

EMC® Celerra® Simulator

Version 6.0

Installation and Configuration Guide

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As part of an effort to improve and enhance the performance and capabilities of its product line, EMC from time to time releases revisions of its hardware and software. Therefore, some functions described in this guide may not be supported by all revisions of the software or hardware currently in use. For the most up-to-date information on product features, refer to your product release notes.

If a product does not function properly or does not function as described in this guide, please contact your EMC representative.

Audience

This guide is part of the EMC Celerra Simulator documentation set, and is intended for use by trained EMC or EMC partner personnel during installation and setup of the product.

Readers of this guide are expected to be familiar with the following topic:

- ◆ Celerra hardware and software configuration

Related Documentation

Related documents include:

Celerra configuration and management documentation on the *Celerra User Information CD* or on the Powerlink website at:

<http://Powerlink.EMC.com>

Conventions Used in This Guide

EMC uses the following conventions for notes, cautions, warnings, and danger notices.

Note: A note presents information that is important, but not hazard-related.



CAUTION

A caution contains information essential to avoid data loss or damage to the system or equipment. The caution may apply to hardware or software.



WARNING

A warning contains information essential to avoid a hazard that can cause severe personal injury, death, or substantial property damage if you ignore the warning.



DANGER

A danger notice contains information essential to avoid a hazard that will cause severe personal injury, death, or substantial property damage if you ignore the message.

Typographical Conventions

EMC uses the following type style conventions in this guide:

bold

- User actions (what the user clicks, presses, or selects)
- Interface elements (button names, dialog box names)
- Names of keys, commands, programs, scripts, applications, utilities, processes, notifications, system calls, services, applications, and utilities in text

italic

- Book titles
- New terms in text
- Emphasis in text

`Courier`

- Prompts
- System output
- Filenames
- Pathnames
- URLs
- Syntax when shown in command line or other examples

`Courier, bold`

- User entry
- Options in command-line syntax

`Courier italic`

- Arguments in examples of command-line syntax
- Variables in examples of screen or file output
- Variables in pathnames

<>

Angle brackets for parameter values (variables) supplied by user.

[]

Square brackets for optional values.

| Vertical bar symbol for alternate selections. The bar means or.
... Ellipsis for nonessential information omitted from the example.

Where to get help

EMC support, product, and licensing information can be obtained as follows.

Product information — For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to the EMC Powerlink website (registration required) at:

<http://Powerlink.EMC.com>

Your Comments

Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications. Please send your opinion of this guide to:

celerradoc_comments@EMC.com



EMC Celerra Simulator

This chapter introduces the EMC Celerra Simulator and provides instructions on how to install and configure it.

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Introduction

The EMC® Celerra® Simulator package is a pre-installed virtual Celerra run on VMware Player, or VMware Workstation software. The simulator behaves like a Celerra system with a Control Station and one or two Data Movers running the DART operating system. It manages simulated LUNs on the local virtual disk and allows the user to create and manage new simulated LUNs on mounted external file systems.

Users will be able to configure the virtual Celerra's network settings, but other settings, such as the size of the virtual hard drive and the amount of virtual memory, are fixed.

The laptop or desktop system running the Celerra Simulator must meet the minimum system requirements or the simulator will not install. Refer to ["System requirements" on page 12](#) for more information on the minimum requirements.

Performance

The performance of EMC Celerra Simulator is considerably less than that of an actual Celerra system. Do not attempt to perform any large requests or any jobs that will put the simulator under stress. The simulator is not designed for a large workload.

For the dual Data Mover version, each virtual Data Mover has 750 MB of memory for processing requests. The single Data Mover version has 600 MB of memory for processing requests. The simulator comes enabled with 22.5 GB of virtual storage at installation time. This comes in the form of two storage pools, one 18 GB and one 4.5 GB.

Installation overview

When you install the Celerra Simulator, you must perform the following tasks:

- ◆ Download and install the VMware software on the desktop or laptop system if necessary.
- ◆ Download and extract the Celerra Simulator zip file.

