APX for Configuring LVM and MPIO: User Guide

1.   Introduction

It is a common activity for server administrators to configure Volume Managers and MPIOs on various HP SA managed servers in customer data centers. In an Enterprise Data Center, typically there will be hundreds or thousands of servers managed by HP SA. The servers belong to various departments or customers. Accessing these servers requires an approval process from various departments and could take a long time. Once server administrators obtain access, they must manually configure MPIOs and Volume Managers on those servers, requiring further effort. To avoid these numerous problems, this release introduces an automation feature that automates the configuration of Volume Managers and MPIO on HP SA managed servers.

The feature is a WAPX (**W**eb **A**pplication **P**rogramming e**X**tension) based solution. It is designed in such a way that:

1. It provides a way to access the servers belonging to a customer in any datacenter from WAPX. Of course, this is subjected to HP SA user access privileges.

2. For a selected server, it provides the list of supported Volume Managers (lvm) software configured on the server.

3. When a particular Volume Manager is selected to configure, it provides a wizard driven UI and provides various operations to perform.

2.   Support

For the 7.85 release,

Volume Manager:

Only Linux Native Volume management (lvm) configuration is supported. **No 3rd party** Volume manager is supported

MPIO:

 MPIO configuration is **NOT** supported in 7.85.

3.   Prerequisites

This feature assumes the following:

- Customer has already installed and enabled the following on the server:
    - Supported Volume Managers
    - Supported MPIO
- The Server Storage Inventory snapshot is already running on the server.

4.   Settings

This section discusses settings for this feature.

Permissions

In order to enable Volume Manager and MPIO configuration, the following permissions must be granted for the user group from NGUI and OCC web.

- From NGUI, set Read/Execute permission to Opsware → Storage → Tools → Host Storage Configuration Folder

- In OGFS permissions, "**Run Command on Server"** feature must be granted to root

- For the Managed Server, a Server Storage Inventory snapshot specification must be run

5.   Volume Manager Configuration Wizard

Volume Manager and MPIO Configuration wizard can be accessed from

  SA Java Client → Library → Extensions →Web

Select *"Volume Manager and MPIO Configuration Wizard"* APX from right panel. Launch the Wizard by one of the following methods:

Option 1: Right click on this APX and click Run. OR

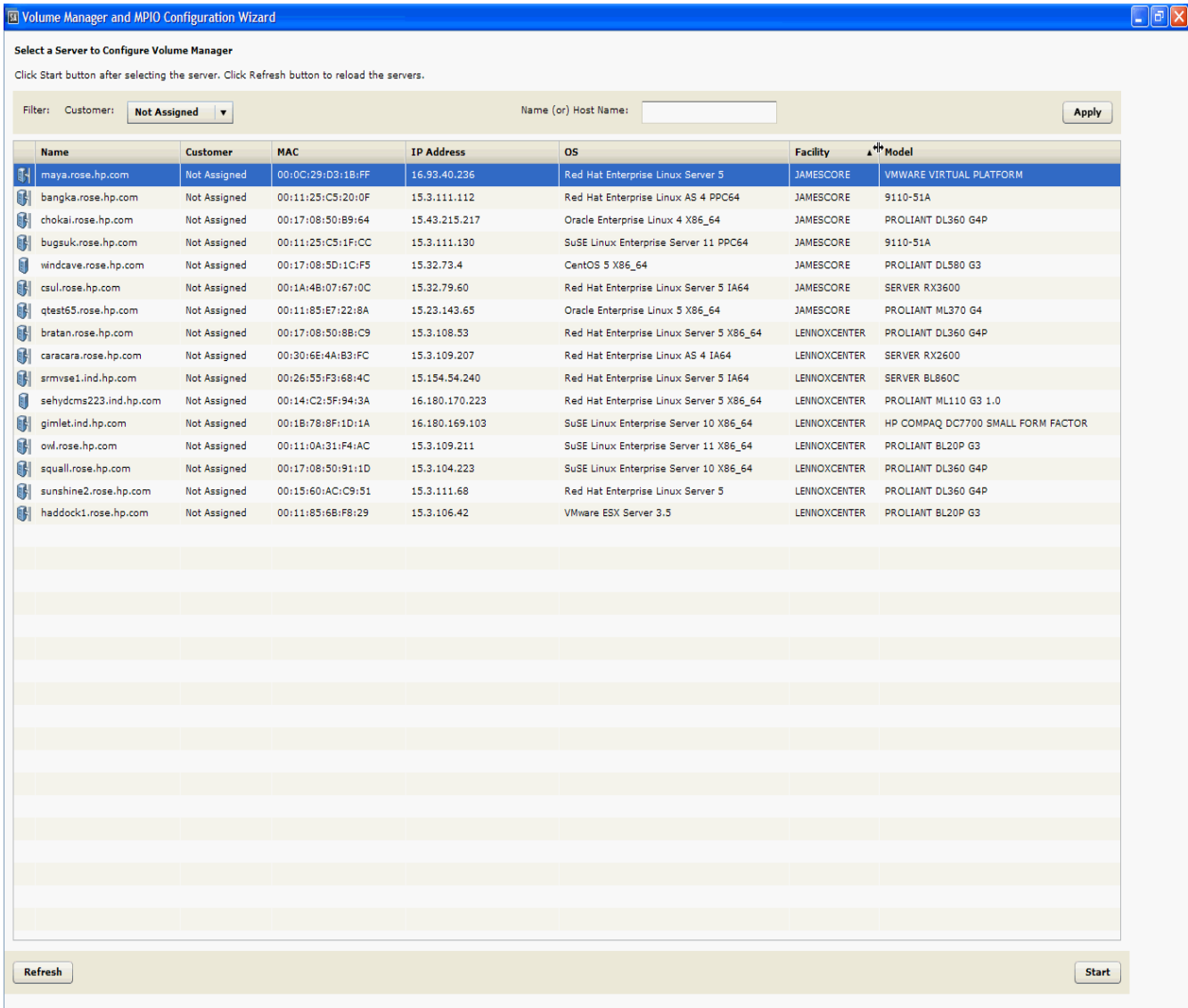*Option 2:* From lower right panel, select the URL and launch it in any of the supported   browsers

Volume Manager Configuration wizard gets launched

Select a Server to Configure Volume Manager

In "Select a Server to Configure Volume Manager" page, only the supported operating system Managed Servers will be listed.

Select the server for which Volume Manager needs to be configured and click Start.

Select a Server to Configure Volume Manager

Click Start button after selecting the server. Click Refresh button to reload the servers.

