



EMC Installation Roadmap for CX-Series and FC-Series Storage Systems

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This manual contains checklists of the tasks required to install an EMC CX-Series or FC-Series storage system in a configuration with a server running the AIX®, HP-UX®, IRIX®, Linux®, Novell® NetWare®, Solaris™, Tru64® UNIX®, Windows® 2000, or Windows NT® operating system.

Audience

This roadmap is intended for use by system administrators and/or service personnel during installation of CLARiiON® Fibre Channel storage systems.

Readers of this roadmap should be familiar with the following topics:

- ◆ The operating system running on the server that you are installing.
- ◆ How the operating system handles the device names of physical disks (LUNs).

Organization

This manual contains eight chapters, as follows.

- | | |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Chapter 1 | Installation checklist for an AIX server with EMC PowerPath™, Application Transparent Failover™ (ATF) or CLARiiON Driver Extensions (CDE) software. |
| Chapter 2 | Installation checklist for an HP-UX server. |
| Chapter 3 | Installation checklist for an IRIX server. |
| Chapter 4 | Installation checklist for a Linux server with and without EMC PowerPath software. |
| Chapter 5 | Installation checklist for a NetWare server with EMC PowerPath, ATF, or CDE. |

Chapter 6	Installation checklists for a Solaris server with EMC PowerPath, ATF, or CDE, or VERITAS DMP.
Chapter 7	Installation checklist for a Tru64 UNIX server.
Chapter 8	Installation checklists for a Windows 2000 or Windows NT server with EMC PowerPath, ATF, or CDE.

**Conventions Used in
This Guide**

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

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.

Typographical Conventions

This manual uses the following format conventions:

This typeface	<ul style="list-style-type: none">◆ Specific filenames or complete paths.◆ Dialog box names and menu items in text.◆ Selections you can make from the user interface, including buttons, icons, options, and field names.◆ Emphasis in cautions and warnings.
<i>This typeface</i>	<ul style="list-style-type: none">◆ New terms or unique word usage in text.◆ Command line arguments when used in text.
<code>This typeface</code>	<ul style="list-style-type: none">◆ Represents a system response (such as a message or prompt), a file or program listing.
<code>x -> y</code>	Represents a menu path. For example, Operations -> Poll All Storage Systems tells you to select Poll All Storage Systems on the Operations menu.

Where to Get Help

For questions about technical support and service, contact your service provider.

If you have a valid EMC service contract, contact EMC Customer Service at:

United States: (800) 782-4362 (SVC-4EMC)

Canada: (800) 543-4782 (543-4SVC)

Worldwide: (508) 497-7901

Follow the voice menu prompts to open a service call, then select CLARiiON Product Support.

Sales and Customer Service Contacts

For the list of EMC sales locations, please access the EMC home page at:

<http://www.emc.com/contact/>

For additional information on the EMC products and services available to customers and partners, refer to the EMC Powerlink Web site 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 a message to techpub_comments@emc.com with your opinions of this guide.

AIX Installation Checklists

This chapter contains checklists of the tasks required to install a CLARiiON[®] CX400, CX600, or FC-Series storage system in a configuration with an IBM AIX[®] server and PowerPath[™] or ATF/CDE failover software.

ATF/CDE failover software does not support CX-Series storage systems.

The sections for the different configurations are

- ◆ PowerPath Configurations for AIX 1-2
- ◆ ATF or CDE Configurations for AIX 1-43

PowerPath Configurations for AIX

Read this section if you are installing a AIX PowerPath configuration with a new or existing server and a new or existing CX400, CX600, or FC4700-Series storage system. A new and existing server and a new and existing storage system are defined as follows:

new server - A server running AIX and *not* connected to any storage system.

existing server - A server running AIX and that is already connected to one or more storage systems.

new storage system - A CX400, CX600, or FC4700-Series storage system that has the factory default settings and has *never* been connected to a server.

existing storage system - A CX400, CX600, or FC4700-Series storage system that is already connected to one or more servers and is in a Navisphere® domain.

All CLARiiON storage systems connected to the server must be CX400, CX600, or FC4700-Series storage systems. If any other type of CLARiiON storage system is connected to the server, the server cannot run AIX PowerPath.

Topics relating to the checklists for AIX PowerPath configurations are

- ◆ Required Software Revisions 1-3
- ◆ Prerequisites 1-4
- ◆ Documentation..... 1-4
- ◆ PowerPath Checklist — New AIX Server and New Storage System..... 1-6
- ◆ PowerPath Checklist — New AIX Server and Existing Storage System..... 1-14
- ◆ PowerPath Checklist — Existing AIX Server and New Storage System..... 1-23
- ◆ PowerPath Checklist — Existing AIX Server and Existing Storage System..... 1-33

Required Software Revisions

- ◆ AIX operating system revision listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ HBA driver revision listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ AIX PowerPath 3.0.0 with patch 3.0.2 or higher
- ◆ EMC CLArrayS3 version 5.1.0.0 or higher

Refer to the PowerPath Release Notes on the Powerlink website (<http://powerlink.emc.com>) for the specific revision required for your AIX version.

- ◆ For CX400 storage systems
 - CX400 Access Logix™ version 02.02.1.40.5.004 or higher
or
CX400 Base Software shipping version 02.02.0.40.5.004 or higher
 - EMC ControlCenter™ Navisphere SP Agent version 6.1 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
 - EMC ControlCenter Navisphere Manager version 6.1 or higher
- ◆ For CX600 storage systems
 - CX600 Access Logix version 02.01.1.60.5.006 or higher
or
CX600 Base Software version 02.01.0.60.5.006 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.1 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
 - EMC ControlCenter Navisphere Manager version 6.1 or higher
- ◆ For FC4700 storage systems
 - FC4700 Access Logix version 8.45.5x or higher
or
FC4700 Base Software version 8.45.0x or higher

- EMC ControlCenter Navisphere SP Agent version 6.1 or higher
- EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
- EMC ControlCenter Navisphere Manager version 6.1 or higher

Prerequisites

- ◆ You must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system server and that you will connect to the SPs in CX400, CX600, or FC4700-Series storage system.
- ◆ For most configurations, you must also have a host that is
 - Running Navisphere CLI version 6.X
 - On a network that is connected to the storage-system server and that you will connect to SPs in CX400, CX600, or FC4700-Series storage systems.
- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)

Documentation

Each checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop before starting the installation.

- ◆ Documentation that ships with
 - PCI HBA and native IBM HBA driver
 - Switches
 - AIX operating system and HACMP (if using HACMP)

- ◆ *Removing ATF or CDE Software Before Installing Other Failover Software (P/N 069001173)*
- ◆ *PowerPath Product Guide (P/N 300-000-510)*
- ◆ *PowerPath Version 3.0 for UNIX Installation and Administration Guide (P/N 300-000-511)*
- ◆ *EMC ControlCenter Navisphere Host Agent and CLI for AIX Version 6.X Installation Guide (P/N 069001145)*
- ◆ *EMC ControlCenter Navisphere Command Line Interface (CLI) Version 6.X Reference (P/N 069001038)*
- ◆ *EMC Storage-System Host Utilities for AIX Administrator's Guide (P/N 069001137)*
- ◆ *EMC SnapView admsnap Utility Administrator's Guide (P/N 069001039)*
- ◆ *EMC Storage Systems 40U Cabinet Configuration Guide (P/N 014003082)*
- ◆ *EMC 2-Gigabit Storage Processor Enclosure (DAE2) Model CX400 Setup Guide (P/N 014003105)*
- ◆ *EMC Storage Processor Enclosure (SPE) Model CX600 Setup Guide (P/N 014003078)*
- ◆ *EMC Storage Systems CX-Series Initialization Guide (P/N 014003112)*
- ◆ *EMC 2-Gigabit Disk Enclosure (DAE2) Setup Guide (P/N 014003104)*
- ◆ *FC4700-2 Setup Guide (P/N 0140373)*
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide (P/N 069001125)*
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide (P/N 069001124)*
- ◆ *EMC CLARiiON Host Connectivity Guide for IBM AIX (P/N 300-000-608)*

PowerPath Checklist — New AIX Server and New Storage System

Tasks highlighted with grey in the checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	HBA documentation
2 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide
3 Server <i>Install CLARiiON software</i>	<input type="checkbox"/> Insert the AIX Utilities Kit CD and mount it. <input type="checkbox"/> Install the CLArraySx software using SMIT or from the command line.	<input type="checkbox"/> Insert the AIX Utilities Kit CD and mount it. <input type="checkbox"/> Install the CLArraySx software using SMIT or from the command line.	AIX utilities administrator's guide
4 Server <i>Install Host Agent</i>	<input type="checkbox"/> Insert the AIX Navisphere Host Based Agent/CLI CD and mount it. <input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Insert the AIX Navisphere Host Based Agent/CLI CD and mount it. <input type="checkbox"/> Install the Navisphere Host Agent and CLI.	AIX Host Agent and CLI installation guide
5 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install the admsnap utility.	N/A	Admsnap administrator's guide
6 Server <i>Install PowerPath</i>	<input type="checkbox"/> Insert the PowerPath installation CD and mount it. <input type="checkbox"/> Install PowerPath using SMIT or from the command line.	<input type="checkbox"/> Insert the PowerPath installation CD and mount it. <input type="checkbox"/> Install PowerPath using SMIT or from the command line.	PowerPath Release Notes and PowerPath for UNIX installation and administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
6 Server Install PowerPath (cont.)	<input type="checkbox"/> Register PowerPath. Contrary to what the PowerPath documentation says, you cannot initialize the PowerPath devices at this time because the server is not connected to the storage system. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/aix	<input type="checkbox"/> Register PowerPath. Contrary to what the PowerPath documentation says, you cannot initialize the PowerPath devices at this time because the server is not connected to the storage system. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/aix	PowerPath for UNIX installation and administrator's guide
7 Switches Install	For a SAN <input type="checkbox"/> Install switches, if not already installed. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port. <input type="checkbox"/> Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	For a SAN <input type="checkbox"/> Install switches, if not already installed. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port. <input type="checkbox"/> Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Rails, cabinet, and switch documentation AIX documentation Switch documentation
8 Storage System Install	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed.	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed.	Rails and cabinet documentation

Task	With Access Logix	Without Access Logix	Reference Document
9 Storage System <i>Initialize and install software</i>	<input type="checkbox"/> Initialize the storage system and install Access Logix. <input type="checkbox"/> If you have SnapView and/or MirrorView software, install it.	<input type="checkbox"/> Initialize the storage system.	Storage-system setup guide and Manager administrator's guide and online help
10 Storage System <i>Cable</i>	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system.	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system.	Storage-system setup guide.
11 Storage System <i>Set up security</i>	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> Use Navisphere Manager to define a global administrator (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
12 Storage System <i>Set properties for PowerPath</i>	<input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: navicli -h <i>hostname</i> systemtype -config 3 navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycommpath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system. Note: Unlike many other operating systems, AIX does <i>not</i> require that the array commpath property be set to 1 (enabled). If you set it to 1, you will have to remove the LUNZ devices later in the procedure.	<input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: navicli -h <i>hostname</i> systemtype -config 3 navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycommpath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system. Note: Unlike many other operating systems, AIX does <i>not</i> require that the array commpath property be set to 1 (enabled). If you set it to 1, you will have to remove the LUNZ devices later in the procedure.	CLI reference
13 Switches <i>Zone</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	Switch documentation
14 Server <i>Make target SP available</i>	<input type="checkbox"/> Execute the AIX command cfgmgr	<input type="checkbox"/> Execute the AIX command cfgmgr	AIX documentation

[illegible]

Task	With Access Logix	Without Access Logix	Reference Document
16 Storage System <i>Set up Event Monitor</i>	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
17 Server <i>Configure devices</i>	<input type="checkbox"/> Execute the AIX command cfgmgr emc_cfgmgr.sh You can download emc_cfgmgr.sh from the ftp URL ftp://ftp.emc.com/pub/elab/powerpath/aix <input type="checkbox"/> Execute the PowerPath command powermt config <input type="checkbox"/> Checkpoint - Verify that the server sees hdisk devices for the LUNs. <input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command Powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 12. 	<input type="checkbox"/> Execute the AIX command cfgmgr emc_cfgmgr.sh You can download emc_cfgmgr.sh from the ftp URL ftp://ftp.emc.com/pub/elab/powerpath/aix <input type="checkbox"/> Execute the PowerPath command powermt config <input type="checkbox"/> Checkpoint - Verify that the server sees hdisk devices for the LUNs. <input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command Powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 12. 	AIX documentation PowerPath product guide AIX documentation PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
17 Server Configure devices (cont.)	<input type="checkbox"/> Restart the Navisphere Host Agent with the AIX commands /etc/rc.agent stop /etc/rc.agent start <input type="checkbox"/> Checkpoint - Use Navisphere Manager to verify that the LUNs are mapped to hdiskpower devices.	<input type="checkbox"/> Checkpoint - Use Navisphere Manager to verify that the LUNs are mapped to hdiskpower devices.	AIX Host Agent and CLI installation guide Manager administrator's guide and on-line help
18 Serve Make LUNs available to AIX	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs. If AIX does not recognize any LUNs, verify the connection to the Storage Group.	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.	Host connectivity guide or AIX documentation
19 Server Test PowerPath with a license key	If you have a PowerPath license key If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN.	If you have a PowerPath license key If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN.	AIX documentation PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
19 Server Test PowerPath with a license key (cont.)	<input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

You are now ready to set up any optional software, such as SnapView or MirrorView.