Note: If you are planning to run more than one virtual Celerra, use a different folder for each virtual machine.

- ◆ Start the EMC Celerra Simulator in VMware Player or VMware Workstation.

- ◆ Load Unisphere

**Additional
information**

For more information about Celerra Network servers, DART, Celerra configuration, and Celerra management, refer to the *Celerra Network Server User Information CD* available at:

<http://Powerlink.EMC.com>

System requirements

At a minimum, the EMC Celerra Simulator package requires the following hardware and software configuration for installation:

- ◆ 64-bit-capable CPU supported by VMware Workstation or VMware Player

Note: Refer to the VMware software documentation for more information.

- ◆ RAM:
 - Single Data Mover: 3.0 GB (more is recommended)
 - Dual Data Mover: 4.0 GB (more is recommended)
- ◆ 40 GB of **FREE** hard drive space at install time

Initial installation requires 4 GB, and 10 GB are automatically set aside for storage, but Celerra Simulator may require more space depending on use.

Note: If Celerra Simulator is run with a small number of file systems, and under a light operating load, it can be run with 21 GB of free hard drive space. However, EMC strongly recommends using 40 GB of disk space, as running out of hard drive space may cause a fatal corruption of the Celerra Simulator.

- ◆ 64-bit-capable operating system supported by VMware Workstation or VMware Player

Note: Refer to the VMware software documentation for more information.

- ◆ VMware software requirements:
 - Single Data Mover: VMware Workstation 5.5.9 or higher, or VMware Player
 - Dual Data Mover: VMware Workstation 6.0 or higher, or VMware Player

Step 1: Installing Celerra Simulator

Note: Before installing, make sure there are no installations of VMware GSX, or VMware ACE packages. To remove any existing VMware installs using Windows, use the **Add/Remove Programs** feature in the **Control Panel**.

To install the EMC Celerra Simulator package, complete the following steps:

If you have VMware Workstation version 5.5.9 or higher, or VMware Player already installed on your system, go to Step 3. Otherwise, continue with the steps below to download and install the free VMware Player

1. Download VMware player from:
<http://vmware.com/products/player>
2. Install the VMware Player on the host system.
3. Download the Celerra Simulator zip file from Powerlink®.
 - a. Go to <http://Powerlink.EMC.com>
 - b. Select **Support < Product and Diagnostic Tools < Celerra Tools < Celerra Simulator**
4. Extract the zip file to a folder of your choice.

Note: If you are planning to run more than one virtual Celerra, use a different folder for each virtual machine.

Step 2: Configuring physical network interface ports

Configuring a physical network interface port allows the Celerra Simulator to create a share that is accessible from outside of the host system. The simulator would be accessible from an outside system on the same network sharing the host Windows operating system.

By default a host-based network has been configured between the host Windows operating system and the Celerra Simulator. This default network uses a virtual IP address that is automatically assigned to port **VMnet1** for use with the virtual Control Station port **eth2**. Configuring a physical network interface is only required if users would like to connect the simulator to an external network.

To configure one or more network interface ports for use with the Celerra Simulator do the following:

- ◆ Configure the network interface port through Windows
- ◆ Configure the network interface port through VMware Player or Workstation
- ◆ Configure the network interface port for an external network

If you have a single network interface port on the host system, the simulator automatically configures that NIC as **VMnet0** for use with the virtual Control Station port **eth0**.

If you have two or more network interface ports on the host system, you need to configure which network port is going to be assigned to which VMnet port (**VMnet0** or **VMnet2**) and which virtual Control Station port (**eth0** and **eth1**).

Note: If you have a single network interface port on the host system, the simulator automatically configures that NIC as **VMnet0** for use with the virtual Control Station port **eth0**.

Step 3: Start the Celerra Simulator

To start the Celerra Simulator, do the following:

1. Verify the free hard drive space on the host computer. If you have not created any file systems, you must have approximately 10 GB of free hard drive space on your host computer.