Filter: Customer: Not Assigned ▼   Name (or) Host Name: [   ]   Apply

Name	Customer	MAC	IP Address	OS	Facility	Model
maya.rose.hp.com	Not Assigned	00:0C:29:D3:1B:FF	16.93.40.236	Red Hat Enterprise Linux Server 5	JAMESCORE	VMWARE VIRTUAL PLATFORM
bangka.rose.hp.com	Not Assigned	00:11:25:C5:20:0F	15.3.111.112	Red Hat Enterprise Linux AS 4 PPC64	JAMESCORE	9110-51A
chokai.rose.hp.com	Not Assigned	00:17:08:50:B9:64	15.43.215.217	Oracle Enterprise Linux 4 X86_64	JAMESCORE	PROLIANT DL360 G4P
bugsuk.rose.hp.com	Not Assigned	00:11:25:C5:1F:CC	15.3.111.130	SuSE Linux Enterprise Server 11 PPC64	JAMESCORE	9110-51A
windcave.rose.hp.com	Not Assigned	00:17:08:5D:1C:F5	15.32.73.4	CentOS 5 X86_64	JAMESCORE	PROLIANT DL580 G3
csul.rose.hp.com	Not Assigned	00:1A:4B:07:67:0C	15.32.79.60	Red Hat Enterprise Linux Server 5 IA64	JAMESCORE	SERVER RX3600
qtest65.rose.hp.com	Not Assigned	00:11:85:E7:22:8A	15.23.143.65	Oracle Enterprise Linux 5 X86_64	JAMESCORE	PROLIANT ML370 G4
bratan.rose.hp.com	Not Assigned	00:17:08:50:8B:C9	15.3.108.53	Red Hat Enterprise Linux Server 5 X86_64	LENNOXCENTER	PROLIANT DL360 G4P
caracara.rose.hp.com	Not Assigned	00:30:6E:4A:B3:FC	15.3.109.207	Red Hat Enterprise Linux AS 4 IA64	LENNOXCENTER	SERVER RX2600
srmvse1.ind.hp.com	Not Assigned	00:26:55:F3:68:4C	15.154.54.240	Red Hat Enterprise Linux Server 5 IA64	LENNOXCENTER	SERVER BL860C
sehydcms223.ind.hp.com	Not Assigned	00:14:C2:5F:94:3A	16.180.170.223	Red Hat Enterprise Linux Server 5 X86_64	LENNOXCENTER	PROLIANT ML110 G3 1.0
gimlet.ind.hp.com	Not Assigned	00:1B:78:8F:1D:1A	16.180.169.103	SuSE Linux Enterprise Server 10 X86_64	LENNOXCENTER	HP COMPAQ DC7700 SMALL FORM FACTOR
owl.rose.hp.com	Not Assigned	00:11:0A:31:F4:AC	15.3.109.211	SuSE Linux Enterprise Server 11 X86_64	LENNOXCENTER	PROLIANT BL20P G3
squall.rose.hp.com	Not Assigned	00:17:08:50:91:1D	15.3.104.223	SuSE Linux Enterprise Server 10 X86_64	LENNOXCENTER	PROLIANT DL360 G4P
sunshine2.rose.hp.com	Not Assigned	00:15:60:AC:C9:51	15.3.111.68	Red Hat Enterprise Linux Server 5	LENNOXCENTER	PROLIANT DL360 G4P
haddock1.rose.hp.com	Not Assigned	00:11:85:6B:F8:29	15.3.106.42	VMware ESX Server 3.5	LENNOXCENTER	PROLIANT BL20P G3

Refresh   Start

Volume manager Configuration Wizard

In "Volume manager configuration Wizard", the selected server name will be displayed at top left. The following supported LVM (Logical Volume Manager) operations will be listed on left panel:

- Add Physical Disks under LVM control

- Create Volume Group

- Create Logical Volume

- Activate/Deactivate Volume Group

- Delete Logical Volume
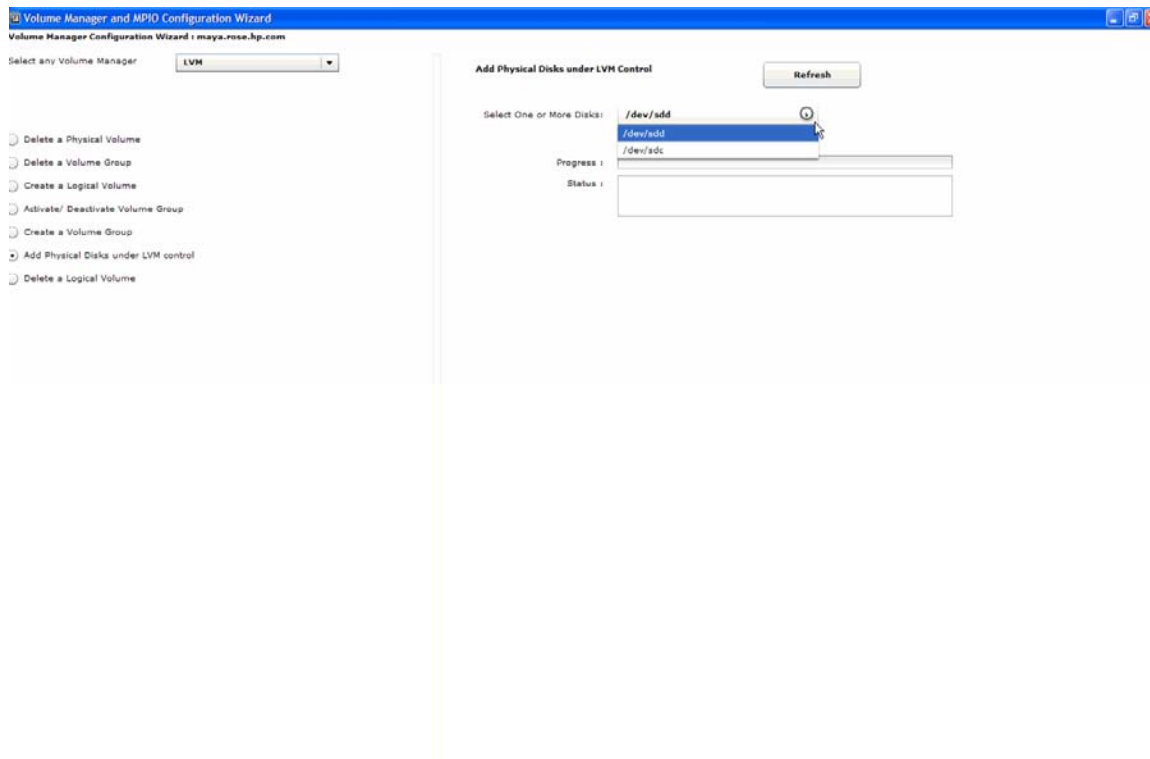
- Delete Volume Group