PowerPath Checklist — New AIX Server and Existing Storage System

Tasks highlighted with grey in the checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	HBA documentation
2 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide
3 Server <i>Install CLARiiON software</i>	<input type="checkbox"/> Insert the AIX Utilities Kit CD and mount it. <input type="checkbox"/> Install the CLArraySx software using SMIT or from the command line.	<input type="checkbox"/> Insert the AIX Utilities Kit CD. and mount it <input type="checkbox"/> Install the CLArraySx software using SMIT or from the command line.	AIX utilities administrator's guide
4 Server <i>Install PowerPath</i>	<input type="checkbox"/> Insert the PowerPath installation CD and mount it. <input type="checkbox"/> Install PowerPath using SMIT or from the command line. <input type="checkbox"/> Register PowerPath. Contrary to what the PowerPath documentation says, you cannot initialize the PowerPath devices at this time because the server is not connected to the storage system. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/aix	<input type="checkbox"/> Insert the PowerPath installation CD and mount it. <input type="checkbox"/> Install PowerPath using SMIT or from the command line <input type="checkbox"/> Register PowerPath. Contrary to what the PowerPath documentation says, you cannot initialize the PowerPath devices at this time because the server is not connected to the storage system. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/aix	PowerPath Release Notes and PowerPath for UNIX installation and administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
5 Server <i>Install Host Agent</i>	<input type="checkbox"/> Insert the AIX Navisphere Host Based Agent/CLI CD and mount it. <input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Insert the AIX Navisphere Host Based Agent/CLI CD and mount it. <input type="checkbox"/> Install the Navisphere Host Agent and CLI.	AIX Host Agent and CLI installation guide
6 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install the admsnap utility.	N/A	Admsnap administrator's guide
7 Storage System <i>Update software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 1-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 1-3), update it: <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
8 Storage System <i>Set properties for PowerPath</i>	<input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's HBA ports (initiators): Initiator Type to Open CLARiiON Failover mode to 1 Array commpath to Disabled Note: Unlike many other operating systems, AIX does <i>not</i> require that the array commpath property be set to enabled) If you set it to enabled, you will have to remove the LUNZ devices later in the procedure.	<input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: navicli -h <i>hostname</i> systemtype -config 3 navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycommpath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system. Note: Unlike many other operating systems, AIX does <i>not</i> require that the array commpath property be set to 1 (enabled). If you set it to 1, you will have to remove the LUNZ devices later in the procedure.	Manager administrator's guide and on-line help or CLI reference
9 Server <i>Cable to switches or storage system</i>	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Execute the AIX command cfgmgr	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Execute the AIX command cfgmgr	Storage-system setup guide. AIX documentation

Task	With Access Logix	Without Access Logix	Reference Document
9 Server <i>Cable to switches or storage system (cont.)</i>	<input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Switch documentation
10 Switches <i>Zone</i>	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	For a SAN <p>Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs</p> <ul style="list-style-type: none"> <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	Switch documentation

Task	With Access Logix	Without Access Logix	Reference Document
11 Server <i>Make target SP available</i>	<input type="checkbox"/> Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - Verify that the AIX does not see any LUNZ devices with the AIX command lscfg grep LUNZ If AIX sees LUNZ devices <ul style="list-style-type: none"> • Check that array comppath is set to 0 as described in step 8. • Remove each LUNZ device with the AIX command rmdev -dl hdisk<i>n</i> where <i>n</i> is the hdisk number for the LUNZ device. • Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned with the AIX command lsdev -Cc array <input type="checkbox"/> Restart the Navisphere Host Agent with the AIX commands /etc/rc.agent stop /etc/rc.agent start <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system.	<input type="checkbox"/> Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - Verify that the AIX does not see any LUNZ devices with the AIX command lscfg grep LUNZ If AIX sees LUNZ devices <ul style="list-style-type: none"> • Check that array comppath is set to 0 as described in step 8. • Remove each LUNZ device with the AIX command rmdev -dl hdisk<i>n</i> where <i>n</i> is the hdisk number for the LUNZ device. • Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned with the AIX command lsdev -Cc array	AIX documentation AIX Host Agent and CLI installation guide Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
12 Storage System Configure	<input type="checkbox"/> If the server will use an <i>existing</i> Storage Group, use Navisphere Manager to connect the server to the Storage Group. <input type="checkbox"/> If the server will use a <i>new</i> Storage Group, use Navisphere Manager to create RAID Groups, bind LUNs, create the Storage Group, and assign LUNs to the Storage Group. <input type="checkbox"/> Use Navisphere Manager to connect the server to the Storage Group.	N/A	Manager administrator's guide and on-line help Manager administrator's guide and on-line help Manager administrator's guide and on-line help
13 Storage System Set up Event Monitor	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
14 Server Configure devices	<input type="checkbox"/> Execute the AIX commands cfgmgr emc_cfgmgr.sh You can download emc_cfgmgr.sh from the ftp URL ftp://ftp.emc.com/pub/elab/powerpath/aix <input type="checkbox"/> Execute the PowerPath command powermt config <input type="checkbox"/> Checkpoint - Verify that the servers see hdisk devices for the LUNs.	<input type="checkbox"/> Execute the AIX commands cfgmgr emc_cfgmgr.sh You can download emc_cfgmgr.sh from the ftp URL ftp://ftp.emc.com/pub/elab/powerpath/aix <input type="checkbox"/> Execute the PowerPath command powermt config <input type="checkbox"/> Checkpoint - Verify that the servers see hdisk devices for the LUNs.	AIX documentation PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
14 Server <i>Configure devices (cont.)</i>	<p><input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command</p> <p>Powermt display dev=all class=clariion</p> <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 8. <p><input type="checkbox"/> Restart the Navisphere Host Agent with the AIX commands</p> <p>/etc/rc.agent stop /etc/rc.agent start.</p> <p><input type="checkbox"/> Checkpoint - Use Navisphere Manager to verify that the LUNs are mapped to hdiskpower devices.</p>	<p><input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command</p> <p>Powermt display dev=all class=clariion</p> <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 8. <p><input type="checkbox"/> Checkpoint - Use Navisphere Manager to verify that the LUNs are mapped to hdiskpower devices.</p>	<p>PowerPath product guide</p> <p>AIX Host Agent and CLI installation guide</p> <p>Manager administrator's guide and on-line help</p>
15 Serve <i>Make LUNs available to AIX</i>	<p><input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.</p> <p>If AIX does not recognize any LUNs, verify the connection to the Storage Group.</p>	<p><input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.</p>	<p>Host connectivity guide or AIX documentation</p>

Task	With Access Logix	Without Access Logix	Reference Document
16 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes “dead.” • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes “dead.” • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	<p>AIX documentation</p> <p>PowerPath product guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
16 Server <i>Test PowerPath with a license key (cont.)</i>	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

You are now ready to set up any optional software, such as SnapView or MirrorView.

PowerPath Checklist — Existing AIX Server and New Storage System

Tasks highlighted with grey in the checklist should be performed before the service provider arrives, except for the removal of ATF or CDE, which you can have done by EMC Professional Services.



CAUTION

You cannot run ATF or CDE and PowerPath on the same server. Before you transition your server from ATF or CDE to PowerPath, you must

- ◆ **Back up your server configurations.**
- ◆ **Back up data on all storage systems connected to the server.**
- ◆ **Remove ATF or CDE, which EMC recommends that EMC Professional Services do, especially if your server configuration is complex. If you want to remove it yourself, you must use the procedure in the *Removing ATF or CDE Software Before Installing Other Failover Software* document (P/N 069001173), which is on the Powerlink website with this roadmap.**

Simply removing ATF or CDE using the uninstall procedure in the AIX ATF administrator's guide or the AIX utilities administrator's guide may not return the server to its original state, and may result in lost data.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Unmount file systems and vary off volumes</i>	<input type="checkbox"/> Unmount any files systems that reside on the storage system. <input type="checkbox"/> Vary off any volume groups that reside on the storage systems.	<input type="checkbox"/> Unmount any files systems that reside on the storage system. <input type="checkbox"/> Vary off any volume groups that reside on the storage systems.	AIX documentation
2 Server Replace CLARiiON HBA driver	If the CLARiiON HBA driver is installed <input type="checkbox"/> Remove the hdisk devices for LUNs in the storage system. <input type="checkbox"/> Replace it with the IBM HBA driver.	If the CLARiiON HBA driver is installed <input type="checkbox"/> Remove the hdisk devices for LUNs in the storage system. <input type="checkbox"/> Replace it with the IBM HBA driver	AIX documentation HBA driver documentation
3 Server <i>Remove ATF or CDE</i>	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	Removing ATF or CDE
4 Server <i>Install CLARiiON software</i>	<input type="checkbox"/> Remove the DiskArray software,. CAUTION Do not reboot the server. <input type="checkbox"/> Disconnect any non-FC4700 or non-CX-Series storage systems. PowerPath does not support these storage systems. <input type="checkbox"/> Insert the AIX Utilities Kit CD and mount it. <input type="checkbox"/> Install the CLArraySx software using SMIT or from the command line. <input type="checkbox"/> Reboot the server.	<input type="checkbox"/> Remove the DiskArray software. <input type="checkbox"/> CAUTION Do not reboot the server. <input type="checkbox"/> Disconnect any non-FC4700 or non-CX-Series storage systems. PowerPath does not support these storage systems. <input type="checkbox"/> Insert the AIX Utilities Kit CD and mount it. <input type="checkbox"/> Install the CLArraySx software using SMIT or from the command line. <input type="checkbox"/> Reboot the server.	AIX utilities administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
5 Server Replace Emulex LP8000 HBAs and/or Install additional HBAs	<p>Note: PowerPath requires Emulex PCI HBAs and the driver supported by IBM for AIX.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If the server has Emulex LP8000 HBAs connected to the storage system, replace them with the LP9000 HBAs. <input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. <p>CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.</p>	<p>Note: PowerPath requires Emulex PCI HBAs and the driver supported by IBM for AIX.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If the server has Emulex LP8000 HBAs connected to the storage system, replace them with the LP9000 HBAs. <input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. <p>CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.</p>	HBA documentation
6 Server Update Software	<ul style="list-style-type: none"> <input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 1-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent • admsnap 	<ul style="list-style-type: none"> <input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 1-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent 	HBA driver documentation AIX Host Agent and CLI installation guide Admsnap administrator's guide
7 Server Set HBA driver parameters	<ul style="list-style-type: none"> <input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON and PowerPath. <p>CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON and PowerPath. <p>CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.</p>	Host connectivity guide
8 Server Install PowerPath	<ul style="list-style-type: none"> <input type="checkbox"/> Insert the PowerPath installation CD and mount it. <input type="checkbox"/> Install PowerPath from the command line or using SMIT. <input type="checkbox"/> Register PowerPath. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/aix 	<ul style="list-style-type: none"> <input type="checkbox"/> Insert the PowerPath installation CD and mount it. <input type="checkbox"/> Install PowerPath from the command line or using SMIT. <input type="checkbox"/> Register PowerPath. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/aix 	PowerPath Release Notes and PowerPath for UNIX installation and administrator's guide
9 Storage System Install	<ul style="list-style-type: none"> <input type="checkbox"/> Install the storage system in the cabinet, if not already installed. 	<ul style="list-style-type: none"> <input type="checkbox"/> Install the storage system in the cabinet, if not already installed. 	Rails and cabinet documentation

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Task	With Access Logix	Without Access Logix	Reference Document
13 Storage System Set properties for PowerPath	<input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: navicli -h <i>hostname</i> systemtype -config 3 navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycommpath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system. Note: Unlike many other operating systems, AIX does <i>not</i> require that the array commpath property be set to 1 (enabled). If you set it to 1, you will have to remove the LUNZ devices later in the procedure.	<input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: navicli -h <i>hostname</i> systemtype -config 3 navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycommpath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system. Note: Unlike many other operating systems, AIX does <i>not</i> require that the array commpath property be set to 1 (enabled). If you set it to 1, you will have to remove the LUNZ devices later in the procedure.	CLI reference
14 Server Cable additional HBAs to switches or storage system	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide. AIX documentation Switch documentation

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Task	With Access Logix	Without Access Logix	Reference Document
17 Storage System Configure	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups, and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs.	Manager administrator's guide and online help
18 Storage System Set up Event Monitor	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
19 Server Configure devices	<input type="checkbox"/> Execute the AIX commands cfgmgr emc_cfgmgr.sh You can download emc_cfgmgr.sh from the ftp URL ftp://ftp.emc.com/pub/elab/powerpath/aix <input type="checkbox"/> Execute the PowerPath command powermt config <input type="checkbox"/> Checkpoint - Verify that the server sees hdiskpower devices for the LUNs.	<input type="checkbox"/> Execute the AIX commands cfgmgr emc_cfgmgr.sh You can download emc_cfgmgr.sh from the ftp URL ftp://ftp.emc.com/pub/elab/powerpath/aix <input type="checkbox"/> Execute the PowerPath command powermt config <input type="checkbox"/> Checkpoint - Verify that the server sees hdiskpower devices for the LUNs.	AIX documentation PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
19 Server <i>Configure devices (cont.)</i>	<p><input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command</p> <p>Powermt display dev=all class=clariion</p> <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 13. <p><input type="checkbox"/> Restart the Navisphere Host Agent with the AIX commands</p> <p>/etc/rc.agent stop /etc/rc.agent start</p> <p><input type="checkbox"/> Checkpoint - Use Navisphere Manager to verify that the LUNs are mapped to hdiskpower devices.</p>	<p><input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command</p> <p>Powermt display dev=all class=clariion</p> <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 13. <p><input type="checkbox"/> Checkpoint - Use Navisphere Manager to verify that the LUNs are mapped to hdiskpower devices.</p>	<p>PowerPath product guide</p> <p>AIX Host Agent and CLI installation guide</p> <p>Manager administrator's guide and on-line help</p>
20 Server <i>Make LUNs available to AIX</i>	<p><input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.</p> <p>If AIX does not recognize any LUNs, verify the connection to the Storage Group.</p>	<p><input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.</p>	<p>Host connectivity guide or AIX documentation</p>

Task	With Access Logix	Without Access Logix	Reference Document
21 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command <p>powermt display dev=all class=clariion</p> <ul style="list-style-type: none"> <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command <p>powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes “dead.” • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command <p>powermt display dev=all class=clariion</p> <ul style="list-style-type: none"> <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command <p>powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes “dead.” • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
21 Server <i>Test PowerPath with a license key (cont.)</i>	<input type="checkbox"/> If you did not follow the previous steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> If you did not follow the previous steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

You are now ready to set up any optional software, such as SnapView or MirrorView.

PowerPath Checklist — Existing AIX Server and Existing Storage System

This checklist assumes that the existing AIX server and existing storage system are already connected in a SAN or direct attach configuration. Tasks highlighted with grey in the checklist should be performed before the service provider arrives, except for the removal of ATF or CDE, which you can have done by EMC Professional Services.