Note: If you created any file systems or if you have used any of the 25 GB of virtual storage created on the simulator, you might have less than 10 GB of free space from the original 14 GB. As you use the virtual storage on the simulator, the 10 GB of free space on your host system will decrease proportionally.

2. Shut down any applications running on the host system, including any email applications.

If you have less than 2 GB of free memory in the host system, you are warned about the simulator swapping virtual machine memory to compensate for the lack of memory. Using the swap memory will degrade simulator performance. We recommend you shut down all applications or increase the physical memory before continuing.

3. Double-click the shortcut for VMware Workstation or VMware Player on the Desktop.
4. Open the `Other Linux 2.6.x kernel 64-bit.vmx` file in the VMware software.

At this point, the VMware package is ready to run Celerra Management tools. Management of the virtual Celerra system can be accomplished through the Celerra command line interface (CLI) or by loading Celerra Manager in a web browser.

Log in as **root** using the default password **nasadmin** to configure the virtual external network interface.

Configuring the virtual external network interface

To configure the network interface(s) for an external network, do the following:

1. Type the following command to configure the virtual `eth0` port for the simulator:

```
netconfig -d eth0
```

A screen appears asking if you want to set up networking.

2. Tab to **Yes** and press ENTER.
3. If you wish to use dynamic IP configuration, press the space bar to select the **Use dynamic IP configuration (BOOTP/DHCP)** option. Tab to **OK** and press ENTER, as shown in [Figure 1 on page 16](#).

Note: To use DHCP with the Celerra Simulator, the external network must support DHCP clients.

To use a static IP address, enter the port IP address, netmask, default gateway IP address, and primary nameserver IP address. Tab to **OK** and press ENTER, as shown in [Figure 1](#).

Note: The virtual machine must reside on the same subnet as the host machine.

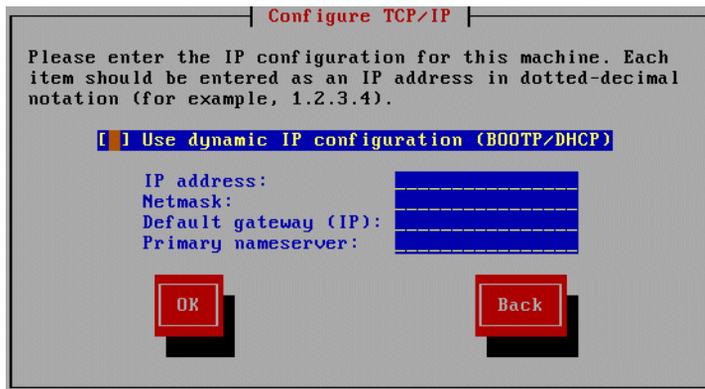


Figure 1 Configure TCP/IP

4. At the command prompt, type `ifup eth0` to activate the network interface.
5. Type `ifconfig eth0` to view the network interface's configuration information.
6. To configure an optional second network interface port, repeat steps 1 through 2 in this procedure and use `eth1` in all of the commands, instead of `eth0`.

If you want to configure network interface `eth2`, you must configure it using DHCP.

Note: The IP addresses for `eth0` and `eth1` must be different.

7. Type **exit** to log out of root.

At this point, the virtual network interfaces have been configured, and the VMware package is ready to run Celerra Management tools.

Go to [“Step 4: Load Unisphere” on page 18](#) to load Celerra Manager

Go to [Chapter 2, “Celerra Simulator Advanced Configuration,”](#) for advanced configuration options.

Step 4: Load Unisphere

To access Unisphere on the Celerra Simulator, do the following:

1. Log in to the Celerra Simulator as `root`. The default password is `nasadmin`.
2. Type `ifconfig eth2` to view the network interface's configuration information.