- Delete Physical Disks
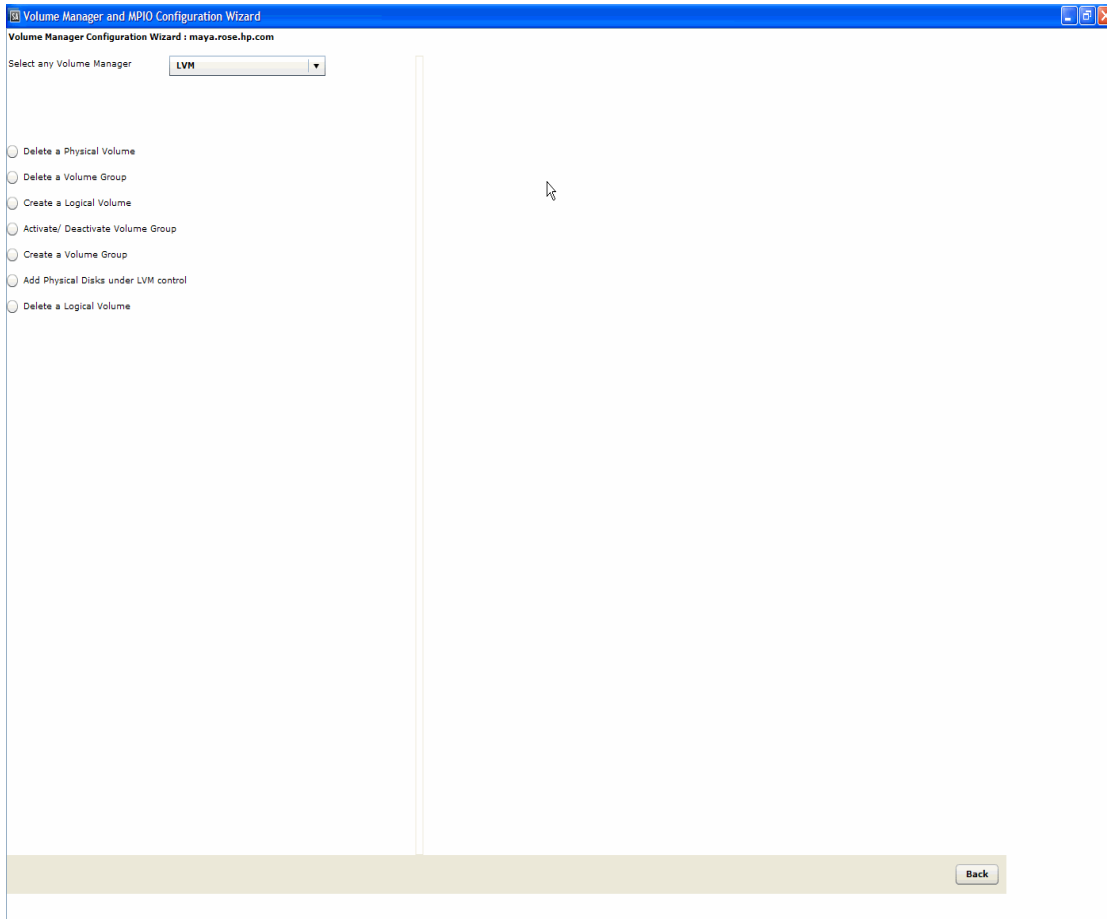
Physical Volume (pvcreate) Creation Wizard

To add physical disks under LVM control, select "Add Physical Disks under LVM control" operation. On right panel, following controls will be available:

- Select one or more Disks drop down box

- Create button

- Progress bar

- Status

All Physical Disks which are still not under LVM control will be listed in the '*Select one or more Disks*' drop down. Select Physical Disks from the drop down and click Create. Progress bar will display the operation state. The Status will display a message about Physical Volume creation status.

Note: Disks Partitions will not be listed under 'Select one or more Disks' drop down. This is not handled in current release (7.85)

Volume Group (vgcreate) Creation Wizard

To create a Volume Group, select "Create a Volume Group" operation. On right panel, following controls will be available

- Volume Group Edit control
- Select Physical Volume(s) list box
- Create button
- Progress bar
- Status