CAUTION

You cannot run ATF or CDE and PowerPath on the same server. Before you transition your server from ATF or CDE to PowerPath, you must

- ◆ **Back up your server configurations.**
- ◆ **Back up data on all storage systems connected to the server.**
- ◆ **Remove ATF or CDE, which EMC recommends that EMC Professional Services do, especially if your server configuration is complex. If you want to remove it yourself, you must use the procedure in the *Removing ATF or CDE Software Before Installing Other Failover Software* document (P/N 069001173), which is on the Powerlink website with this roadmap.**

Simply removing ATF or CDE using the uninstall procedure in the AIX ATF administrator's guide or the AIX utilities administrator's guide may not return the server to its original state, and may result in lost data.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Unmount file systems and vary off volumes</i>	<input type="checkbox"/> Unmount any file systems that reside on the storage system. <input type="checkbox"/> Vary off any volume groups that reside on the storage systems.	<input type="checkbox"/> Unmount any file systems that reside on the storage system. <input type="checkbox"/> Vary off any volume groups that reside on the storage systems.	AIX documentation
2 Server <i>Replace CLARiiON HBA driver</i>	If the CLARiiON HBA driver is installed <input type="checkbox"/> Remove the hdisk devices for LUNs in the storage system. <input type="checkbox"/> Replace it with the IBM HBA driver.	If the CLARiiON HBA driver is installed <input type="checkbox"/> Remove the hdisk devices for LUNs in the storage system. <input type="checkbox"/> Replace it with the IBM HBA driver.	AIX documentation HBA driver documentation
3 Server <i>Remove ATF or CDE</i>	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	Removing ATF or CDE
4 Server <i>Install CLARiiON software</i>	<input type="checkbox"/> Remove the DiskArray software., CAUTION Do not reboot the server. <input type="checkbox"/> Disconnect any non-FC4700 or non-CX-Series storage systems. PowerPath does not support these storage systems. <input type="checkbox"/> Insert the AIX Utilities Kit CD and mount it. <input type="checkbox"/> Install the CLArraySx software using SMIT or from the command line. <input type="checkbox"/> Reboot the server.	<input type="checkbox"/> Remove the DiskArray software. <input type="checkbox"/> CAUTION Do not reboot the server. <input type="checkbox"/> Disconnect any non-FC4700 or non-CX-Series storage systems. PowerPath does not support these storage systems. <input type="checkbox"/> Insert the AIX Utilities Kit CD and mount it. <input type="checkbox"/> Install the CLArraySx software using SMIT or from the command line. <input type="checkbox"/> Reboot the server.	AIX utilities administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
5 Server <i>Replace Emulex LP8000 HBAs and/or Install additional HBAs</i>	<p>Note: PowerPath requires Emulex PCI HBAs and the driver supported by IBM for AIX.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If the server has Emulex LP8000 HBAs connected to the storage system, replace them with the LP9000 HBAs. <input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. <p>CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.</p>	<p>Note: PowerPath requires Emulex PCI HBAs and the driver supported by IBM for AIX.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If the server has Emulex LP8000 HBAs connected to the storage system, replace them with the LP9000 HBAs. <input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. <p>CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure</p>	HBA documentation
6 Server <i>Update Software</i>	<ul style="list-style-type: none"> <input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 1-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent • admsnap 	<ul style="list-style-type: none"> <input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 1-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent 	HBA driver documentation AIX Host Agent and CLI installation guide Admsnap administrator's guide
7 Server <i>Set HBA driver parameters</i>	<ul style="list-style-type: none"> <input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON and PowerPath. <p>CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON and PowerPath. <p>CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.</p>	Host connectivity guide

Task	With Access Logix	Without Access Logix	Reference Document
8 Storage System Update software	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 1-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 1-3), update it: <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.	Manager administrator's guide and online help
9 Storage System Set properties for PowerPath	For new or replacement HBAs <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h hostname systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h hostname systemtype -config 3 CAUTION The above command reboots both SPs at the same time.	For any HBAs <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h hostname systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h hostname systemtype -config 3 CAUTION The above command reboots both SPs at the same time.	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
9 Storage System Set properties for PowerPath (cont.)	<p>For new or replacement HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 0</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>Note: Unlike many other operating systems, AIX does <i>not</i> require that the array commpath property be set to 1 (enabled). If you set it to 1, you will have to remove the LUNZ devices later in the procedure.</p> <p>For existing HBAs</p> <p>An existing HBA is one that is registered with the storage system.</p> <p><input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's existing HBA ports (initiators):</p> <p>Initiator Type to Open CLARiiON</p> <p>Failover mode to 1</p> <p>Array commpath to Disabled</p> <p>Note: Unlike many other operating systems, AIX does <i>not</i> require that the array commpath property be set to enabled) If you set it to enabled, you will have to remove the LUNZ devices later in the procedure.</p>	<p>For any HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 0</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>Note: Unlike many other operating systems, AIX does <i>not</i> require that the array commpath property be set to 1 (enabled). If you set it to 1, you will have to remove the LUNZ devices later in the procedure.</p>	<p>CLI reference</p> <p>Manager administrator's guide and online help</p>

Task	With Access Logix	Without Access Logix	Reference Document
10 Server <i>Install PowerPath</i>	<input type="checkbox"/> Insert the PowerPath installation CD and mount it. <input type="checkbox"/> Install PowerPath from the command line or using SMIT. <input type="checkbox"/> Register PowerPath. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/aix <input type="checkbox"/> Execute the PowerPath command powermt config	<input type="checkbox"/> Insert the PowerPath installation CD and mount it. <input type="checkbox"/> Install PowerPath from the command line or using SMIT. <input type="checkbox"/> Register PowerPath. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/aix <input type="checkbox"/> Execute the PowerPath command • powermt config	PowerPath Release Notes and PowerPath for UNIX installation and administrator's guide PowerPath product guide
11 Server <i>Cable additional HBAs to switches or storage system</i>	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Execute the AIX command cfgmgr <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide. AIX documentation Switch documentation

[illegible]

Task	With Access Logix	Without Access Logix	Reference Document
14 Server <i>Configure devices</i>	<p><input type="checkbox"/> If you replaced HBAs or added additional HBAs, use Navisphere Manager to disconnect and then reconnect the server and its Storage Group.</p> <p><input type="checkbox"/> Execute the AIX commands cfgmgr emc_cfgmgr.sh You can download emc_cfgmgr.sh from the ftp URL ftp://ftp.emc.com/pub/elab/powerpath/aix</p> <p><input type="checkbox"/> Execute the PowerPath command powermt config</p> <p><input type="checkbox"/> Checkpoint - Verify that the server sees hdiskpower devices for the LUNs.</p> <p><input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 9. <p><input type="checkbox"/> Restart the Navisphere Host Agent with the AIX commands /etc/rc.agent stop /etc/rc.agent start</p>	<p><input type="checkbox"/></p> <p><input type="checkbox"/> Execute the AIX commands cfgmgr emc_cfgmgr.sh You can download emc_cfgmgr.sh from the ftp URL ftp://ftp.emc.com/pub/elab/powerpath/aix</p> <p><input type="checkbox"/> Execute the PowerPath command powermt config</p> <p><input type="checkbox"/> Checkpoint - Verify that the server sees hdiskpower devices for the LUNs.</p> <p><input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 9 	<p>Manager administrator's guide and online help</p> <p>AIX documentation</p> <p>PowerPath product guide</p> <p>PowerPath product guide</p> <p>AIX Host Agent and CLI installation guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
14 Server <i>Configure devices (cont.)</i>	<input type="checkbox"/> Checkpoint - Use Navisphere Manager to verify that the LUNs are mapped to hdiskpower devices.	<input type="checkbox"/> Checkpoint - Use Navisphere Manager to verify that the LUNs are mapped to hdiskpower devices.	Manager administrator's guide and on-line help
15 Server <i>Test PowerPath with a license key</i>	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server.	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server.	PowerPath product guide
	<input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion	<input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion	
	<input type="checkbox"/> Choose one available LUN to receive I/O for the test.	<input type="checkbox"/> Choose one available LUN to receive I/O for the test.	
	<input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN.	<input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN.	
	<input type="checkbox"/> Start I/O to the LUN.	<input type="checkbox"/> Start I/O to the LUN.	
	<input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.	<input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.	
	<input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. 	<input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. 	

Task	With Access Logix	Without Access Logix	Reference Document
15 Server <i>Test PowerPath with a license key (cont.)</i>	<input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the previous steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the previous steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

ATF or CDE Configurations for AIX

Read this section if you are installing an AIX ATF or CDE configuration with a new server and a new FC-Series storage system, defined as follows:

new server - A server running AIX and *not* connected to any storage system.

new storage system - An FC-Series storage system that has the factory default settings and that has *never* been connected to a server.

All storage systems connected to the server must be FC-Series storage systems. If any other type of storage system is connected to the server, the server cannot run ATF or CDE. Note that *pre-FC4700 storage system*, refers to an FC4500, FC5300, or FC5700 storage system.

Topics relating to the checklists for AIX ATF or CDE configurations are

- ◆ Prerequisites 1-44
- ◆ Documentation..... 1-45
- ◆ ATF or CDE Checklist — New AIX Server and New Storage System 1-46

Prerequisites

All switches must be installed.

- ◆ Storage systems must be set up, initialized (if required), and connected to switches, and any optional storage-system software (Access Logix™, SnapView™, MirrorView™) you have must be installed.
- ◆ If any storage systems have SnapView, the admsnap utility must be installed on the servers that will be the SnapView production and secondary hosts.
- ◆ If you will use EMC ControlCenter™ Navisphere® Manager 6.X, you must have a host that is
 - Running an operating system that can support the EMC ControlCenter Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the EMC ControlCenter Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.
- ◆ If you will use EMC ControlCenter Navisphere Manager 5.X, you must have it installed on a Windows® 2000 or Windows NT® host on a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.
- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following manuals will help you with this planning:
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4700 Configuration Planning Guide* (P/N 014003016)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

Each checklist refers to some or all of the documents listed below. We recommend that you load this documents on your service laptop before starting the installation.

- ◆ Documentation that ships with
 - HBA and HBA driver
 - Switches
 - IBM AIX operating system
- ◆ *EMC Storage-System Host Utilities for AIX Administrator's Guide* (P/N 069001137)
- ◆ *EMC Navisphere Application Transparent Failover (ATF) for AIX Administrator's Guide* (P/N 069001162)
- ◆ *EMC ControlCenter Navisphere Host Agent and CLI for AIX Version 6.X Installation Guide* (P/N 069001145)
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide* (P/N 069001125)
or
EMC Navisphere Manager Version 5.X Administrator's Guide (P/N 069001143)
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide* (P/N 069001124)
- ◆ *EMC CLARiiON Host Connectivity Guide for IBM AIX* (P/N 300-000-608)

ATF or CDE Checklist — New AIX Server and New Storage System

Tasks highlighted with grey in the checklist should be performed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs, drivers, cables</i>	<input type="checkbox"/> Install the HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports.	<input type="checkbox"/> Install the HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports.	HBA documentation
2 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON® and ATF/CDE. <input type="checkbox"/> Checkpoint - For a SAN, verify the server connections to the switch by checking that the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON and ATF/CDE. <input type="checkbox"/> Checkpoint - For a SAN, verify the server connections to the switch by checking that the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Host connectivity guide and AIX utilities administrator guide
3 Server <i>Install disk-array utilities</i>	<input type="checkbox"/> Install the disk-array utilities: DiskArray and HACMP .	<input type="checkbox"/> Install the disk-array utilities: DiskArray and HACMP .	Utilities administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
4 Server <i>Install CDE or ATF</i>	<input type="checkbox"/> Install CDE or ATF.	<input type="checkbox"/> Install CDE or ATF.	For CDE - Utilities administrator's guide For ATF - Server software administrator's guide or ATF administrator's guide
5 Switches <i>Zone</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to an SP.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to an SP.	Switch documentation
6 Server <i>Configure CDE or ATF</i>	For a SAN <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Verify that each HBA port sees only the targets (SPs) to which it is zoned. For a direct attach <input type="checkbox"/> Configure CDE or ATF.	For a SAN <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Verify that each HBA port sees only the targets (SPs) to which it is zoned. For a direct attach <input type="checkbox"/> Configure CDE or ATF.	 For CDE - Utilities administrator's guide For ATF - ATF administrator's guide
7 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Host Agent. <input type="checkbox"/> Edit the agent.config file as follows: <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where <i>SP_ip_address</i> is the address of the SP.	<input type="checkbox"/> Install the Host Agent. <input type="checkbox"/> Edit the agent.config file as follows: <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where <i>SP_ip_address</i> is the address of the SP.	AIX Host Agent and CLI installation guide

[illegible]

Task	With Access Logix	Without Access Logix	Reference Document
12 Server <i>Make LUNs available to AIX</i>	<input type="checkbox"/> Prepare the LUNs to receive data. For example, create volume groups for the LUNs, and create and mount file systems on the volume groups. If AIX does not recognizes any LUNs, verify the connections to the Storage Group.	<input type="checkbox"/> Prepare the LUNs to receive data. For example, create volume groups for the LUNs, and create and mount file systems on the volume groups.	Host connectivity guide and AIX documentation

You are now ready to set up any optional software, such as SnapView or MirrorView.

HP-UX Installation Checklist

This chapter contains a checklist of the tasks required to install a new EMC CX400, CX600, or FC-Series storage system in a configuration with a new HP-UX® server.

Topics are

- ◆ HP-UX Configurations.....2-2
- ◆ Checklist - New HP-UX Server and New Storage System.....2-4

HP-UX Configurations

Read this section if you are installing an HP-UX configuration with a new server and a new storage system. A new server and storage system are defined as follows:

New server - A server running HP-UX and *not* connected to any storage system.

New storage system - A storage system that has the factory default settings and has *never* been connected to a server.

Note that *pre-FC4700 storage system*, refers to an FC4500, FC5300, or FC5700 storage system.

Topics relating to the checklist for an HP-UX configuration are

- ◆ Prerequisites 2-2
- ◆ Documentation..... 2-3
- ◆ Checklist - New HP-UX Server and New Storage System 2-4

Prerequisites

- ◆ All switches must be installed.
- ◆ Storage systems must be set up, initialized (if required), and connected to switches, and any optional storage-system software (Access Logix, SnapView, MirrorView) you have must be installed.
- ◆ If any storage systems have SnapView, the admsnap utility must be installed on the servers that will be the SnapView production and secondary hosts.
- ◆ If you will use Navisphere Manager 6.X, you must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system servers and that will be connected to the SPs in CX400, CX600, or FC4700-Series storage systems.

- ◆ If you will use Navisphere Manager 5.X, you must have it installed on a Windows 2000 or Windows NT host on a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.
- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4700 Configuration Planning Guide* (P/N 014003016)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

This checklist refers to some of all of the documents listed below. We recommend that you load these documents on your service laptop before starting the installation.