Sample output:

```
eth2 Link encap:Ethernet HWaddr 00:0C:29:07:29:F9
inet addr:192.168.20.1 Bcast:192.168.20.255 Mask:255.255.255.0
UP BROADCAST NOTRAILERS RUNNING MTU:1500 Metric:1
RX packets:12 errors:0 dropped:0 overruns:0 frame:0
TX packets:13 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:100
RX bytes:1102 (1.0 Kb) TX bytes:1564 (1.5 Kb)
Interrupt:5 Base address:0x1480
```

3. Locate the IP address of `eth2`, this is the virtual IP address of the Celerra Simulator. It should be `192.168.xxx.1` and be listed after `inet addr:.`
4. Open a web browser on the host system and enter the IP address from the previous step in the address bar.

The following error message may appear on your browser:

```
Internal Server Error
```

```
The server encountered an internal error or
misconfiguration and was unable to complete your
request.
```

The error message means that the configuration information for the virtual Celerra has not updated yet. Refreshing the web browser, or closing it and waiting a few minutes before opening it again will take care of the problem.

5. If a security alert about the system's security certificate appears, click **Yes** to proceed.
6. At the login prompt, log in as user `nasadmin` and password `nasadmin`.
7. If a security warning about the system's security certificate being issued by an untrusted source appears, click **Yes** to accept the certificate.

8. If a warning about a hostname mismatch appears, click **Yes** to proceed.
9. Enable any licenses as appropriate. The virtual storage will not be available unless you enable CIFS and NFS.

Each virtual Data Mover has 1600 MB of memory for processing requests.

The simulator comes enabled with 22.5 GB of virtual storage at installation time. This comes in the form of two storage pools, one 18 GB and one 4.5 GB.

Troubleshooting

For troubleshooting information regarding the setup or management of the virtual Celerra Simulator, refer to the *Celerra Network Server User Information CD* that shipped with the *EMC Celerra Simulator DVD* or is available at:

<http://Powerlink.EMC.com>

For troubleshooting information regarding the VMware software, refer to the VMware Knowledge Base at:

http://www.vmware.com/support/kb/enduser/std_alp.php

This document describes how to perform advanced tasks with the Celerra Simulator.

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- ◆ Creating LUNs using external storage..... 27
- ◆ Deleting virtual storage..... 32
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Binding Data Mover ports to network interfaces

At installation time two Data Mover ports **cge0** and **cge1** are configured and mapped to the Control Station port **eth0**. To change one of these existing Data Mover ports to a different Control Station port (**eth1** or **eth2**) or to create any additional (up to six total) Data Mover ports, do the following:

Note: This procedure requires the reboot of the Celerra Simulator for the change to take affect.

1. Log in to the Celerra Simulator as `root`. The default password is `nasadmin`.
2. Run the script to add a device to Control Station ports **eth1** or **eth2** by entering the following command:

```
./configure_nic server_<x> -a eth<y>
```

Where `x` is the slot number, and `y` is the Control Station port number.

```
server_2: added new device cge3 in slot 8.
Use server_ifconfig to configure the newly added device
after reboot the virtual machine.
```

```
-----
server_2: network devices:
Slot  Device Driver Stub  Ifname Irq    Id      Vendor
-----
3      cge0   bbnic  direct eth0   0x0018 0x1645 0x14e4
4      cge1   bbnic  direct eth1   0x0019 0x1645 0x14e4
5      cge2   bbnic  direct eth1   0x001a 0x1645 0x14e4
8      cge3   bbnic  direct eth2   0x001b 0x1645 0x14e4
-----
```

3. Reboot the Celerra Simulator by typing the following command:

```
reboot
```

The simulator reboots and logs you out.

4. When the simulator is finished rebooting, log in to the Celerra Simulator as `root`. The default password is `nasadmin`.
5. Verify the change was successful by typing:
 - a. Export the NAS database, by typing:

```
export NAS_DB=/nas
```

- b. Display the PCI devices, by typing:

```
/nas/bin/server_sysconfig server_2 -p
```

The `server_sysconfig` command displays all of the PCI devices for the virtual Data Mover.