All Physical Volumes will be listed in the '*Select Physical Volume(s)*' list box. Enter a Volume Group name in the 'Volume Group Name' field and select Physical volumes from the list box, then click 'Create'. A progress bar will display the operation state. The Status will display a message about the Volume Group creation status
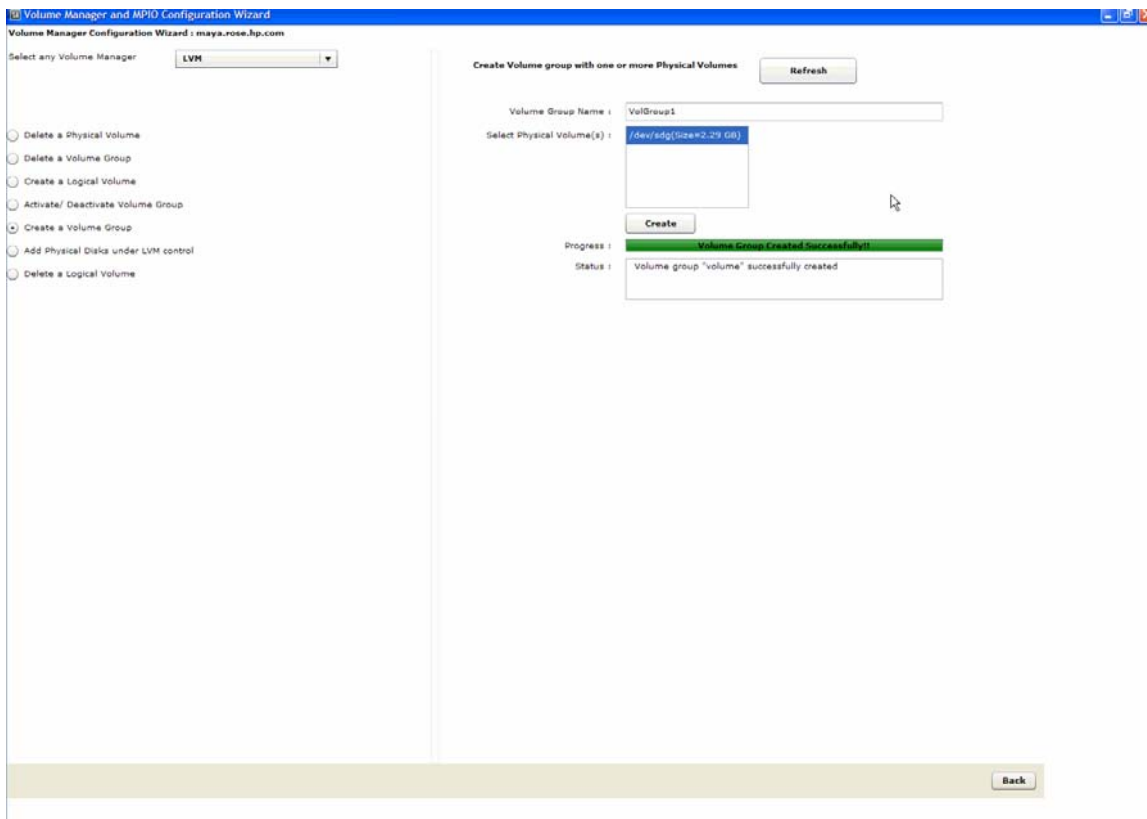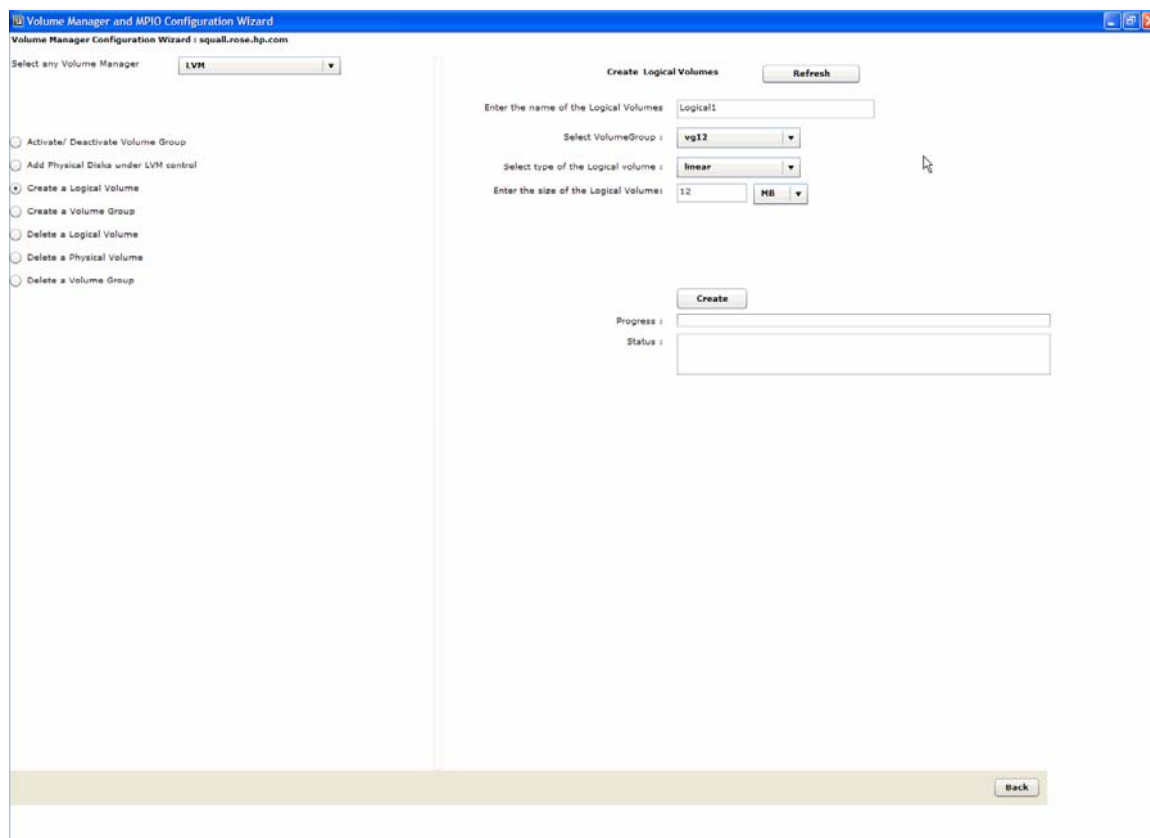
Logical Volume (LV) Creation Wizard

To create a Logical Volume, select "Create a Logical Volume" operation. On right panel, following controls will be available

- Refresh button (Note: Always click Refresh button after each operation)
- Enter name of the Logical Volume Edit control
- Select Volume Group drop down
- Select Type of Logical Volume (Supported types : Linear, Mirror, Stripe)
  - If type is Mirror , these additional controls will be available
    - Enter Mirror count Edit control
    - Is Core Check box
  - If type is Stripe, these additional controls will be available
    - Enter the Stripes count Edit control
    - Enter Stripe size Edit control
    - Units (KB,MB,GB) drop down
- Enter the Size of the logical Volume Edit control
- Logical Volume size Units (KB,MB,GB) drop down
- Create button
- Progress bar
- Status