- ◆ Documentation that ships with
 - HBA and HBA driver
 - Switches
 - HP-UX operating system
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide* (P/N 069001125)
or
EMC Navisphere Manager Version 5.X Administrator's Guide (P/N 069001143)
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide* (P/N 069001124)
- ◆ *EMC Host Connectivity Guide for HP-UX* (P/N 300-000-614)

Checklist - New HP-UX Server and New Storage System

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs, drivers, cables</i>	<input type="checkbox"/> Install the HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports. <input type="checkbox"/> Install the HBA driver.	<input type="checkbox"/> Install the HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports. <input type="checkbox"/> Install the HBA driver.	HBA documentation
2 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. <input type="checkbox"/> Reboot the server to complete the installation of the drivers. <input type="checkbox"/> Checkpoint — For a SAN, verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. <input type="checkbox"/> Reboot the server to complete the installation of the drivers. <input type="checkbox"/> Checkpoint — For a SAN, verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Host connectivity guide and HBA documentation

Task	With Access Logix	Without Access Logix	Reference Document
3 Switches Zone	<p>For a SAN</p> <p><input type="checkbox"/> Zone the switches to provide a path from each host initiator to an SP.</p> <p><input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned with the commands: ioscan -fc disk insf -e</p>	<p>For a SAN</p> <p><input type="checkbox"/> Zone the switches to provide a path from each host initiator to an SP.</p> <p><input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned with the commands: ioscan -fc disk insf -e</p>	<p>Switch documentation</p> <p>HP-UX documentation</p>
4 Server Install Host Agent	<p><input type="checkbox"/> Prepare to install the Navisphere Host Agent.</p> <p><input type="checkbox"/> Install the Navisphere Host Agent.</p> <p><input type="checkbox"/> Modify user login scripts.</p> <p><input type="checkbox"/> Configure the Navisphere Host Agent.</p> <p><input type="checkbox"/> Edit the agent.config file as follows:</p> <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <p><input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where SP_ip_address is the address of the SP.</p> <p><input type="checkbox"/> Restart the Navisphere Host Agent.</p>	<p><input type="checkbox"/> Prepare to install the Navisphere Host Agent.</p> <p><input type="checkbox"/> Install the Navisphere Host Agent.</p> <p><input type="checkbox"/> Modify user login scripts.</p> <p><input type="checkbox"/> Configure the Navisphere Host Agent.</p> <p><input type="checkbox"/> Edit the agent.config file as follows:</p> <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <p><input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where SP_ip_address is the address of the SP.</p> <p><input type="checkbox"/> Restart the Navisphere Host Agent.</p>	<p>HP-UX Host Agent and CLI installation guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
5 CX400, CX600, or FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help
6 Storage System <i>Set system type</i>	<input type="checkbox"/> Set the initiator type with one of the following entries in the agent.config file: No auto trespass for HP-UX without PVLlinks # OptionsSupported Autotrespass Auto trespass for HP-UX with PVLlinks OptionsSupported Autotrespass	<input type="checkbox"/> Use Navisphere CLI to set the default storage-system type with the following command: navicli -h hostname systemtype -config x where x is one of the following: A for auto-trespass off (HP-UX without PVLlinks) 2 for auto-trespass on (HP-UX with PVLlinks) hostname is the IP address or network name of an SP in the storage system.	CLI reference
7 CX400, CX600, Storage System <i>Set properties</i>	<input type="checkbox"/> Use Navisphere CLI to set the default failover mode and array compath properties with the following commands: navicli -h hostname failovermode 0 navicli -h hostname arraycompath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system.	<input type="checkbox"/> Use Navisphere CLI to set the default failover mode and array compath properties with the following commands: navicli -h hostname failovermode 0 navicli -h hostname arraycompath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system.	CLI reference
8 Storage System <i>Configure</i>	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups.	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs.	Manager administrator's guide and on-line help

Task	With Access Logix	Without Access Logix	Reference Document
8 Storage System Configure (cont.)	<input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group. <input type="checkbox"/> Stop and start the Host Agent. Now the LUNs in the Storage Group look like any other disks in the server. <input type="checkbox"/> Checkpoint - Verify that HP-UX can recognize these LUNs with the commands: ioscan -fc disk insf -e If HP-UX does not recognize any LUNs, verify the connection to the Storage Group.	<input type="checkbox"/> Stop and start the Host Agent. Now the LUNs look like any other disks in the server. <input type="checkbox"/> Checkpoint - Verify that HP-UX can recognize these LUNs with the commands: ioscan -fc disk insf -e	Manager administrator's guide and online help HP-UX Host Agent and CLI installation guide HP-UX documentation
9 Storage System Set up Event Monitor	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
10 Server Make LUNs available to HP-UX	<input type="checkbox"/> Prepare the LUNs to receive data using the Logical Volume Manager (LVM). If HP-UX does not recognizes any LUNs, verify the connection to the Storage Group.	<input type="checkbox"/> Prepare the LUNs to receive data using the Logical Volume Manager (LVM).	Host connectivity guide and HP-UX documentation

You are now ready to set up any optional software, such as SnapView or MirrorView.

IRIX Installation Checklist

This chapter contains a checklist of the tasks required to install a new EMC CX400, CX600, FC4700, or FC5500 storage system in a configuration with a new IRIX® server.

Topics are

- ◆ IRIX Configurations.....3-2
- ◆ Checklist - New IRIX Server and New Storage System3-4

IRIX Configurations

Read this section if you are installing an IRIX configuration with a new server and a new storage system. A new server and storage system are defined as follows:

New server - A server running IRIX and *not* connected to any storage system.

New storage system - A storage system that has the factory default settings and has *never* been connected to a server.

Topics relating to the checklist for an IRIX configuration are

- ◆ Prerequisites 3-2
- ◆ Documentation..... 3-3
- ◆ Checklist - New IRIX Server and New Storage System 3-4

Prerequisites

- ◆ All switches must be installed.
- ◆ Storage systems must be set up, initialized (if required), and connected to switches, and any optional storage-system software (Access Logix, SnapView, MirrorView) must be installed.
- ◆ If any storage systems have SnapView, the admsnap utility must be installed on the servers that will be the SnapView production and secondary hosts.
- ◆ If you will use Navisphere Manager 6.X, you must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system servers and that will be connected to the SPs in CX400, CX600, or FC4700-Series storage systems.
- ◆ If you will use Navisphere Manager 5.X, you must have it installed on a Windows 2000 or Windows NT host on a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.

- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4700 Configuration Planning Guide* (P/N 014003016)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

This checklist refers to some of all of the documents listed below. We recommend that you load these documents on your service laptop before starting the installation.

- ◆ Documentation that ships with
 - HBA and HBA driver
 - Switches
 - IRIX operating system
- ◆ *EMC ControlCenter Navisphere Host Agent and CLI for IRIX Version 6.X Installation Guide* (P/N 069001147)
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide* (P/N 069001125)
or
EMC Navisphere Manager Version 5.X Administrator's Guide (P/N 069001143)
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide* (P/N 069001124)
- ◆ *EMC Host Connectivity Guide for Silicon Graphics* (P/N 300-000-617)

Checklist - New IRIX Server and New Storage System

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs, drivers, cables</i>	<input type="checkbox"/> Install the HBAs, and boot the system. The HBA drivers are automatically installed. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port.	<input type="checkbox"/> Install the HBAs, and boot the system. The HBA drivers are automatically installed. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port.	HBA documentation
2 Server <i>HBA driver parameters</i>	<input type="checkbox"/> Make changes (topology, HBA, speed, etc.) in <code>/var/sysgen/master.d/qlfc</code> , if required. <input type="checkbox"/> Reboot the server if changes were made. <input type="checkbox"/> Checkpoint — For a SAN, verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Make changes (topology, HBA, and speed) in <code>/var/sysgen/master.d/qlfc</code> , if required. <input type="checkbox"/> Reboot the server if changes were made. <input type="checkbox"/> Checkpoint — For a SAN, verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Host connectivity guide and HBA documentation
3 Switches <i>Zone</i>	<input type="checkbox"/> Zone the switches to provide a path from each host initiator to an SP.	N/A	Switch documentation

[illegible]

Task	With Access Logix	Without Access Logix	Reference Document
6 Storage System Set system type	<input type="checkbox"/> Use Navisphere Manager to verify that HBA connections have been registered. If not, register them, specifying the SGI initiator type.	<input type="checkbox"/> Use Navisphere CLI to set the default storage-system type with the following command: navicli -h <i>hostname</i> systemtype - messner -config x where navicli -h <i>hostname</i> systemtype - messner -config x where <i>x</i> is one of the following: 9 for a CX400, CX600, or FC4700-Series storage system 17 for an FC5500 storage system <i>hostname</i> is the IP address or network name of an SP in the storage system.	Manager administrator's guide and on-line help, CLI reference manual, and release notes
7 CX400, CX600, Storage System Set properties	<input type="checkbox"/> Use Navisphere CLI to set the default failover mode and array comppath properties with the following commands: navicli -h <i>hostname</i> failovermode 0 navicli -h <i>hostname</i> arraycomppath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system.	<input type="checkbox"/> Use Navisphere CLI to set the default failover mode and array comppath properties with the following commands: navicli -h <i>hostname</i> failovermode 0 navicli -h <i>hostname</i> arraycomppath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system.	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
8 Storage System Configure	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group. <input type="checkbox"/> Run scsiha and ioconfig commands to configure LUNs. Now the LUNs in the Storage Group look like any other disks in the server. <input type="checkbox"/> Checkpoint — Use the hinv command to verify that IRIX recognizes the LUNs.	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs <input type="checkbox"/> Run scsiha and ioconfig commands to configure LUNs. Now the LUNs look like any other disks in the server. <input type="checkbox"/> Checkpoint — Use the hinv command to verify that IRIX recognizes the LUNs.	Manager administrator's guide and on-line help IRIX documentation
9 Storage System Set up Event Monitor	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Set user options, create templates, and set your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Set user options, create templates, and set your monitoring configuration.	Manager administrator's guide and on-line
10 Server Make LUNs available to IRIX	<input type="checkbox"/> Prepare the LUNs to receive data by creating device file names for the LUNs and creating partitions and logical volumes on the LUNs.	<input type="checkbox"/> Prepare the LUNs to receive data by creating device file names for the LUNs and creating partitions and logical volumes on the LUNs.	Host connectivity guide and IRIX documentation

You are now ready to set up any optional software, such as SnapView or MirrorView.

This chapter contains checklists of the tasks required to install an EMC CX-Series or FC-Series storage system in a configuration with a Linux[®] server and PowerPath or with no EMC failover software.

Topics are

- ◆ PowerPath Configurations for Linux.....4-2
- ◆ Configurations for Linux Without EMC Failover Software.....4-44

PowerPath Configurations for Linux

Read this section if you are installing a Linux PowerPath configuration with a new or existing server and a new or existing CX-Series, FC4500, or FC4700-Series, storage system. A new and existing server and a new and existing storage system are defined as follows:

new server - A server running Linux that is *not* connected to any storage system.

existing server - A server running Linux that is already connected to one or more storage systems.

new storage system - A CX-Series, FC4500, or FC4700-Series storage system that has the factory default settings and has *never* been connected to a server.

existing storage system - A CX-Series, FC4500, or FC4700-Series storage system that is already connected to one or more servers and is in a Navisphere domain.

All storage systems connected to the server must be CX-Series, FC4500, or FC4700-Series storage systems. If any other type of storage system is connected to the server, the server cannot run PowerPath.

Topics in this section are

- ◆ Required Software Revisions 4-3
- ◆ Prerequisites 4-5
- ◆ Documentation..... 4-6
- ◆ PowerPath Checklist — New Linux Server and New Storage System..... 4-8
- ◆ PowerPath Checklist — New Linux Server and Existing Storage System..... 4-17
- ◆ PowerPath Checklist — Existing Linux Server and New Storage System..... 4-25
- ◆ PowerPath Checklist — Existing Linux Server and Existing Storage System 4-34

Required Software Revisions

- ◆ Linux operating system revision and errata listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ HBA driver revision listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ Linux PowerPath 3.0.2
- ◆ For CX200 storage systems
 - CX200 Access Logix version 02.03.1.20.5.001 or higher
or
CX200 Base Software version 02.03.0.20.5.001 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.2 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.2 or higher
 - EMC ControlCenter Navisphere Manager Base version 6.2.1 and Management Server 6.2.
or
EMC ControlCenter Navisphere Manager version 6.2 or higher and Management Server 6.2 or higher
- ◆ For CX400 storage systems
 - CX400 Access Logix 02.02.1.40.5.004 or higher
or
CX400 Base Software 02.02.0.40.5.004 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.2 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.2 or higher
 - EMC ControlCenter Navisphere Manager version 6.2 or higher

- ◆ For CX600 storage systems
 - CX600 Access Logix 02.02.1.60.5.003 or higher
or
CX600 Base Software 02.02.0.60.5.003 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.2 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.2 or higher
 - EMC ControlCenter Navisphere Manager version 6.2 or higher
- ◆ For FC4500 storage systems
 - FC4500 Access Logix version 6.32.17 or higher
or
FC4500 Base Software version 5.32.17 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.2 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.2 or higher
 - EMC ControlCenter Navisphere Manager version 6.2 or higher
- ◆ For FC4700-Series storage systems
 - FC4700 Access Logix version 8.47.52 or higher
or
FC4700 Base Software version 8.47.02 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.2 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.2 or higher
 - EMC ControlCenter Navisphere Manager version 6.2 or higher

Prerequisites

- ◆ You must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system servers and that will be connected to the SPs in CX-Series or FC4700-Series storage systems.
- ◆ For most configurations, you must also have a host that is
 - Running Navisphere 6.X CLI
 - On a network that is connected to the storage-system server and that you will connect to SPs in CX-Series or FC4700-Series storage systems.
- ◆ For an FC4500 storage system connected to a server on which you will install PowerPath, you must have a computer that is *not* a laptop and that you can connect to the storage system. This computer must run
 - RedHat 2.1 Advance Server
 - Navisphere Host Agent and CLI version 6.1 or higher
- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX200 Configuration Planning Guide* (P/N 014003115)
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4700 Configuration Planning Guide* (P/N 014003016)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

Each checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop or, for an FC4500 or FC4700, on the computer you will connect to the storage system, before starting the installation.

- ◆ Documentation that ships with
 - HBA and HBA driver

This documentation is also available from the following website:

For Qlogic HBAs and drivers:

http://www.qlogic.com/support/drivers_software.asp

and select **EMC** in the **OEM-approved Drivers/Firmware** list at the bottom of the page.