Sample output:

```
server_2 : PCI DEVICES:  
  
Slot: 3  
Broadcom Gigabit Ethernet Controller  
0: cge0 IRQ: 18  
speed=auto duplex=auto  
  
Slot: 4  
Broadcom Gigabit Ethernet Controller  
0: cge1 IRQ: 19  
speed=auto duplex=auto  
  
Slot: 6  
Broadcom Gigabit Ethernet Controller  
0: cge3 IRQ: 20  
speed=auto duplex=auto
```

Creating/Deleting virtual storage

This section describes how to create, bind, unbind, and delete virtual storage (user LUNs, diskgroups, and hot spares). At installation time, the simulator has 10 virtual user LUNs already created. These procedures allow you to create new virtual LUNs or delete any existing virtual LUNs.

The simulator comes enabled with 22.5 GB of virtual storage at installation time. This comes in the form of two storage pools, one 18 GB and one 4.5 GB.

The default configuration of the Celerra Simulator requires 40 GB of storage on the host system that is reserved for the simulator. From this 40 GB of reserved storage, approximately 5-7 GB of that space is required for the simulator software and files. 22.5 GB of space is allocated to two storage pools, one is 4.5 GB and one 18 GB. The two storage pools consist of a total of ten 2.2 GB LUNs.

The ten LUNs are sparse LUNs, meaning the disk space has not been specifically reserved for the LUNs. Sparse LUNs allow other users to use disk space allocated for the LUN, causing the LUN to run out of physical disk space before its maximum size is reached.



CAUTION

If you plan to create any new virtual storage, you must have the same amount of free storage on the host laptop or desktop. This free space must be over and above the free space required for the original 25 GB of virtual storage.

Types of LUN creation

When creating new LUNs for the Celerra Simulator, you can create LUNs using internal storage or external storage. Internal storage uses the local disks on the host system to create additional LUNs. External storage uses a mounted file system outside of the host system to create additional LUNs.

External storage is the recommended choice for creating additional LUNs for the simulator. This allows for an unlimited amount of disk space. You must have an external network connection for the simulator and the file system with the free space for the new LUN must be mounted by the simulator. The file system must be persistently mounted with NFS. The free space should be dedicated for the simulator.

Refer to [“Creating LUNs using external storage” on page 27](#) for more information on creating an external storage LUN.

You have three different ways to create LUNs:

Creating LUNs using available free space

The safest way to create new LUNs is to use the available space on the external storage as determined by the simulator. Once you identify the pathname of the file system to create the LUNs, the simulator identifies the available storage to create new LUNs. This is option 1 on the **Data LUN Creation Menu** as shown in [Figure 5 on page 30](#).

Once created the LUN will have the same functionality as the original LUNs created on the host system. Refer to [“Creating LUNs using external storage” on page 27](#) for more information on creating LUNs using external storage.

Creating sparse LUNs to mimic a full CLARiiON array

The simulator allows for the creation of sparse LUNs on the host system that appear to the simulator as actual LUNs. This allows the simulator user to create sparse LUNs that appear as full size LUNs equivalent to an actual CLARiiON[®] array, without having to actually have that much free space on the host system.

Sparse LUNs allow other users to use disk space allocated for the LUN, potentially causing the LUN to run out of physical disk space before its maximum size is reached. The LUNs would not be able to perform any input/output operations at that point, but they would appear to the simulator just like an actual array. This would be ideal for demonstration purposes.

Refer to [“Type exit to log out of root.” on page 31](#) for more information on creating sparse LUNs.

Creating user-specified LUNs

The simulator allows for the creation of user-specified LUNs. The user selects the size of the LUN to create. The danger with this option is that the user can define a LUN much larger than the free space available. If the user defines a LUN larger than the available free space, a sparse LUN is created. If the user defines a LUN that is equal to or less than the available space, a normal LUN is created. If a normal LUN is created it has the same functionality as the original LUNs created on the host system. If a sparse LUN is created, the LUN would not be able to perform any input/output operations, but it would appear to the simulator as a normal LUN.