All volume groups will be listed in the '*Select Volume* Group' drop down after Refresh button is clicked. Enter Logical Volume name in the 'Enter name of the Logical Volume' field and select Volume groups from the drop down. Select logical Volumes type from 'Select Type of Logical' drop down; enter its logical size click on 'Create' button. Progress bar will display the operation state. The Status will display message about Create Logical Volume creation status.
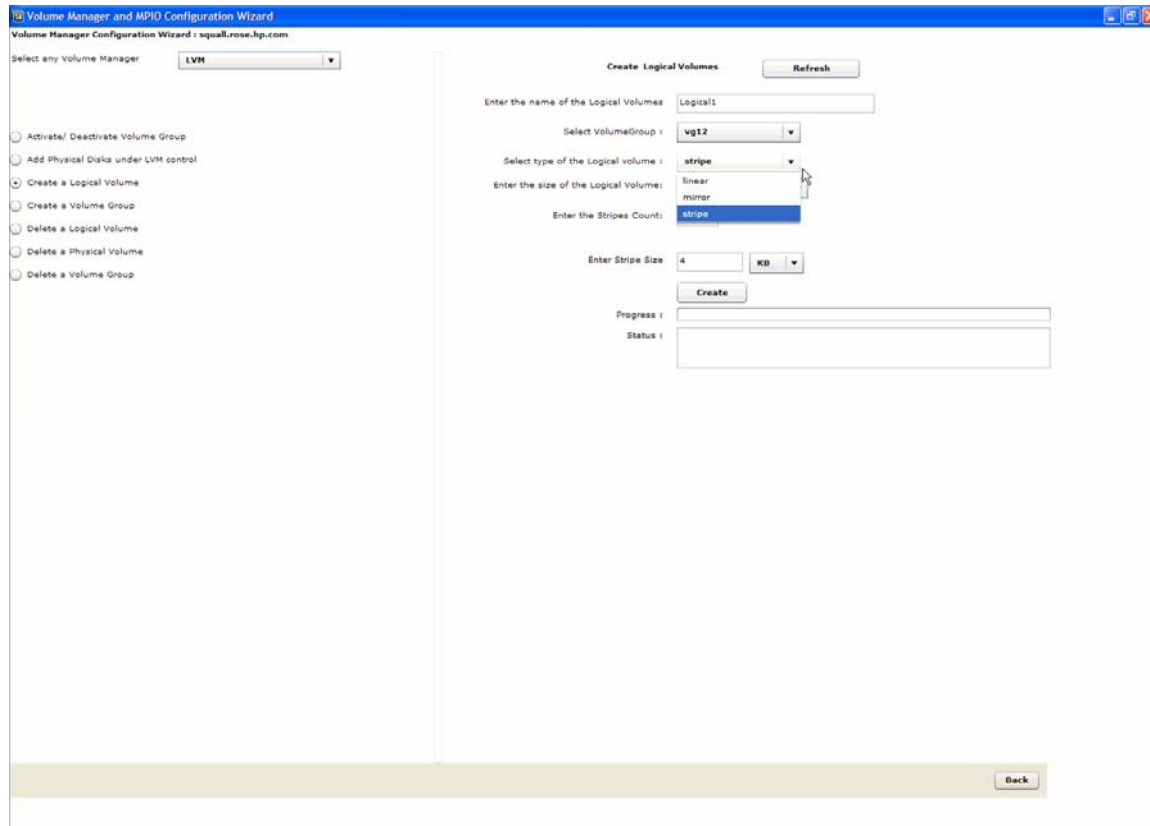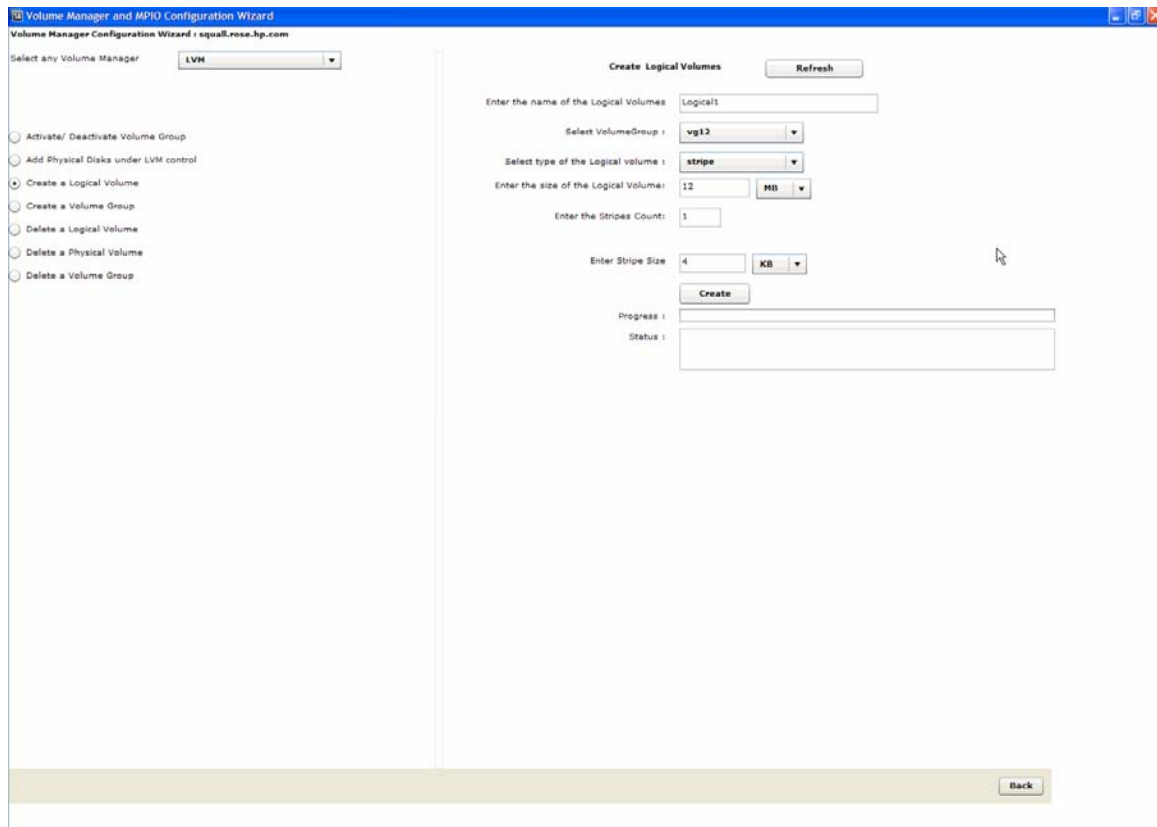

Linear Logical Volume (lvcreate) Creation Wizard

To create Linear Logical Volume, select "Create a Logical Volume" operation. On right panel, following controls will be available

- Refresh button (Note: Always click Refresh button after each operation)
- Enter name of the Logical Volume Edit control
- Select Volume Group drop down
- Select Type of Logical Volume (Select "Linear" type from drop down)
- Enter the Size of the logical Volume Edit control
- Logical Volume size Units (KB, MB, GB) drop down
- Create button
- Progress bar
- Status

All volume groups will be listed in the 'Select Volume Group' drop down after Refresh button is clicked. Enter Linear Logical Volume name in the 'Enter name of the Logical Volume' field and select Volume groups from the drop down. Select "Linear" type from 'Select Type of Logical' drop down; enter its logical size click on 'Create' button. Progress bar will display the operation state. The Status will display message about Create Logical Volume creation status


Stripe Logical Volume (lvcreate) Creation Wizard

To create Stripe Logical Volume, select "Create a Logical Volume" operation. On right panel, following controls will be available

- Refresh button (Note: Always click Refresh button after each operation)

- Enter name of the Logical Volume Edit control

- Select Volume Group drop down

- Select Type of Logical Volume (Select type : Stripe)

  - o If type is Stripe, following more controls will be available

    - ▪ Enter the Stripes count Edit control

    - ▪ Enter Stripe size Edit control

    - ▪ Units (KB,MB,GB) drop down

- Enter the Size of the logical Volume Edit control

- Logical Volume size Units (KB,MB,GB) drop down

- Create button

- Progress bar

- Status

All volume groups will be listed in the 'Select Volume Group' drop down after Refresh button is clicked. Enter Stripe Logical Volume name in the 'Enter name of the Logical Volume' field and select Volume groups from the drop down. Select "Stripe" type from 'Select Type of Logical' drop down, enter logical volume size and its units, stripe count, stripe size and its units and click on 'Create' button. Progress bar will display the operation state. The Status will display message about Stripe Logical Volume creation status

Mirror Logical Volume (lvcreate) Creation Wizard

To create Mirror Logical Volume, select "Create a Logical Volume" operation. On right panel, following controls will be available

- Refresh button (Note: Always click Refresh button after each operation)

- Enter name of the Logical Volume Edit control

- Select Volume Group drop down

- Select Type of Logical Volume (Select type : Mirror)

    o If type is Mirror , following more controls will be available

- ▪ Enter Mirror count Edit control
- ▪ Is Core Check box (If "Is Core" checked, 'mlog' will be created on memory and if it's not checked it will be created on disks)
- • Enter the Size of the logical Volume Edit control
- • Logical Volume size Units (KB,MB,GB) drop down
- • Create button
- • Progress bar
- • Status