- Switches
- Red Hat Linux operating system
- ◆ *PowerPath Version 3.0 Product Guide* (P/N 300-000-510)
- ◆ *PowerPath Version 3.0 Installation and Administration Guide for Linux* (P/N 300-000-514)
- ◆ *EMC ControlCenter Navisphere Host Agent and CLI for Linux Version 6.X Installation Guide* (P/N 069001148)
- ◆ *EMC ControlCenter Navisphere Command Line Interface (CLI) Version 6.X Reference* (P/N 069001038)
- ◆ *EMC SnapView admsnap and Command Line Interface (CLI) Administrator's Guide* (P/N 069001181)
or
EMC SnapView admsnap Utility Administrator's Guide (P/N 069001039)
- ◆ *EMC Storage Systems 40U Cabinet Configuration Guide* (P/N 014003082)
- ◆ *EMC 2-Gigabit Storage Processor Enclosure (DPE2) Model CX200 Setup Guide* (P/N 014003116)
- ◆ *EMC Storage Systems CX200 Initialization Guide* (P/N 014003117)
- ◆ *EMC 2-Gigabit Storage Processor Enclosure (DAE2) Model CX400 Setup Guide* (P/N 014003105)
- ◆ *EMC Storage Processor Enclosure (SPE) Model CX600 Setup Guide* (P/N 014003078)
- ◆ *EMC Storage Systems CX-Series Initialization Guide* (P/N 014003112)

- ◆ *EMC 2-Gigabit Disk Enclosure (DAE2) Setup Guide* (P/N 014003104)
- ◆ *FC4500 Setup Guide* (P/N 014003102, revision A03 or higher)
- ◆ *FC4700-2 Setup Guide* (P/N 0140373)
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide* (P/N 069001125)
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide* (P/N 069001124)
- ◆ *EMC Host Connectivity Guide for Linux* (P/N 300-000-604)

PowerPath Checklist — New Linux Server and New Storage System

Complete the tasks highlighted with grey in the checklist before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Boot host. <input type="checkbox"/> Install the appropriate version of the HBA driver. Make sure the QLogic HBA driver is always loaded after the internal SCSI adapter driver as specified by the <code>/etc/modules.conf</code> file.	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Boot host. <input type="checkbox"/> Install the appropriate version of the HBA driver. Make sure the QLogic HBA driver is always loaded after the internal SCSI adapter driver as specified by the <code>/etc/modules.conf</code> file.	HBA documentation (see URL on page 4-6) PowerPath for Linux installation guide
2 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays. <input type="checkbox"/> Reboot host.	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays. <input type="checkbox"/> Reboot host.	Linux host connectivity guide and HBA documentation (see URL on page 4-6)
3 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	Linux Host Agent and CLI installation guide
4 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install the admsnap utility.	N/A	Admsnap administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
5 Switches <i>Install</i>	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Install switches, if not already installed. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port. <input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. <p>For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Install switches, if not already installed. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port. <input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. <p>For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Rails, cabinet, and switch documentation
6 Storage System <i>Install</i>	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 7, and for an FC4500 storage system, skip to step 8.	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 7, and for an FC4500 storage system, skip to step 8.	Rails and cabinet documentation
7 CX-Series or FC4700-Series Storage System <i>Initialize and install software</i>	<ul style="list-style-type: none"> <input type="checkbox"/> Initialize the storage system and install Access Logix. <input type="checkbox"/> If you have SnapView and/or MirrorView software, install it. 	<input type="checkbox"/> Initialize the storage system.	Storage-system setup guide and Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
8 Storage System <i>Cable to switch or server and LAN or serial port</i>	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage-system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 10.	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage-system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 10.	Storage-system setup guide.
9 CX-Series or FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> Use Navisphere Manager to define a global administrator (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System <i>Set Properties for PowerPath</i>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
11 Switches Zone	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	Switch documentation
12 Server Make target SPs available	<ul style="list-style-type: none"> <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system. <input type="checkbox"/> Checkpoint - Make sure the /proc/scsi/scsi directory has entries for LUNs. <input type="checkbox"/> Checkpoint - Make sure the file for the HBAs, in the /proc/scsi directory, has entries for the expected targets. 	<ul style="list-style-type: none"> <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Make sure the /proc/scsi/scsi directory has entries for LUNs. <input type="checkbox"/> Checkpoint - Make sure the file for the HBAs, in the /proc/scsi directory, has entries for the expected targets. 	Linux documentation Manager administrator's guide and online help Linux documentation

Task	With Access Logix	Without Access Logix	Reference Document
13 Storage System Configure	<p><input type="checkbox"/> Use Navisphere Manager to set general storage-system properties.</p> <p><input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups, and assign LUNs to Storage Groups.</p> <p><input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group.</p> <p><input type="checkbox"/> Reload the driver (if the driver is loaded as a module) or reboot the server (if the driver is static to the kernel) so that Linux recognizes the LUNs.</p> <p>Now the LUNs in the Storage Group look like any other disks in the server.</p> <p><input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory.</p> <p>If any LUN entries are missing from the file, check the zoning.</p> <p>For an FC4500 storage system</p> <p><input type="checkbox"/> Disconnect the computer from the serial port on the storage system.</p>	<p><input type="checkbox"/> Use Navisphere Manager to set general storage-system properties.</p> <p><input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs.</p> <p><input type="checkbox"/> Reload the driver (if the driver is loaded as a module) or reboot the server (if the driver is static to the kernel) so that Linux recognizes the LUNs.</p> <p>Now the LUNs look like any other disks in the server.</p> <p><input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory.</p> <p>If any LUN entries are missing from the file, check the zoning.</p> <p>For an FC4500 storage system</p> <p><input type="checkbox"/> Disconnect the computer from the serial port on the storage system.</p>	<p>Manager administrator's guide and online help</p> <p>HBA documentation</p> <p>Linux documentation</p> <p>Storage-system setup guide</p>
14 Server Prepare Server for PowerPath	<p><input type="checkbox"/> Make sure you have 128 sd and sg devices in the /dev directory.</p> <p><input type="checkbox"/> Load the scsi_mod.o, sd_mod.o, and sg.o modules into the kernel.</p> <p><input type="checkbox"/> Ensure that the PowerPath driver's major numbers (232-239) are not already in use.</p>	<p><input type="checkbox"/> Make sure you have 128 sd and sg devices in the /dev directory.</p> <p><input type="checkbox"/> Load the scsi_mod.o, sd_mod.o, and sg.o modules into the kernel.</p> <p><input type="checkbox"/> Ensure that the PowerPath driver's major numbers (232-239) are not already in use.</p>	PowerPath for Linux installation guide

[illegible]

Task	With Access Logix	Without Access Logix	Reference Document
16 Storage System <i>Set up Event Monitor</i>	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
17 Server <i>Make LUNs available to Linux</i>	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.	Host connectivity guide and Linux documentation
18 Server <i>Test PowerPath with a license key</i>	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is a pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to the LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is a pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to the LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
18 Server <i>Test PowerPath with a license key (cont.)</i>	<p><input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that</p> <ul style="list-style-type: none"> The state of the uncabled path(s) becomes “dead.” I/O continues to the remaining path(s) to the LUN, indicating that the failover path was successful, and PowerPath is working properly. <p><input type="checkbox"/> Reconnect the cable that you disconnected from the HBA.</p> <p><input type="checkbox"/> If you caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore</p>	<p><input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that</p> <ul style="list-style-type: none"> The state of the uncabled path(s) becomes “dead.” I/O continues to the remaining path(s) to the LUN, indicating that the failover path was successful, and PowerPath is working properly. <p><input type="checkbox"/> Reconnect the cable that you disconnected from the HBA.</p> <p><input type="checkbox"/> If you caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore</p>	<p>PowerPath product guide</p> <p>PowerPath product guide</p>

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-Series storage system.

PowerPath Checklist — New Linux Server and Existing Storage System

Complete the tasks highlighted with grey in the checklist before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Reboot host. <input type="checkbox"/> Install the appropriate version of the HBA driver. Make sure the QLogic HBA driver is always loaded after the internal SCSI adapter driver as specified by the <code>/etc/modules.conf</code> file.	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Reboot host. <input type="checkbox"/> Install the appropriate version of the HBA driver. Make sure the QLogic HBA driver is always loaded after the internal SCSI adapter driver as specified by the <code>/etc/modules.conf</code> file.	HBA documentation (see URL on page 4-6) PowerPath for Linux installation guide
2 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays. <input type="checkbox"/> Reboot host.	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays. <input type="checkbox"/> Reboot host.	Linux host connectivity guide and HBA documentation (see URL on page 4-6)
3 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	Linux Host Agent and CLI installation guide
4 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install the admsnap utility.	N/A	Admsnap administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
5 Storage System Update software	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 4-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 4-3), update it: <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	Manager administrator's guide and online help
6 Server Cable HBAs to switches or storage system	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. <p>For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. <p>For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide.

Task	With Access Logix	Without Access Logix	Reference Document
7 Switches Zone	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	Switch documentation
8 Server Register HBAs	<ul style="list-style-type: none"> <input type="checkbox"/> Restart the Host Agent. <input type="checkbox"/> To make LUNs visible to the HBAs, either reload the HBA driver or reboot the server. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system. 	N/A <ul style="list-style-type: none"> <input type="checkbox"/> To make LUNs visible to the HBAs, either reload the HBA driver or reboot the server. 	Linux Host Agent and CLI installation guide Linux documentation Manager administrator's guide and online help
9 CX-Series or FC4700-Series Storage System Set properties for PowerPath	<ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's existing HBA ports (initiators): Initiator Type to Open CLARiiON Failover mode to 1 Array compmpath to Enabled 	<ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere CLI to determine the default storage-system type: navicli -h hostname systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h hostname systemtype -config 3 CAUTION The above command reboots both SPs at the same time. 	Manager administrator's guide and online help and CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
9 CX-Series or FC4700-Series Storage System <i>Set properties for PowerPath (cont.)</i>		<input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycommpath 1 where <i>hostname</i> is the IP address or network name of an SP in the storage system.	CLI reference
10 FC4500 Storage System <i>Set properties for PowerPath</i>	<input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. <input type="checkbox"/> From the computer connected to the storage system's serial port, use the Navisphere CLI to set the following storage-system properties for the server's existing HBA existing ports (initiators): navicli -np -d <i>device</i> storagegroup -sethost -host <i>servername</i> systemtype -config 3 navicli -np -d <i>device</i> storagegroup -sethost -host <i>servername</i> failovermode 1 navicli -np -d <i>device</i> storagegroup -sethost -host <i>servername</i> arraycommpath 1 where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1). <i>servername</i> is the name of the server with the HBAs.	<input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. <input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage-system type: navicli -np -d <i>device</i> systemtype where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1). If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -np -d <i>device</i> systemtype -config 3 CAUTION The above command reboots both SPs at the same time.	Storage-system setup guide CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
10 FC4500 Storage System <i>Set properties for PowerPath (cont.)</i>		<input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: navicli -np -d device failovermode 1 navicli -np -d device arraycomppath 1 where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).	CLI reference
11 Server <i>Make target SPs available</i>	<input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system. <input type="checkbox"/> Checkpoint - Make sure the /proc/scsi/scsi directory has entries for LUNZs. <input type="checkbox"/> Checkpoint - Make sure the file for the HBAs, in the /proc/scsi directory, has entries for the expected targets.	<input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Make sure the /proc/scsi/scsi directory has entries for LUNZs. <input type="checkbox"/> Checkpoint - Make sure the file for the HBAs, in the /proc/scsi directory, has entries for the expected targets.	Linux documentation Manager administrator's guide and online help Linux documentation
12 Storage System <i>Configure</i>	<input type="checkbox"/> If the server will use an <i>existing</i> Storage Group, use Navisphere Manager to connect the server to the Storage Group. <input type="checkbox"/> If the server will use a <i>new</i> Storage Group, use Navisphere Manager to create RAID Groups, bind LUNs, create the Storage Group, and assign LUNs to the Storage Group. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group.		Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
12 Storage System Configure (cont.)	<input type="checkbox"/> Reload the driver (if the driver is loaded as a module) or reboot the server (if the driver is static to the kernel) so that Linux recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server.	<input type="checkbox"/> Reload the driver (if the driver is loaded as a module) or reboot the server (if the driver is static to the kernel) so that Linux recognizes the LUNs. Now the LUNs look like any other disks in the server.	HBA documentation
	<input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory. If any LUN entries are missing from the file, check the zoning.	<input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory. If any LUN entries are missing from the file, check the zoning.	Linux documentation
	For an FC4500 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	For an FC4500 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	Storage-system setup guide
13 Server Prepare Server for PowerPath	<input type="checkbox"/> Make sure you have 128 sd and sg devices in the /dev directory. <input type="checkbox"/> Load the scsi_mod.o , sd_mod.o , and sg.o modules into the kernel. <input type="checkbox"/> Ensure that the PowerPath driver's major numbers (232-239) are not already in use.	<input type="checkbox"/> Make sure you have 128 sd and sg devices in the /dev directory. <input type="checkbox"/> Load the scsi_mod.o , sd_mod.o , and sg.o modules into the kernel. <input type="checkbox"/> Ensure that the PowerPath driver's major numbers (232-239) are not already in use.	PowerPath for Linux installation guide
14 Server Install PowerPath	<input type="checkbox"/> Mount the CD-ROM. <input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Unmount the CD-ROM and remove it from the drive. <input type="checkbox"/> If you have a PowerPath license key, register it. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath.	<input type="checkbox"/> Mount the CD-ROM. <input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Unmount the CD-ROM and remove it from the drive. <input type="checkbox"/> If you have a PowerPath license key, register it. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath.	PowerPath release notes and PowerPath for Linux installation guide

Task	With Access Logix	Without Access Logix	Reference Document
14 Server Install PowerPath (cont.)	<input type="checkbox"/> If you loaded the HBA driver as a module, verify that all extensions are loaded. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/linux <input type="checkbox"/> Checkpoint - Verify that PowerPath sees all the paths to the LUNs using the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Make sure that you registered your PowerPath license key if you have one. • Verify that the storage-system properties are as defined in step 10. • Verify that you have the appropriate revision of the HBA driver loaded. 	<input type="checkbox"/> If you loaded the HBA driver as a module, verify that all extensions are loaded. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/linux <input type="checkbox"/> Checkpoint - Verify that PowerPath sees all the paths to the LUNs using the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Make sure that you registered your PowerPath license key if you have one. • Verify that the storage-system properties are as defined in step 10. • Verify that you have the appropriate revision of the HBA driver loaded. 	PowerPath release notes and PowerPath for Linux installation guide PowerPath product guide
15 Server Make LUNs available to Linux	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.	Host connectivity guide and Linux documentation
16 Server Test PowerPath with a license key	If you have a PowerPath license key Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test.	If you have a PowerPath license key Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test.	PowerPath product guide

[illegible]

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-Series storage system.