Refer to [“Type exit to log out of root.” on page 31](#) for more information on creating user-specified LUNs.

Creating LUNs using external storage

To create additional user LUNs on external storage for the Celerra Simulator, do the following:

Note: You must have an external network connection for the simulator and the file system with the free space for the new LUN must be mounted by the simulator. The file system must be persistently mounted with NFS. The free space should be dedicated for the simulator. Refer to [“Troubleshooting 36” on page 21](#) for information on creating an external network connection.

1. Log in to the Celerra Simulator as `root`. The default password is `nasadmin`.
2. Run the `setup_clariion` command by typing:

```
/nas/sbin/setup_clariion -init
```

The **Enclosure Configuration Menu** appears, as shown in [Figure 2](#).
3. Enter **1** to add a new enclosure, as shown in [Figure 2](#).
4. Enter the number of the new enclosure, or press `ENTER` to use the default value, as shown in [Figure 2](#).
5. Enter the disk size for the new enclosure, or press `ENTER` to use the default value, as shown in [Figure 2](#).
6. Enter the disk type for the new enclosure, or press `ENTER` to use the default value, as shown in [Figure 2](#).

```
Enclosure(s) 0_0,1_0 are installed in the system.
Enclosure info:
-----
  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14
1_0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146 146
FC   9   9   9   9   9 10 10 10 10 10 11 11 11 11 11  B5
0_0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146 146
FC   0   0   0   0   0 200  8  8  8  8  8  8  8  8  8  B5
-----

Enclosure Configuration Menu:
1. Add New Enclosure
2. Delete Existing Enclosure
3. Continue to Diskgroup Template Menu

Please select a choice in the range of 1-3 or 'q' to quit [3]: 1

Enter Enclosure as "BUS_ENCL" (where BUS=0 to 3; ENCL=0 to 7) [2_0]: 2_0
Enter the physical disk size for Enclosure 2_0 (in GB) [146]: 146
Enter the physical disk type (FC or ATA) [FC]: FC_
```

Figure 2 Enclosure Configuration Menu

You have created the new virtual enclosure. To add additional enclosures, repeat steps 2 through 6 as needed. The **Enclosure Configuration Menu** appears.

7. Enter **3** to select a diskgroup template for the new enclosure, as shown in [Figure 3](#).

The available diskgroup templates are displayed.

8. Select the diskgroup template to use for the new enclosure, as shown in [Figure 3](#). Options for selecting a diskgroup template include a `CX_Standard_Raid_5` configuration and a variety of `User_Defined` configurations. Selecting 1 from this menu will leave the new enclosure unbound.

```

-----
1 0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146
FC  9  9  9  9  9 10 10 10 10 10 11 11 11 11 11 R5
-----
0 0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146
FC  0  0  0  0  0 200 0  0  0  0  0  0  0  0  0 R5
-----

Enclosure Configuration Menu:
1. Add New Enclosure
2. Delete Existing Enclosure
3. Continue to Diskgroup Template Menu

Please select a choice in the range of 1-3 or 'q' to quit [3]: 3

The following 3 template(s) available:
1. CX_Standard_Raid_5
2. User_Defined
3. None

Configuration for BB000C29009699
Please select a template in the range of 1-3 or 'q' to quit: _

```

Figure 3 Enclosure Configuration Menu - Template Selection

9. Enter **yes** to confirm your selection for the desired configuration.

- Enter the pathname for disk storage location and press ENTER, as shown in [Figure 4](#). The pathname is the external mounted file system where you would like to create the new user LUNs.