All volume groups will be listed in the '*Select Volume* Group' drop down after Refresh button is clicked. Enter a Mirror Logical Volume name in the 'Enter name of the Logical Volume' field and select Volume groups from the drop down. Select "Mirror" type from 'Select Type of Logical' drop down, enter logical volume size its units, mirror count and If users wants "mlog" to be created on the disk, user should not select "IsCore" check box . And if user wants to create mlog on memory, he needs to check "IsCore" check box and click on 'Create' button. Progress bar will display the operation state. The Status will display message about Mirror Logical Volume creation status
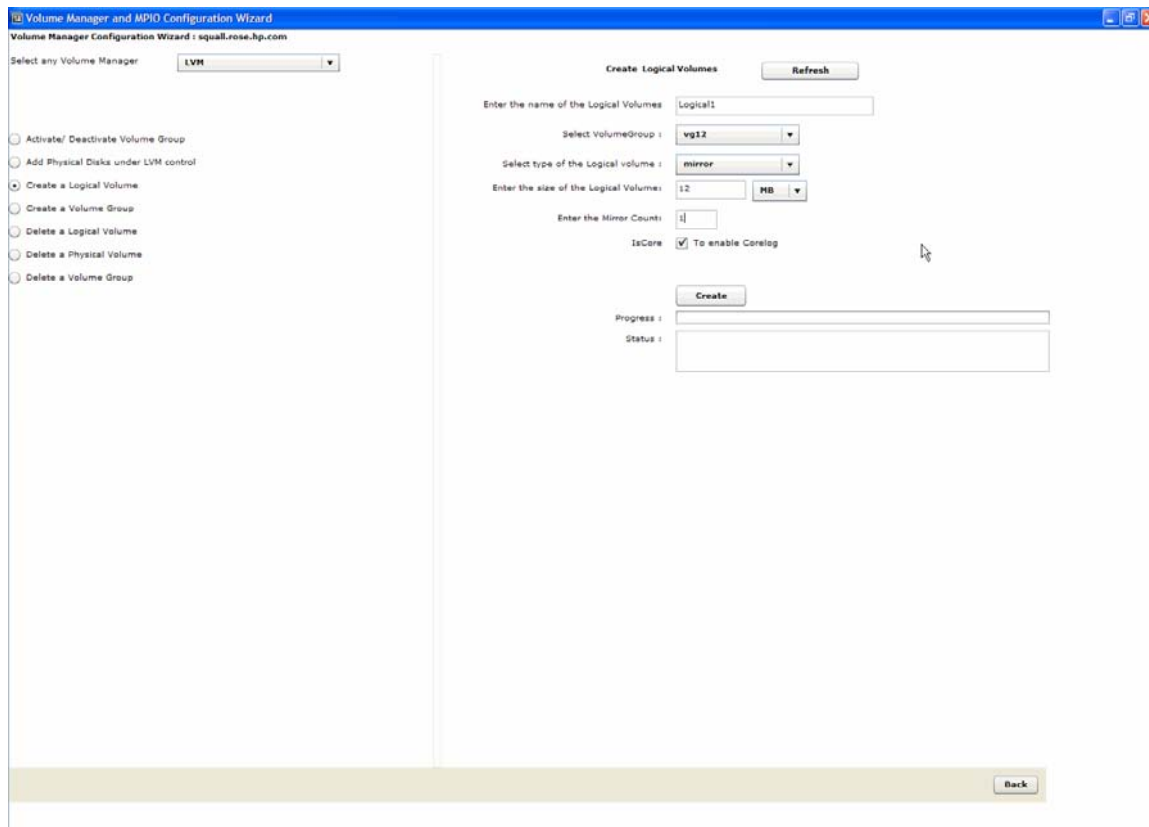

Activate/Deactivate Volume Group Wizard

To Activate/Deactivate any Volume Group, select "Activate/Deactivate Volume Group" operation. On right panel, following controls will be available

- Refresh button (Note: Always click Refresh button after each operation)
- Select Volume Group drop down
- Deactivate Volume Group radio button
- Activate Volume Group radio button
- Activate/Deactivate button
- Progress bar
- Status