PowerPath Checklist — Existing Linux Server and New Storage System

Complete the tasks highlighted with grey in the checklist before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install additional HBAs</i>	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	HBA documentation (see URL on page 4-6)
2 Server <i>Update Software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 4-3), update it: <ul style="list-style-type: none"> • HBA driver • admsnap 	<input type="checkbox"/> If the HBA driver software is currently installed and not at the required minimum revision (page 4-3), update it.	HBA documentation (see URL on page 4-6) and Admsnap administrator's guide
3 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays. <input type="checkbox"/> If you added additional HBAs or drivers, reboot the host.	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays. <input type="checkbox"/> If you added additional HBAs or drivers, reboot the host.	Linux host connectivity guide and HBA documentation (see URL on page 4-6)
4 Storage System <i>Install</i>	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 5, and for an FC4500 storage system, skip to step 6.	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 5, and for an FC4500 storage system, skip to step 6.	Rails and cabinet documentation
5 CX-Series or FC4700-Series Storage System <i>Initialize and install software</i>	<input type="checkbox"/> Initialize the storage system and install Access Logix. <input type="checkbox"/> If you have SnapView and/or MirrorView software, install it.	<input type="checkbox"/> Initialize the storage system.	Storage-system setup guide and Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
6 Storage System <i>Cable to switch or server and LAN or serial port</i>	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage-system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 10.	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage-system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 10.	Storage-system setup guide.
7 CX-Series or FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> Use Navisphere Manager to define a global administrator (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
8 Storage System Set Properties for PowerPath	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
9 Server <i>Cable additional HBAs to switches or storage system</i>	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide.
10 Switches <i>Zone for additional HBAs</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	Switch documentation
11 Server <i>Register additional HBAs with storage system</i>	<input type="checkbox"/> To make LUNs visible to the HBAs, either reload the HBA driver or reboot the server. <input type="checkbox"/> If you reloaded the HBA driver, restart the Host Agent. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system.	<input type="checkbox"/> To make LUNs visible to the HBAs, either reload the HBA driver or reboot the server. N/A	Linux documentation Linux Host Agent and CLI installation guide Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
12 Server <i>Make target SPs available</i>	<input type="checkbox"/> If you did not reboot the server in step 11, reboot the server now. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system. <input type="checkbox"/> Checkpoint - Make sure the /proc/scsi/scsi directory has entries for LUNZs. <input type="checkbox"/> Checkpoint - Make sure the file for the HBAs, in the /proc/scsi directory, has entries for the expected targets.	<input type="checkbox"/> If you did not reboot the server in step 11, reboot the server now. <input type="checkbox"/> Checkpoint - Make sure the /proc/scsi/scsi directory has entries for LUNZs. <input type="checkbox"/> Checkpoint - Make sure the file for the HBAs, in the /proc/scsi directory, has entries for the expected targets.	Linux documentation Manager administrator's guide and online help Linux documentation
13 Storage System <i>Configure</i>	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups, and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group <input type="checkbox"/> Reload the driver (if the driver is loaded as a module) or reboot the server (if the driver is static to the kernel) so that Linux recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server. <input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory. If any LUN entries are missing from the file, check the zoning.	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs. <input type="checkbox"/> Reload the driver (if the driver is loaded as a module) or reboot the server (if the driver is static to the kernel) so that Linux recognizes the LUNs. Now the LUNs look like any other disks in the server. <input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory. If any LUN entries are missing from the file, check the zoning.	Manager administrator's guide and online help HBA documentation Linux documentation

Task	With Access Logix	Without Access Logix	Reference Document
13 Storage System <i>Configure (cont.)</i>	For an FC4500 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	For an FC4500 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	Storage-system setup guide
14 Server <i>Prepare Server for PowerPath</i>	<input type="checkbox"/> Make sure you have 128 sd and sg devices in the /dev directory. <input type="checkbox"/> Load the scsi_mod.o , sd_mod.o , and sg.o modules into the kernel. <input type="checkbox"/> Ensure that the PowerPath driver's major numbers (232-239) are not already in use.	<input type="checkbox"/> Make sure you have 128 sd and sg devices in the /dev directory. <input type="checkbox"/> Load the scsi_mod.o , sd_mod.o , and sg.o modules into the kernel. <input type="checkbox"/> Ensure that the PowerPath driver's major numbers (232-239) are not already in use.	PowerPath for Linux installation guide
15 Server <i>Install PowerPath</i>	<input type="checkbox"/> Mount the CD-ROM. <input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Unmount the CD-ROM and remove it from the drive. <input type="checkbox"/> If you have a PowerPath license key, register it. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. <input type="checkbox"/> If you loaded the HBA driver as a module, verify that all extensions are loaded. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/linux	<input type="checkbox"/> Mount the CD-ROM. <input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Unmount the CD-ROM and remove it from the drive. <input type="checkbox"/> If you have a PowerPath license key, register it. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. <input type="checkbox"/> If you loaded the HBA driver as a module, verify that all extensions are loaded. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/linux	PowerPath release notes and PowerPath for Linux installation guide
16 Storage System <i>Set up Event Monitor</i>	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help

Task	With Access Logix	Without Access Logix	Reference Document
17 Server Make LUNs available to additional HBAs	<input type="checkbox"/> Use Navisphere Manager to disconnect and then reconnect the server and its Storage Group. <input type="checkbox"/> Reboot the server to scan for new LUNs. <input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory. If any LUN entries are missing from the file, check the zoning. For an FC4500 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system. <input type="checkbox"/> Checkpoint - Verify that PowerPath sees all the paths to the LUNs using the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Make sure that you registered your PowerPath license key if you have one. • Verify that the storage-system properties are as defined in step 10. • Verify that you have the appropriate revision of the HBA driver loaded. 	N/A <input type="checkbox"/> Reboot the server to scan for new LUNs. <input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory. If any LUN entries are missing from the file, check the zoning. For an FC4500 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system. <input type="checkbox"/> Checkpoint - Verify that PowerPath sees all the paths to the LUNs using the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Make sure that you registered your PowerPath license key if you have one. • Verify that the storage-system properties are as defined in step 10. • Verify that you have the appropriate revision of the HBA driver loaded. 	Manager administrator's guide and online help Linux documentation Storage-system setup guide PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
18 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p> <p><input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command</p> <p>powermt display dev=x every=2 where x is a pseudo device that represents the chosen LUN.</p> <p><input type="checkbox"/> Start I/O to the LUN.</p> <p><input type="checkbox"/> Identify the HBA sending I/O to the LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.</p> <p><input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that</p> <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to the LUN, indicating that the failover path was successful, and PowerPath is working properly. <p><input type="checkbox"/> Reconnect the cable that you disconnected from the HBA.</p>	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p> <p><input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command</p> <p>powermt display dev=x every=2 where x is a pseudo device that represents the chosen LUN.</p> <p><input type="checkbox"/> Start I/O to the LUN.</p> <p><input type="checkbox"/> Identify the HBA sending I/O to the LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.</p> <p><input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that</p> <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to the LUN, indicating that the failover path was successful, and PowerPath is working properly. <p><input type="checkbox"/> Reconnect the cable that you disconnected from the HBA.</p>	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
18 Server <i>Test PowerPath with a license key (cont.)</i>	<input type="checkbox"/> If you caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command. powermt restore	<input type="checkbox"/> If you caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command. powermt restore	PowerPath product guide

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-Series storage system.

PowerPath Checklist — Existing Linux Server and Existing Storage System

This checklist assumes that the existing Linux server and existing storage system are already connected in a SAN or direct attach configuration. Complete the tasks highlighted with grey in the checklist before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install additional HBAs</i>	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	HBA documentation (see URL on page 4-6)
2 Server <i>Update Software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 4-3), update it: <ul style="list-style-type: none"> • HBA driver • admsnap 	<input type="checkbox"/> If the HBA driver software is currently installed and not at the required minimum revision (page 4-3), update it.	HBA documentation (see URL on page 4-6) and Admsnap administrator's guide
3 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Make sure the HBA driver properties are set to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays. <input type="checkbox"/> If you added additional HBAs or drivers, reboot the host.	<input type="checkbox"/> Make sure the HBA driver properties are set to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays. <input type="checkbox"/> If you added additional HBAs or drivers, reboot the host.	Linux host connectivity guide and HBA documentation (see URL on page 4-6)

Task	With Access Logix	Without Access Logix	Reference Document
4 Storage System Update software	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 4-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p> <p>For a CX-Series or FC4700-Series storage system, continue to step 9, and for an FC4500 storage system, skip to step 10.</p>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 4-3), update it: <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p> <p>For a CX-Series or FC4700-Series storage system, continue to step 9, and for an FC4500 storage system, skip to step 10.</p>	Manager administrator's guide and online help
5 CX-Series or FC4700-Series Storage System Set properties for PowerPath	For new or replacement HBAs <p><input type="checkbox"/> Use Navisphere CLI to determine the default storage-system type:</p> <p>navicli -h <i>hostname</i> systemtype</p> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -h <i>hostname</i> systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p>	For any HBAs <p><input type="checkbox"/> Use Navisphere CLI to determine the default storage-system type:</p> <p>navicli -h <i>hostname</i> systemtype</p> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -h <i>hostname</i> systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
5 CX-Series or FC4700-Series Storage System Set properties for PowerPath (cont.)	<p>For new or replacement HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For existing HBAs</p> <p>An existing HBA is one that is registered with the storage system.</p> <p><input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's existing HBA ports (initiators):</p> <p>Initiator Type to Open CLARiiON</p> <p>Failover mode to 1</p> <p>Array compath to Enabled</p>	<p>For any HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p>	<p>CLI reference</p> <p>Manager administrator's guide and online help</p>

Task	With Access Logix	Without Access Logix	Reference Document
6 FC4500 Storage System Set properties for PowerPath	<p><input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system.</p> <p>For new HBAs</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage-system type:</p> <p>navicli -np -d device systemtype</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -np -d device systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <p>navicli -np -d device failovermode 1</p> <p>navicli -np -d device arraycommpath 1</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p><input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system.</p> <p>For any HBAs</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage-system type:</p> <p>navicli -np -d device systemtype</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -np -d device systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <p>navicli -np -d device failovermode 1</p> <p>navicli -np -d device arraycommpath 1</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>Storage-system setup guide</p> <p>CLI reference</p>

Task	With Access Logix	Without Access Logix	Reference Document
6 FC4500 Storage System Set properties for PowerPath (cont.)	For existing HBAs An existing HBA is one that is registered with the storage system. <input type="checkbox"/> From the computer connected to the storage system's serial port, use the Navisphere CLI to set the following storage-system properties for the server's existing HBA existing ports (initiators): <pre>navicli -np -d device storagegroup -sethost -host servername systemtype -config 3</pre> <pre>navicli -np -d device storagegroup -sethost -host servername failovermode 1</pre> <pre>navicli -np -d device storagegroup -sethost -host servername arraycommpath 1</pre> where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1). <i>servername</i> is the name of the server with the HBAs		CLI reference
7 Server Re-install Host Agent	<input type="checkbox"/> Re-install (reload) the correct version of the Navisphere Host Agent and CLI. <input type="checkbox"/> Start Navisphere Host Agent.	<input type="checkbox"/> Re-install (reload) the correct version of the Navisphere Host Agent and CLI. <input type="checkbox"/> Start Navisphere Host Agent.	Linux Host Agent and CLI installation guide

Task	With Access Logix	Without Access Logix	Reference Document
8 Server <i>Cable additional HBAs to switches or storage system</i>	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide.
9 Switches <i>Zone for additional HBAs</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	Switch documentation
10 Server <i>Register additional HBAs with storage system</i>	<input type="checkbox"/> To make LUNs visible to the HBAs, either reload the HBA driver or reboot the server. <input type="checkbox"/> If you reloaded the HBA driver, restart the Host Agent. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system.	<input type="checkbox"/> To make LUNs visible to the HBAs, either reload the HBA driver or reboot the server. N/A	Linux documentation Linux Host Agent and CLI installation guide Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
11 Server <i>Make LUNs available to additional HBAs</i>	<input type="checkbox"/> Use Navisphere Manager to disconnect and then reconnect the server and its Storage Group. <input type="checkbox"/> Reboot the server to scan for new LUNs. <input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory. If any LUN entries are missing from the file, check the zoning. For an FC4500 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	N/A <input type="checkbox"/> Reboot the server to scan for new LUNs. <input type="checkbox"/> Checkpoint - Make sure all LUNs have entries in the /proc/scsi/scsi directory and in the file for the HBAs in the /proc/scsi directory. If any LUN entries are missing from the file, check the zoning. For an FC4500 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	Manager administrator's guide and online help Linux documentation Storage-system setup guide
12 Server <i>Prepare Server for PowerPath</i>	<input type="checkbox"/> Make sure you have 128 sd and sg devices in the /dev directory. <input type="checkbox"/> Load the scsi_mod.o , sd_mod.o , and sg.o modules into the kernel. <input type="checkbox"/> Ensure that the PowerPath driver's major numbers (232-239) are not already in use. <input type="checkbox"/> Manually unload the Navisphere Host Agent. <input type="checkbox"/> Install any required Red Hat patches.	<input type="checkbox"/> Make sure you have 128 sd and sg devices in the /dev directory. <input type="checkbox"/> Load the scsi_mod.o , sd_mod.o , and sg.o modules into the kernel. <input type="checkbox"/> Ensure that the PowerPath driver's major numbers (232-239) are not already in use. <input type="checkbox"/> Manually unload the Navisphere Host Agent. <input type="checkbox"/> Install any required Red Hat patches.	PowerPath for Linux installation Linux Host Agent and CLI installation guide PowerPath for Linux installation

[illegible]

Task	With Access Logix	Without Access Logix	Reference Document
14 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is a pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to the LUN, indicating that the failover path was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is a pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to the LUN, indicating that the failover path was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
14 Server <i>Test PowerPath with a license key (cont.)</i>	<input type="checkbox"/> If you caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> If you caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

Configurations for Linux Without EMC Failover Software

Read this section if you are installing a Linux configuration with a new server that will *not* run EMC failover software and a new storage system. A new server and storage system are defined as follows:

New server - A server running Linux with *no* EMC failover software and *not* connected to any storage system.

New storage system - A storage system that has the factory default settings and has *never* been connected to a server.

Note that *pre-FC4700 storage system*, refers to an FC4500, FC5300, or FC5700 storage system.

Topics relating to the checklist for a Linux configuration are

- ◆ Prerequisites 4-45
- ◆ Documentation..... 4-46
- ◆ Without EMC Failover Software Checklist — New Linux Server and New Storage System..... 4-47

Prerequisites

- ◆ All switches must be installed.
- ◆ Storage systems must be set up, initialized (if required), and connected to switches, and any optional storage-system software (Access Logix, SnapView, MirrorView) you have must be installed.
- ◆ If any storage systems have SnapView, the admsnap utility must be installed on the servers that will be the SnapView production systems.
- ◆ If you will use Navisphere Manager 6.X, you must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system servers and that will be connected to the SPs in CX-Series or FC4700-Series storage systems.
- ◆ If you will use Navisphere Manager 5.X, you must have it installed on a Windows 2000 or Windows NT host on a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.
- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX200 Configuration Planning Guide* (P/N 014003115)
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4700 Configuration Planning Guide* (P/N 014003016)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

This checklist refers to some of all of the documents listed below. We recommend that you load these documents on your service laptop before starting the installation.

- ◆ Documentation that ships with
 - HBA and HBA driver

This documentation is also available from the following websites:

For Emulex HBAs and drivers:

<http://www.emulex.com/ts/docoem/framemc.htm>

For Qlogic HBAs and drivers:

http://www.qlogic.com/support/home_support.asp

and select **EMC** in the OEM selection box at the bottom of the page.