Note: Once you press ENTER, the simulator scans the external file system for available storage. The file system must be accessible and have free space.

```
Enclosure info:
-----
      0  1  2  3  4  5  6  7  8  9 10 11 12 13 14
2 0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146 146
   FC *HS *12 *12 *12 *12 *12 *13 *13 *13 *13 *13 *13 *13 *13 R5
1 0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146 146
   FC  9  9  9  9  9 10 10 10 10 10 11 11 11 11 11 R5
0 0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146 146
   FC  0  0  0  0  0 200  8  8  8  8  8  8  8  8  8 R5
-----
"*" indicates a diskgroup/spare which will be configured

Size Type Disks Spares
-----
146  FC   45     2

Do you want to continue and configure as shown [yes or no]?: y
Enter pathname for disk storage location or 'r' return to previous menu
[/opt/blackbird/storage/disks]: /opt/blackbird/storage/disks_
```

Figure 4 Enclosure Configuration Menu - Pathname Selection

The Data LUN Creation Menu appears, as shown in [Figure 5](#).

12. Enter **no** to zero the LUNs if the disk space for the LUN is dedicated for the Celerra Simulator.

Enter **yes** to zero the LUNs if the disk space for the LUNs is not dedicated for the Celerra Simulator.

Note: Zeroing the LUNs is a very time-consuming process, but if you skip it, the LUNs will be created from sparse files. This means that other users may use disk space allocated for the LUN, causing the LUN to run out of physical disk space before its maximum size is reached.

For example: To zero a 100 MB LUN, it takes approximately three hours.
To zero a 1 GB LUN, it takes approximately 30 hours.

13. Type **exit** to log out of root.

Deleting virtual storage

To delete virtual storage (user LUNs, disk groups, or hot spares) from the simulator, complete the following steps:

Note: Before you delete any virtual storage, all file systems and volumes associated with the LUNs must be deleted. Use the `nas_disk -l` command to identify any file systems or volumes associated with the LUNs you are about to delete are in use.

1. Log in to the Celerra Simulator as `root`. The default password is `nasadmin`.
2. Set the `NAS_DB` variable by typing:


```
export NAS_DB=/nas
```
3. Navigate to the `/nas/sbin/setup_backend` directory by typing:


```
cd /nas/sbin/setup_backend
```
4. Type `./nas_raid list` command to bring up a list of raid groups, as shown in [Figure 6](#).

```
Lun ID: 4  RG ID: 0  State: Bound  45
Lun ID: 5  RG ID: 0  State: Bound  46
Lun ID: 16 RG ID: 0  State: Bound  4395
Lun ID: 17 RG ID: 0  State: Bound  4396
Lun ID: 18 RG ID: 0  State: Bound  4397
Lun ID: 19 RG ID: 0  State: Bound  4398
Lun ID: 20 RG ID: 9  State: Bound  4399
Lun ID: 21 RG ID: 9  State: Bound  4310
Lun ID: 22 RG ID: 10 State: Bound  4311
Lun ID: 23 RG ID: 10 State: Bound  4312
Lun ID: 24 RG ID: 11 State: Bound  4319
Lun ID: 25 RG ID: 11 State: Bound  4320
Lun ID: 26 RG ID: 12 State: Bound  4315
Lun ID: 27 RG ID: 12 State: Bound  4316
Lun ID: 28 RG ID: 13 State: Bound  4317
Lun ID: 29 RG ID: 13 State: Bound  4318

Spare info:
-----
Spare ID: 200  Disk: 0_0_5
Spare ID: 201  Disk: 2_0_0

Done
[root@rtsp5dhcp126 setup_backend]# _
```

Figure 6 `nas_raid` List Output

Before an enclosure can be deleted, all of its LUNs must be unbound.

5. When unbinding the LUNs in the diskgroup, you have three options:

- To delete all the LUNs in a specific diskgroup, use the following command:

```
./nas_raid delete diskgroup <diskgroup number>
```

Where the diskgroup number is the number following the RG ID: in the `nas_raid` command output, as shown in [Figure 6 on page 32](#).

Note: If you intend to delete more than one diskgroup, you can wait until all the diskgroups are deleted before rebooting the DMs.

- To unbind a spare disk, use the following command:

```
./nas_raid delete spare <spare disk number>
```

Where the spare disk number is the number following the Spare ID: in the `nas_raid` command output, as shown in [Figure 6 on page 32](#).