All volumes groups will be listed in the '*Select Volume* Group' drop down after Refresh button is clicked. Select either Activate/Deactivate option and click on 'Activate/Deactivate' button. Progress bar will display the operation state. The Status will display message about Volume Group activation status
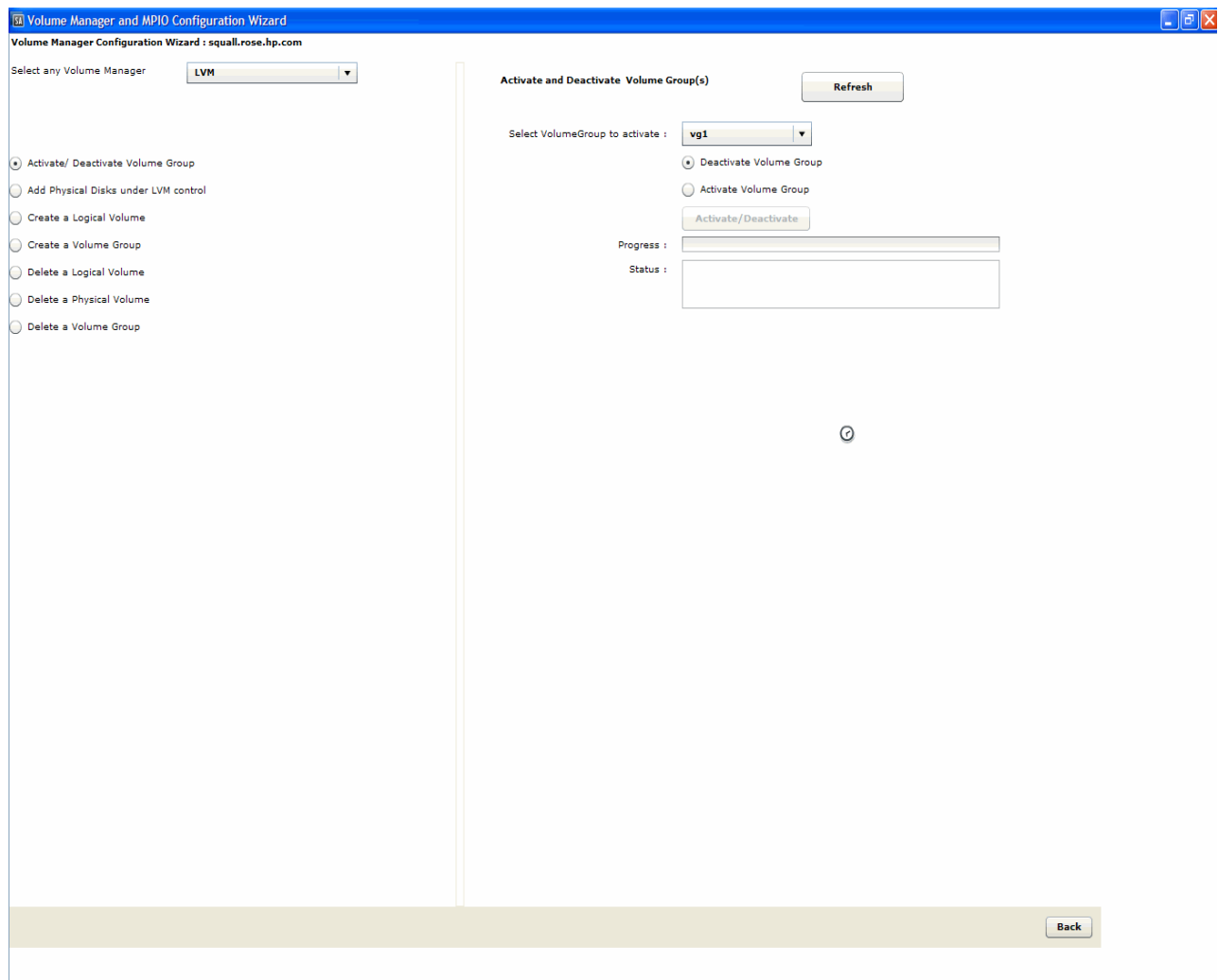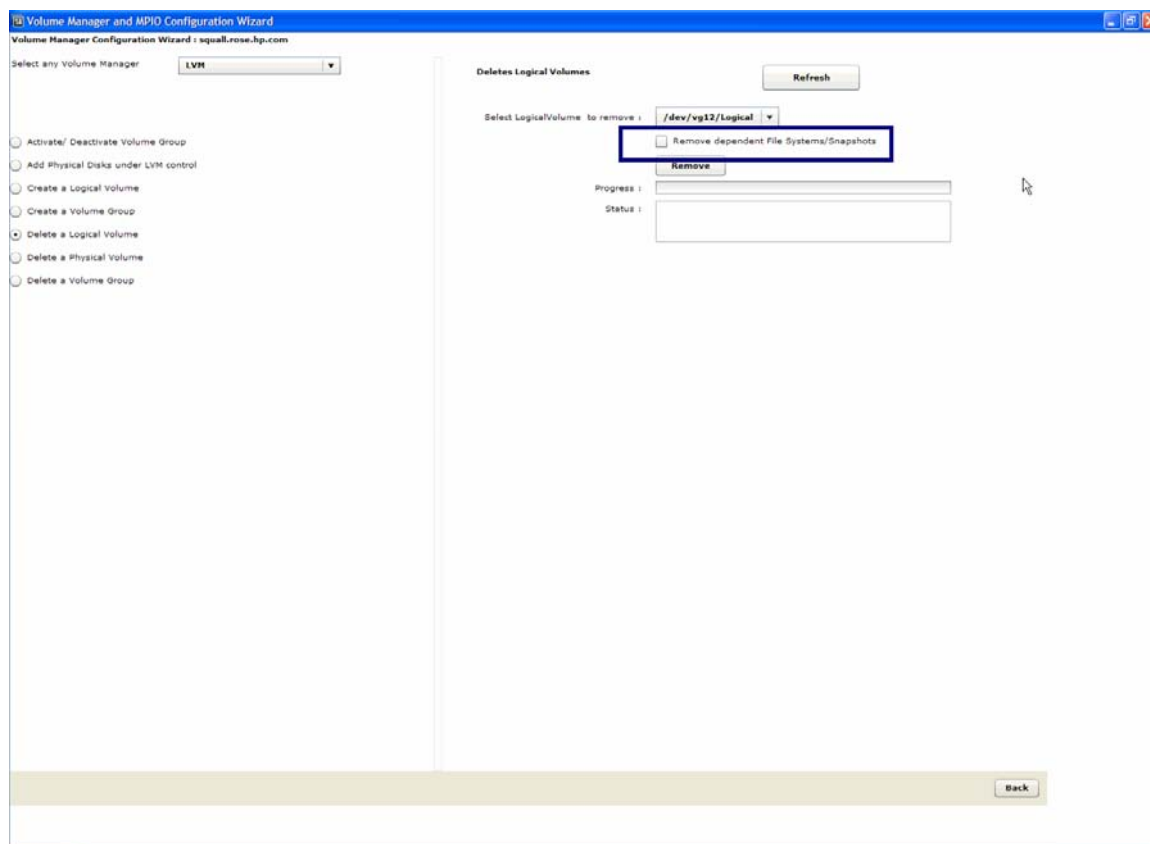
Delete Logical Volume (lvremove) Deletion Wizard

To delete any Logical Volume, select "Delete a Logical Volume" operation. On right panel, following controls will be available

- Refresh button (Note: Always click Refresh button after each operation)

- Select Logical Volume to remove drop down

- Remove dependent File System/Snapshots check box.

- Remove button

- Progress bar

- Status

All Logical Volumes will be listed in the '*Select logical Volum*e to remove' drop down after Refresh button is clicked. If Logical volume has mounted point or has snapshots volumes then, select the "Remove dependent File System/Snapshots" check box. To delete Logical Volumes having mount points/snapshots, click on the 'Remove 'button. A progress bar will display the operation state. The Status will display message about Logical Volume removal status
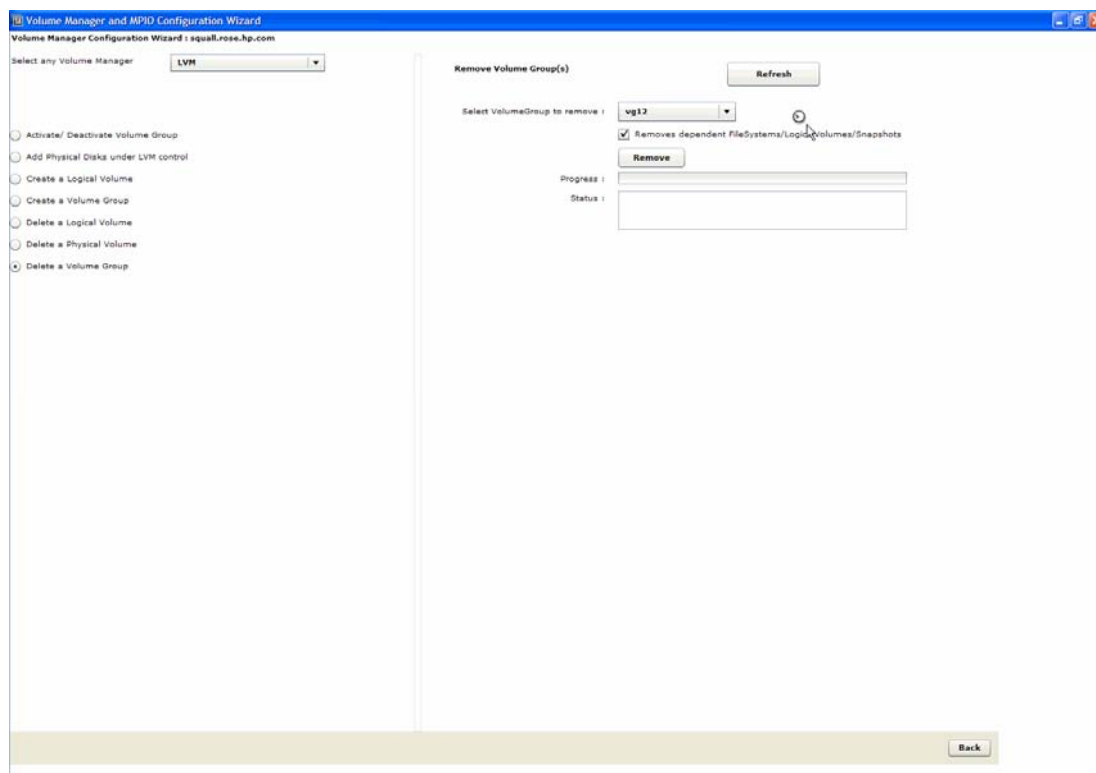
Delete Volume Group (vgremove) Deletion Wizard