- Switches
- Red Hat Linux operating system
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide* (P/N 069001125)
or
EMC Navisphere Manager Version 5.X Administrator's Guide (P/N 069001143)
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide* (P/N 069001124)
- ◆ *EMC Host Connectivity Guide for Linux* (P/N 300-000-604)

Without EMC Failover Software Checklist — New Linux Server and New Storage System

Complete the tasks highlighted with grey in the checklist before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs, drivers, cables</i>	<input type="checkbox"/> Install the HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports. <input type="checkbox"/> Boot host. <input type="checkbox"/> Install the HBA driver.	<input type="checkbox"/> Install the HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports. <input type="checkbox"/> Boot host. <input type="checkbox"/> Install the HBA driver.	HBA documentation (see URL on page 4-46)
2 Server <i>Set the HBA driver parameters</i>	<input type="checkbox"/> For a Qlogic HBA, set the SAN Topology value in the HBA BIOS. <input type="checkbox"/> Checkpoint - For a SAN, verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA. For 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> For a Qlogic HBA, set the SAN Topology value in the HBA BIOS. <input type="checkbox"/> Checkpoint - For a SAN, verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Host connectivity guide and HBA documentation (see URL on page 4-46)

Task	With Access Logix	Without Access Logix	Reference Document
3 Switches Zone	<input type="checkbox"/> Zone the switches to provide a path from each host initiator to an SP. <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned.	N/A	Switch documentation
4 Server Install Host Agent	<input type="checkbox"/> Install the Navisphere Host Agent. <input type="checkbox"/> Edit the agent.config file as follows: <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where <i>SP_ip_address</i> is the address of the SP.	<input type="checkbox"/> Install the Navisphere Host Agent. <input type="checkbox"/> Edit the agent.config file as follows: <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where <i>SP_ip_address</i> is the address of the SP.	Linux Host Agent and CLI installation guide
5 CX-Series or FC4700-Series Storage System Set up security	<input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
6 CX-Series Storage System <i>Set properties</i>	<input type="checkbox"/> Use Navisphere CLI to set the default failover mode and array comppath properties with the following commands: navicli -h <i>hostname</i> failovermode 0 navicli -h <i>hostname</i> arraycomppath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system.	<input type="checkbox"/> Use Navisphere CLI to set the default failover mode and array comppath properties with the following commands: navicli -h <i>hostname</i> failovermode 0 navicli -h <i>hostname</i> arraycomppath 0 where <i>hostname</i> is the IP address or network name of an SP in the storage system.	CLI reference
7 Storage System <i>Configure</i>	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group. <input type="checkbox"/> Reload the driver (if the driver is loaded as a module) or reboot the server (if the driver is static to the kernel) so that Linux recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server. If Linux does not recognize any LUNs, verify the connection to the Storage Group.	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs. <input type="checkbox"/> Reload the driver (if the driver is loaded as a module) or reboot the server (if the driver is static to the kernel) so that Linux recognizes the LUNs. Now the LUNs look like any other disks in the server.	Manager administrator's guide and on-line help Manager administrator's guide and on-line help HBA documentation
8 Storage System <i>Set up Event Monitor</i>	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help

Task	With Access Logix	Without Access Logix	Reference Document
9 Server <i>Make LUNs available to Linux</i>	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs. If Linux does not recognize any LUNs, verify the connection to the Storage Group.	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.	Host connectivity guide and Linux documentation

You are now ready to set up any optional software, such as SnapView or MirrorView.

NetWare Installation Checklists

This chapter contains checklists of the tasks required to install a CLARiiON CX-Series or FC-Series storage system in a configuration with a Novell® NetWare® server and PowerPath™ or ATF/CDE failover software.

ATF/CDE failover software does not support CX-Series storage systems.

The sections for the different configurations are

- ◆ PowerPath Configurations for NetWare.....5-2
- ◆ ATF or CDE Configurations for NetWare5-43

PowerPath Configurations for NetWare

Read this section if you are installing a NetWare PowerPath configuration with a new or existing server and a new or existing CX-Series, FC4500, FC4700-Series, or FC5300 storage system. A new and existing server and a new and existing storage system are defined as follows:

new server - A server running NetWare and *not* connected to any storage system.

existing server - A server running NetWare and that is already connected to one or more storage systems.

new storage system - A CX-Series, FC4500, FC4700-Series, or FC5300 storage system that has the factory default settings and has *never* been connected to a server.

existing storage system - A CX-Series, FC4500, FC4700-Series, or FC5300 storage system that is already connected to one or more servers and is in a Navisphere domain.

All CLARiiON storage systems connected to the server must be CX-Series, FC4500, FC4700-Series, or FC5300 storage systems. If any other type of CLARiiON storage system is connected to the server, the server cannot run PowerPath.

Topics relating to the checklists for NetWare PowerPath configurations are

- ◆ Required Software Revisions 5-3
- ◆ Prerequisites 5-5
- ◆ PowerPath Checklist — New NetWare Server and New Storage System..... 5-8
- ◆ PowerPath Checklist — New NetWare Server and Existing Storage System 5-16
- ◆ PowerPath Checklist — Existing NetWare Server and New Storage System 5-24
- ◆ PowerPath Checklist — Existing NetWare Server and Existing Storage System 5-33

Required Software Revisions

- ◆ NetWare operating system revision and kernel listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ HBA driver revision listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ NetWare PowerPath 3.0.0 with patch 3.0.1 or higher (CX-Series or FC4700-Series storage system) or with patch 3.0.2 or higher (FC4500 or FC5300 storage system)
- ◆ For CX200 storage systems
 - CX200 Access Logix version 02.03.1.20.5.001 or higher
or
CX200 Base Software version 02.03.0.20.5.001 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.2 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.2 or higher
- ◆ EMC ControlCenter Navisphere Manager Base version 6.2.1 and Management Server 6.2
or
EMC ControlCenter Navisphere Manager version 6.2 or higher and Management Server 6.2 or higher
- ◆ For CX400 storage systems
 - CX400 Access Logix version 02.02.1.40.5.004
or
CX400 Base Software version 02.02.0.40.5.004
 - EMC ControlCenter Navisphere SP Agent version 6.2 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.2 or higher
 - EMC ControlCenter Navisphere Manager version 6.2 or higher
- ◆ For CX600 storage systems
 - CX600 Access Logix version 02.01.1.60.5.008 or higher
or
CX600 Base Software version 02.01.0.60.5.008 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.1 or higher

- EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
- EMC ControlCenter Navisphere Manager version 6.1 or higher
- ◆ For FC4500 storage systems
 - FC4500 Access Logix version 6.32.16 or higher
or
FC4500 Base Software version 5.32.16 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.1 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
 - EMC ControlCenter Navisphere Manager version 6.1 or higher
- ◆ For FC4700 storage systems
 - FC4700 Access Logix version 8.45.5x or higher
or
FC4700 Base Software version 8.45.0x or higher
 - EMC ControlCenter Navisphere SP Agent version 6.1 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
 - EMC ControlCenter Navisphere Manager version 6.1 or higher

- ◆ For FC5300 storage systems
 - FC5300 Access Logix version 6.24.07 or higher
or
FC5300 Base Software version 5.24.07 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.1 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
 - EMC ControlCenter Navisphere Manager version 6.1 or higher

Prerequisites

- ◆ You must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system server and that you will connect to the SPs in a CX-Series or FC4700-Series storage system.
- ◆ For most configurations, you must also have a host that is
 - Running Navisphere CLI version 6.X
 - On a network that is connected to the storage-system server and that you will connect to SPs in a CX-Series or FC4700-Series storage system.
- ◆ For an FC4500 or FC5300 storage system connected to a server on which you will install PowerPath, you must have a computer that is *not* a laptop and that you can connect to the storage system. This computer must run
 - Windows NT with Service Pack 5 or Windows 2000
 - Navisphere Host Agent and CLI version 6.1 or higher

- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX200 Configuration Planning Guide* (P/N 014003115)
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

Each checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop or, for an FC4500 or FC4700, on the computer you will connect to the storage system, before starting the installation.

- ◆ Documentation that ships with
 - HBA and HBA driver

This documentation is also available from the following QLogic website:
http://www.qlogic.com/support/drivers_software.asp
 and select **EMC** in the **OEM-approved Drivers/Firmware** list at the bottom of the page.

 - Switches
 - Novell NetWare operating system
- ◆ *Removing ATF or CDE Software Before Installing Other Failover Software* (P/N 069001173)
- ◆ *PowerPath Product Guide* (P/N 3000-000-510)
- ◆ *PowerPath Version 3.0 Installation and Administration Guide for NetWare* (P/N 300-000-513)
- ◆ *EMC ControlCenter Navisphere Host Agent and CLI for NetWare Version 6.X Installation Guide* (P/N 069001149)
- ◆ *EMC ControlCenter Navisphere Command Line Interface (CLI) Version 6.X Reference* (P/N 069001038)

- ◆ *EMC Storage-System Host Utilities for NetWare Administrator's Guide (P/N 069001139)*
- ◆ *EMC SnapView admsnap Utility Administrator's Guide (P/N 069001039)*
- ◆ *EMC Storage Systems 40U Cabinet Configuration Guide (P/N 014003082)*
- ◆ *EMC 2-Gigabit Storage Processor Enclosure (DPE2) Model CX200 Setup Guide (P/N 014003116)*
- ◆ *EMC Storage Systems CX200 Initialization Guide (P/N 014003117)*
- ◆ *EMC 2-Gigabit Storage Processor Enclosure (DAE2) Model CX400 Setup Guide (P/N 014003105)*
- ◆ *EMC Storage Processor Enclosure (SPE) Model CX600 Setup Guide (P/N 014003078)*
- ◆ *EMC Storage Systems CX-Series Initialization Guide (P/N 014003112)*
- ◆ *EMC 2-Gigabit Disk Processor Enclosure (DPE2) Setup Guide (P/N 014003105)*
- ◆ *EMC 2-Gigabit Disk Enclosure (DAE2) Setup Guide (P/N 014003104)*
- ◆ *FC4500 Setup Guide (P/N 014003102, revision A03 or higher)*
- ◆ *FC4700-2 Setup Guide (P/N 0140373)*
- ◆ *FC5300 Setup Guide (P/N 014003101, revision A03 or higher)*
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide (P/N 069001125)*
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide (P/N 069001124)*
- ◆ *EMC Host Connectivity Guide for Novell NetWare (P/N 300-000-615)*

PowerPath Checklist — New NetWare Server and New Storage System

Tasks highlighted with grey in the checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	HBA documentation (see URL on page 5-6)
2 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide and HBA documentation (see URL on page 5-6)
3 Server <i>Install PowerPath</i>	<input type="checkbox"/> Make sure the SCSISAN.CDM module is not installed. <input type="checkbox"/> Install PowerPath. Note After PowerPath is installed on a NetWare 6 server, a device named <i>EMC PowerPath Control Device</i> appears under ConsoleOne > Tools > Disk Management > Devices . This device is always inactive and is unavailable for I/O. CAUTION If you use the server -ns command to bring up NetWare, you must either load the PowerPath driver manually or remove all redundant paths. Failure to do so may result in LUN corruption. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/netware	<input type="checkbox"/> Make sure the SCSISAN.CDM module is not installed. <input type="checkbox"/> Install PowerPath. Note After PowerPath is installed on a NetWare 6 server, a device named <i>EMC PowerPath Control Device</i> appears under ConsoleOne > Tools > Disk Management > Devices . This device is always inactive and is unavailable for I/O. CAUTION If you use the server -ns command to bring up NetWare, you must either load the PowerPath driver manually or remove all redundant paths. Failure to do so may result in LUN corruption. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/netware	NetWare documentation PowerPath release notes and PowerPath for NetWare installation and administrator's guide PowerPath product guide PowerPath product guide PowerPath Release Notes and PowerPath for NetWare installation and administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
4 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	NetWare Host Agent and CLI installation guide
5 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install the admsnap utility.	N/A	Admsnap administrator's guide
6 Switches <i>Install</i>	<p>For a SAN</p> <p><input type="checkbox"/> Install switches, if not already installed.</p> <p><input type="checkbox"/> Connect a cable from each host HBA port to a switch port.</p> <p><input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port.</p> <p>For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<p>For a SAN</p> <p><input type="checkbox"/> Install switches, if not already installed.</p> <p><input type="checkbox"/> Connect a cable from each host HBA port to a switch port.</p> <p><input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port.</p> <p>For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<p>Rails, cabinet, and switch documentation</p> <p>Switch documentation</p>
7 Storage System <i>Install</i>	<p><input type="checkbox"/> Install the storage system in the cabinet, if not already installed.</p> <p>For a CX-Series or FC4700-Series storage system, continue to step 8, and for an FC4500 or FC5300 storage system, skip to step 9.</p>	<p><input type="checkbox"/> Install the storage system in the cabinet, if not already installed.</p> <p>For a CX-Series or FC4700-Series storage system, continue to step 8, and for an FC4500 or FC5300 storage system, skip to step 9.</p>	Rails and cabinet documentation

Task	With Access Logix	Without Access Logix	Reference Document
8 CX-Series or FC4700-Series Storage System <i>Initialize and install software</i>	<input type="checkbox"/> Initialize the storage system and install Access Logix. <input type="checkbox"/> If you have SnapView and/or MirrorView software, install it.	<input type="checkbox"/> Initialize the storage system.	Storage-system setup guide and Manager administrator's guide and online help
9 Storage System <i>Cable to switch or server and LAN or serial port</i>	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. <p>For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. <p>For a CX-Series or FC4700-Series storage system</p> <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. <p>For an FC4500 or FC5300 storage system</p> <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 11.	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. <p>For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. <p>For a CX-Series or FC4700-Series storage system</p> <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. <p>For an FC4500 or FC5300 storage system</p> <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 11	Storage-system setup guide.
10 CX-Series or FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> Use Navisphere Manager to define a global administrator (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
11 Storage System <i>Set Properties for PowerPath</i>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to the appropriate default storage-system properties to the values for Power:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	CLI reference

[illegible]

Task	With Access Logix	Without Access Logix	Reference Document
14 Storage System <i>Configure (cont.)</i>	<p><input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 11. <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> Disconnect the computer from the serial port on the storage system.</p>	<p><input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 11. <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> Disconnect the computer from the serial port on the storage system.</p>	<p>PowerPath product guide</p> <p>Storage-system setup guide</p>
15 Storage System <i>Set up Event Monitor</i>	<p><input type="checkbox"/> Plan your monitoring configuration.</p> <p><input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.</p>	<p><input type="checkbox"/> Plan your monitoring configuration.</p> <p><input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.</p>	<p>Manager administrator's guide and on-line help</p>
16 Server <i>Make LUNs available to NetWare</i>	<p><input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.</p> <p>If NetWare does not recognize any LUNs, verify the connection to the Storage Group.</p>	<p><input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.</p>	<p>Host connectivity guide or NetWare documentation</p>
17 Server <i>Save PowerPath configuration</i>	<p><input type="checkbox"/> Save the server's PowerPath configuration with the PowerPath command</p> <p>powermt -save</p> <p>This command creates the powermt.ctm configuration file.</p>	<p><input type="checkbox"/> Save the server's PowerPath configuration with the PowerPath command</p> <p>powermt -save</p> <p>This command creates the powermt.ctm configuration file.</p>	<p>PowerPath product guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
18 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	<p>NetWare documentation</p> <p>PowerPath product guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
18 Server <i>Test PowerPath with a license key (cont.)</i>	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — New NetWare Server and Existing Storage System