- To delete all the diskgroups in the virtual storage, use the following command:



WARNING

This command will erase all of the virtual storage, including any data that is contained there. This includes the original 25 GB of virtual storage configured at installation.

```
/.nas_raid cleanup
```

Before you run the `/.nas_raid cleanup` command, all file systems and volumes associated with the LUNs must be deleted. Use the `nas_disk -l` command to identify any file systems or volumes associated with the LUNs you are about to delete are in use.

Type **yes** at the confirmation screen to confirm the deletion of the virtual storage.

6. If you have multiple diskgroups or multiple hot spares to delete, repeat the `./nas_raid delete` command as appropriate.

Note: Before you can delete an enclosure, you must delete all of the diskgroups and hot spares in the enclosure. If you do not delete all of them, the enclosure deletion will fail.

7. Reboot the Data Movers by typing:
`/nas/bin/server_cpu ALL -reboot now`
8. Return to the root directory by typing:
`cd /root`
9. Run the `setup_clariion` command by typing:
`/nas/sbin/setup_clariion -init`
 The **Enclosure Configuration Menu** appears, as shown in [Figure 2 on page 27](#).
10. Enter **2** to select **Delete Existing Enclosure**.
11. Enter the number of the enclosure to delete, as shown in [Figure 7](#).
 The number is written in the format of `<Bus number>_<enclosure number>`. For example, enclosure `3_2` is enclosure two on the third bus.

```
Enclosure(s) 0_0,1_0,2_0 are installed in the system.
Enclosure info:
-----
      0  1  2  3  4  5  6  7  8  9 10 11 12 13 14
2_0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146 146
FC  UB  UB
-----
1_0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146 146
FC   9   9   9   9   9  10  10  10  10  10  11  11  11  11  11  R5
-----
0_0: 146 146 146 146 146 146 146 146 146 146 146 146 146 146 146
FC   0   0   0   0   0 200  0   0   0   0   0   0   0   0   0  R5
-----

Enclosure Configuration Menu:
1. Add New Enclosure
2. Delete Existing Enclosure
3. Continue to Diskgroup Template Menu

Please select a choice in the range of 1-3 or 'q' to quit [3]: 2
Enter Enclosure as "BUS_ENCL" (where BUS=0 to 3; ENCL=0 to 7) [2_0]: _
```

Figure 7 Delete Enclosure

12. Type `exit` to log out of root.

Adding a second Data Mover to Celerra Simulator

If you are using the one Data Mover version of Celerra Simulator, you can add a second Data Mover to your virtual Celerra.

Verify the following requirements before adding a second Data Mover to Celerra Simulator:

- ◆ The host system must have a minimum of 4.0 GB of RAM.
- ◆ If you are using VMware Workstation, you must be using version 6.0 or higher.

You may also need to increase the memory simulated by the virtual machine.

Note: Be aware that increasing the simulated memory too much will degrade the performance of your PC and virtual machine.

degrade the performance of your PC and virtual machine.

Complete the following steps to add a second Data Mover to the virtual Celerra:

1. Reboot the virtual machine and log in as root. There will be two Data Movers running, but the second one (server_3) will have to be configured.
2. Run the following command to set up server_3:

```
/nas/sbin/setup_slot -init 3
```
3. Run the following command to verify that both Data Movers are set up:

```
/nas/bin/nas_server -l
```

Both server_2 and server_3 should be listed.
4. Configure the Data Movers using the normal Celerra commands.

Troubleshooting

For troubleshooting information regarding the setup or management of the virtual Celerra Simulator, refer to the *Celerra Network Server User Information CD* that shipped with the *EMC Celerra Simulator DVD* or is available at:

<http://Powerlink.EMC.com>

For troubleshooting information regarding the VMware software, refer to the VMware Knowledge Base at:

http://www.vmware.com/support/kb/enduser/std_alp.php

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