If users want to delete any Volume Group, select "Delete a Volume Group" operation. On right panel, following controls will be available

- Refresh button (Note: Always click Refresh button after each operation)
- Select Volume Group to remove drop down
- Remove dependent File System Systems/Logical Volumes/Snapshots check box.
- Remove button
- Progress bar
- Status

All Volumes groups will be listed in the '*Select Volum*e Group to remove' drop down after Refresh button is clicked. If Volumes group has logical volume and/or its logical volumes have mount point or Volume group have snapshots then, select the "Remove dependent File System/logical Volumes/Snapshots" check box. To delete a Volume Group having logical volumes/mount points/snapshots, click on 'Remove' button. Progress bar will display the operation state. The Status will display message about Volume group removal status

Delete Physical Volume (pvremove) Deletion Wizard

To delete any Physical Volume, select "Delete a Physical Volume" operation. On right panel, following controls will be available

- Refresh button (Note: Always click Refresh button after each operation)

- Select Physical Volume to remove drop down

- Remove button

- Progress bar

- Status

All Physical Volumes will be listed in the '*Select Physical Volume* to remove' drop down after Refresh button is clicked. If Physical Volumes is present under any of the Volume groups then those will not be listed under the drop down. Click on 'Remove 'button. Progress bar will display the operation state. The Status will display message about Physical Volume removal status
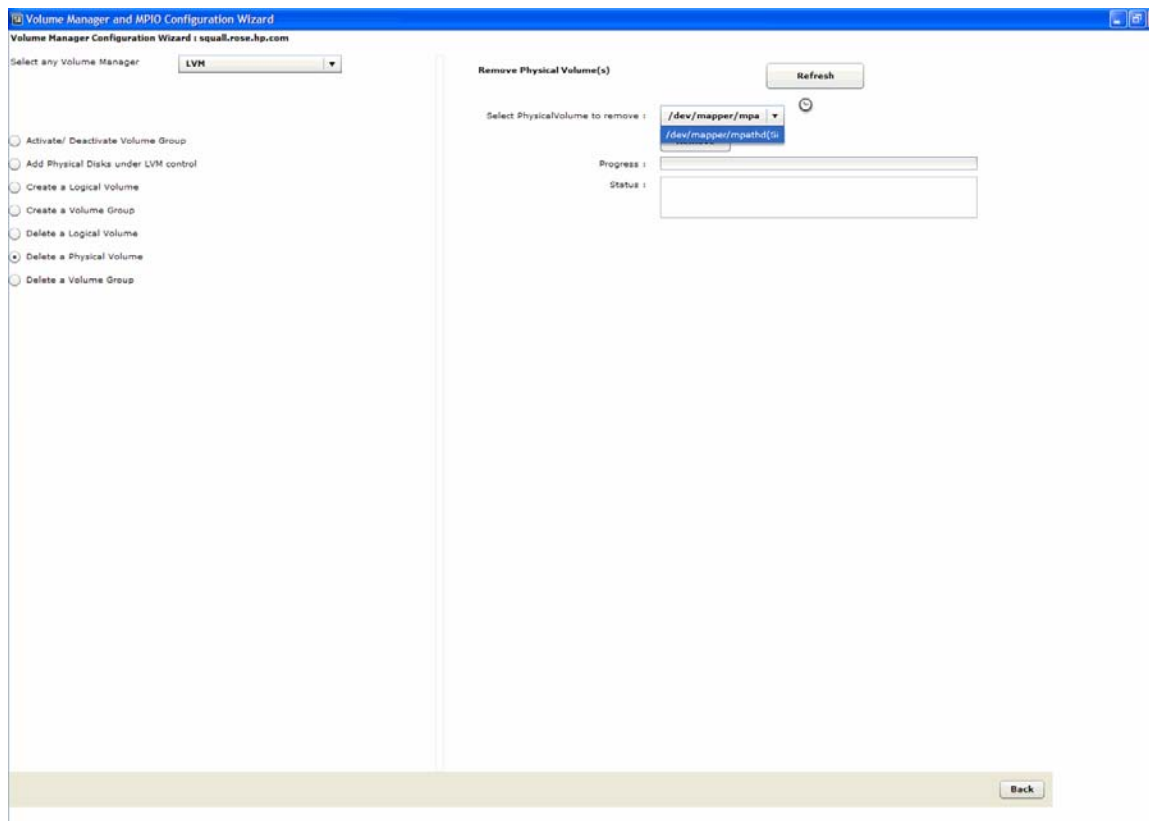
6.   Support Matrix

The following configurations are supported for 7.85 CORD release. The configuring Volume Manager will be supported only if Volume Management software is LVM (native) and MPIO enabled is Native (MPIO).

In 7.85, No 3rd party Volume Managers and MPIO software's are supported

LVM Support Matrix

- Linux + LVM

MPIO Support Matrix

- Linux + DeviceMapper

Browser Support Matrix

- Mozilla
- Firefox
- Internet explorer
- Embedded Browser

7. References

LVM Recommendations

Multiple Partitions on a Disk

LVM allows you to create physical volumes out of disk partitions. It is generally recommended that you create a single partition that covers the whole disk to label as an LVM physical volume for the following reasons:

- Administrative convenience
It is easier to keep track of the hardware in a system if each real disk only appears once. This
Becomes particularly true if a disk fails. In addition, multiple physical volumes on a single disk may cause a kernel warning about unknown partition types at boot-up.

- Striping performance
LVM cannot tell that two physical volumes are on the same physical disk. If you create a striped logical volume when two physical volumes are on the same physical disk, the stripes could be on different partitions on the same disk. This would result in a decrease in performance rather than an increase.

Although it is not recommended, there may be specific circumstances when you will need to
Divide a disk into separate LVM physical volumes. For example, on a system with few disks it may be necessary to move data around partitions when you are migrating an existing system to LVM volumes. Additionally, if you have a very large disk and want to have more than one volume group for administrative purposes then it is necessary to partition the disk. If you do have a disk with more than one partition and both of those partitions are in the same volume group, take care to specify which partitions are to be included in a logical volume when creating striped volumes.