrades the Operation System.
- Ultraband-Software-Upgrade: Upgrades the software.

- **Show Installed Versions:** Determines the system status.
- **1** To start the upgrade process, enter 1

The Upgrade tool starts by checking and confirming the Firmware versions. If the firmwares are not up-to-date, a message is displayed informing, that you should upgrade firmwares before continuing.

2 After the Firmware is confirmed, enter 2 for the Single-Server-ISO-Upgrade.

The server reboots itself to perform the upgrade. In order to confirm the network connectivity you must ping the server. When the system is back Online, login to the system using ssh, run the screen command and load the Upgrade Tool using the following command:

/opt/iso_upgrade/install-tools/upgrade.py When the 2nd step is completed, the menu is displayed again,

3 Enter 3 to run the UltraBand-Software-Upgrade.

Note: If you do not have a valid license, after the upgrade is completed, the system will not work.

4 Enter 4 and run the *Show Installed Versions,* confirm that the output is equivalent to the version you just installed