Tasks highlighted with grey in the checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	HBA documentation (see URL on page 5-6)
2 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide and HBA documentation (see URL on page 5-6)
3 Server <i>Install PowerPath</i>	<input type="checkbox"/> Make sure the SCSISAN.CDM module is not installed. <input type="checkbox"/> Install PowerPath. Note After PowerPath is installed on a NetWare 6 server, a device named <i>EMC PowerPath Control Device</i> appears under ConsoleOne > Tools > Disk Management > Devices . This device is always inactive and is unavailable for I/O. CAUTION If you use the server -ns command to bring up NetWare, you must either load the PowerPath driver manually or remove all redundant paths. Failure to do so may result in LUN corruption. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/netware	<input type="checkbox"/> Make sure the SCSISAN.CDM module is not installed. <input type="checkbox"/> Install PowerPath. Note After PowerPath is installed on a NetWare 6 server, a device named <i>EMC PowerPath Control Device</i> appears under ConsoleOne > Tools > Disk Management > Devices . This device is always inactive and is unavailable for I/O. CAUTION If you use the server -ns command to bring up NetWare, you must either load the PowerPath driver manually or remove all redundant paths. Failure to do so may result in LUN corruption. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/netware	NetWare documentation PowerPath release notes and PowerPath for NetWare installation and administrator's guide PowerPath product guide PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
4 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	NetWare Host Agent and CLI installation guide
5 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install the admsnap utility.	N/A	Admsnap administrator's guide
6 Storage System <i>Update software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 5-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 5-3), update it: <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
7 Server Cable to switches or storage system	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide.
8 Switches Zone	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system	Switch documentation
9 Storage System Register HBAs	<input type="checkbox"/> On the server, restart the Navisphere Host Agent. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system.	N/A	NetWare Host Agent and CLI installation guide Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System Set Properties for PowerPath	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's HBA ports (initiators):</p> <p>Initiator Type to Open CLARiiON</p> <p>Failover mode to 1</p> <p>Array commpath to Enabled</p> <p>Unit Serial Number to LUN</p>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to determine the default storage system type:</p> <p>navicli -h <i>hostname</i> systemtype</p> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -h <i>hostname</i> systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> Use Navisphere CLI to set the default failover mode and array commpath properties to the values for PowerPath:</p> <p>navicli -h <i>hostname</i> failovermode 1</p> <p>navicli -h <i>hostname</i> arraycommpath 1</p> <p>navicli -h <i>hostname</i> unitserialnumber lun</p> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p>	Manager administrator's guide and online help or CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System Set Properties for PowerPath (cont.)	<p>For an FC4500 or FC5300 storage system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. <input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the following storage-system properties for the server's HBA ports (initiators): <pre>navicli -np -d device storagegroup -sethost -host servername systemtype -config 3</pre> <pre>navicli -np -d device storagegroup -sethost -host servername failovermode 1</pre> <pre>navicli -np -d device storagegroup -sethost -host servername arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1). <i>servername</i> is the name of the server with the HBAs.</p> 	<p>For an FC4500 or FC5300 storage system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system <input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type: <pre>navicli -np -d device systemtype</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <pre>navicli -np -d device systemtype -config 3</pre> <p>CAUTION The above command reboots both SPs at the same time.</p> <input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: <pre>navicli -np -d device failovermode 1</pre> <pre>navicli -np -d device arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> 	<p>Storage-system setup guide</p> <p>CLI reference</p>

Task	With Access Logix	Without Access Logix	Reference Document
11 Server <i>Make target SPs available</i>	<input type="checkbox"/> Scan for LUNs with the NetWare command scan all luns <input type="checkbox"/> Checkpoint - Verify that each path has a LUNZ with the NetWare command list devices <input type="checkbox"/> Stop and restart the Navisphere Host Agent.	<input type="checkbox"/> Scan for LUNs with the NetWare command scan all luns <input type="checkbox"/> Checkpoint - Verify the paths to each LUN with the NetWare command list devices <input type="checkbox"/> Stop and restart the Navisphere Host Agent.	NetWare documentation NetWare Host Agent and CLI installation guide
12 Storage System <i>Configure</i>	<input type="checkbox"/> If the server will use an <i>existing</i> Storage Group, use Navisphere Manager to connect the server to the Storage Group. <input type="checkbox"/> If the server will use a <i>new</i> Storage Group, use Navisphere Manager to create RAID Groups, bind LUNs, create the Storage Group, and assign LUNs to the Storage Group. <input type="checkbox"/> Use Navisphere Manager to connect the server to the Storage Group. <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. 	<input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs with the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. 	Manager administrator's guide and online help PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
12 Storage System <i>Configure (cont.)</i>	For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	Storage-system setup guide
13 Storage System <i>Set up Event Monitor</i>	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
14 Server <i>Make LUNs available to NetWare</i>	<input type="checkbox"/> If the storage system has any existing volumes that you want the server to use, mount them. <input type="checkbox"/> Prepare any new LUNs to receive data by creating partitions or the pertinent database file systems on them. If NetWare does not recognize any LUNs, verify the connection to the Storage Group.	<input type="checkbox"/> If the storage system has any existing volumes that you want the server to use, mount them. <input type="checkbox"/> Prepare any new LUNs to receive data by creating partitions or the pertinent database file systems on them.	NetWare documentation Host connectivity guide or NetWare documentation
15 Server <i>Save PowerPath configuration</i>	<input type="checkbox"/> Save the server's PowerPath configuration with the PowerPath command powermt -save This command creates the powermt.ctm configuration file.	<input type="checkbox"/> Save the server's PowerPath configuration with the PowerPath command powermt -save This command creates the powermt.ctm configuration file.	PowerPath product guide
16 Server <i>Test PowerPath with a license key</i>	If you have a PowerPath license key If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion	If you have a PowerPath license key If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion	NetWare documentation PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
16 Server Test PowerPath with a license key (cont.)	<input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP using the PowerPath command powermt restore	<input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP using the PowerPath command powermt restore	PowerPath product guide

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — Existing NetWare Server and New Storage System

Tasks highlighted with grey in the checklist should be performed before the service provider arrives, except for the removal of ATF or CDE, which you can have done by EMC Professional Services.



CAUTION

You cannot run ATF or CDE and PowerPath on the same server. Before you transition your server from ATF or CDE to PowerPath, you must

- ◆ **Back up your server configurations.**
- ◆ **Back up data on all storage systems connected to the server.**
- ◆ **Remove ATF or CDE, which EMC recommends that EMC Professional Services do, especially if your server configuration is complex. If you want to remove it yourself, you must use the procedure in the *Removing ATF or CDE Software Before Installing Other Failover Software* document (P/N 069001173), which is on the Powerlink website with this roadmap.**

Simply removing ATF or CDE using the uninstall procedure in the NetWare ATF administrator's guide or the Netware utilities administrator's guide may not return the server to its original state, and may result in lost data.

Task	With Access Logix	Without Access Logix	Reference Document
1 Serve <i>Install additional HBAs</i>	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. <input type="checkbox"/> CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	HBA documentation (see URL on page 5-6)
2 Server <i>Prepare cluster</i>	If the server is in a cluster <input type="checkbox"/> Move cluster resources from server you want to upgrade. <input type="checkbox"/> Remove the first from the cluster with the command cluster leave <input type="checkbox"/> Unload cluster software with the command uldncs	If the server is in a cluster Move cluster resources from server you want to upgrade. <input type="checkbox"/> Remove the first from the cluster with the command cluster leave <input type="checkbox"/> Unload cluster software with the command uldncs	NetWare documentation
3 Server and Client <i>Remove ATF or CDE</i>	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	Removing ATF or CDE
4 Server <i>Update Software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 5-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent • admsnap 	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 5-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent 	HBA documentation (see URL on page 5-6), NetWare Agent and CLI installation guide, and Admsnap administrator's guide
5 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide and HBA documentation (see URL on page 5-6)

Task	With Access Logix	Without Access Logix	Reference Document
6 Server Install PowerPath	<input type="checkbox"/> Make sure the SCSISAN.CDM module is not installed. <input type="checkbox"/> If the Navisphere Host Agent is running, unload the Navagent.nml driver with the command unload navagent <input type="checkbox"/> Install PowerPath. Note After PowerPath is installed on a NetWare 6 server, a device named <i>EMC PowerPath Control Device</i> appears under ConsoleOne > Tools > Disk Management > Devices . This device is always inactive and is unavailable for I/O. CAUTION If you use the server -ns command to bring up NetWare, you must either load the PowerPath driver manually or remove all redundant paths. Failure to do so may result in LUN corruption. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/netware	<input type="checkbox"/> Make sure the SCSISAN.CDM module is not installed. <input type="checkbox"/> If the Navisphere Host Agent is running, stop it by unloading the Navagent.nml driver with the command unload navagent <input type="checkbox"/> Install PowerPath. Note After PowerPath is installed on a NetWare 6 server, a device named <i>EMC PowerPath Control Device</i> appears under ConsoleOne > Tools > Disk Management > Devices . This device is always inactive and is unavailable for I/O. CAUTION If you use the server -ns command to bring up NetWare, you must either load the PowerPath driver manually or remove all redundant paths. Failure to do so may result in LUN corruption. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/netware	NetWare documentation NetWare Agent and CLI installation guide PowerPath release notes and PowerPath for NetWare installation and administrator's guide
7 Storage System Install	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 8, and for an FC4500 or FC5300, skip to step 9.	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 8, and for an FC4500 or FC5300, skip to step 9.	Rails and cabinet documentation
8 CX-Series or FC4700-Series Storage System Initialize and install software	<input type="checkbox"/> Initialize the storage system and install Access Logix. <input type="checkbox"/> If you have SnapView and/or MirrorView software, install it.	<input type="checkbox"/> Initialize the storage system.	Storage-system setup guide and Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
9 Storage System <i>Cable to switch or server and LAN or serial port</i>	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 11.	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 11.	Storage-system setup guide.
10 CX-Series or FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
11 Storage System <i>Set Properties for PowerPath</i>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
12 Server <i>Cable additional HBAs to switches or storage system</i>	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide
13 Switches <i>Zone additional HBAs</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system	Switch documentation
14 Server <i>Make target SPs available</i>	<input type="checkbox"/> Scan for LUNs with the NetWare command scan all luns <input type="checkbox"/> Checkpoint - Verify that each path has a LUNZ with the NetWare command list devices	<input type="checkbox"/> Scan for LUNs with the NetWare command scan all luns <input type="checkbox"/> Checkpoint - Verify that each path has a LUNZ with the NetWare command list devices	NetWare documentation

Task	With Access Logix	Without Access Logix	Reference Document
14 Server <i>Make target SPs available (cont.)</i>	<input type="checkbox"/> Restart Navisphere Agent. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system.		NetWare Agent and CLI installation guide Manager administrator's guide and online help
15 Storage System Configure	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups, and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs using the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 11. For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs. <input type="checkbox"/> Reboot the server <input type="checkbox"/> Checkpoint - Check that PowerPath sees all the paths to the LUNs using the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 11. For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	Manager administrator's guide and online help Manager administrator's guide and online help PowerPath product guide Storage-system setup guide

Task	With Access Logix	Without Access Logix	Reference Document
16 Storage System <i>Set up Event Monitor</i>	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
17 Server <i>Make LUNs available to NetWare</i>	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs. If NetWare does not recognize any LUNs, verify the connection to the Storage Group.	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.	Host connectivity guide or NetWare documentation
18 Server <i>Move server back into cluster</i>	If the server is in a cluster <input type="checkbox"/> Load cluster software on the server with the command ldncls <input type="checkbox"/> Move cluster resources back to the server.	If the server is in a cluster <input type="checkbox"/> Load cluster software on the server with the command ldncls <input type="checkbox"/> Move cluster resources back to the server.	NetWare documentation
19 Server <i>Save PowerPath configuration</i>	<input type="checkbox"/> Save the server's PowerPath configuration with the PowerPath command powermt -save This command creates the powermt.ctm configuration file.	<input type="checkbox"/> Save the server's PowerPath configuration with the PowerPath command powermt -save This command creates the powermt.ctm configuration file.	PowerPath product guide
20 Server <i>Test PowerPath with a license key</i>	If you have a PowerPath license key If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test.	If you have a PowerPath license key If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test.	NetWare documentation PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
20 Server Test PowerPath with a license key (cont.)	<p><input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command</p> <p>powermt display dev=x every=2</p> <p>where x is pseudo device that represents the chosen LUN.</p> <p><input type="checkbox"/> Start I/O to the LUN.</p> <p><input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.</p> <p><input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that</p> <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <p><input type="checkbox"/> Reconnect the cable that you disconnected from the HBA.</p> <p><input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command</p> <p>powermt restore</p>	<p><input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command</p> <p>powermt display dev=x every=2</p> <p>where x is pseudo device that represents the chosen LUN.</p> <p><input type="checkbox"/> Start I/O to the LUN.</p> <p><input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.</p> <p><input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that</p> <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <p><input type="checkbox"/> Reconnect the cable that you disconnected from the HBA.</p> <p><input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command</p> <p>powermt restore</p>	<p>PowerPath product guide</p> <p>PowerPath product guide</p>

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — Existing NetWare Server and Existing Storage System

This checklist assumes that the existing NetWare server and existing storage system are already connected in a SAN or direct attach configuration. Tasks highlighted with grey in the checklist should be performed before the service provider arrives, except for the removal of ATF or CDE, which you can have done by EMC Professional Services.



CAUTION

You cannot run ATF or CDE and PowerPath on the same server. Before you transition your server from ATF or CDE to PowerPath, you must

- ◆ **Back up your server configurations.**
- ◆ **Back up data on all storage systems connected to the server.**
- ◆ **Remove ATF or CDE, which EMC recommends that EMC Professional Services do, especially if your server configuration is complex. If you want to remove it yourself, you must use the procedure in the *Removing ATF or CDE Software Before Installing Other Failover Software* document (P/N 069001173), which is on the Powerlink website with this roadmap.**

Simply removing ATF or CDE using the uninstall procedure in the NetWare ATF administrator's guide or the NetWare utilities administrator's guide may not return the server to its original state, and may result in lost data.

If you are transitioning a NetWare Cluster Service configuration from ATF or CDE to PowerPath, perform the procedure in the checklist on each node in succession. While you perform the procedure on one node, you can leave the cluster services active on the other node, provided failure in a path to the storage system does not occur.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install additional HBAs</i>	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	HBA documentation (see URL on page 5-6)
2 Server <i>Prepare cluster</i>	If the server is in a cluster <input type="checkbox"/> Move cluster resources from server you want to upgrade. <input type="checkbox"/> Remove the first from the cluster with the command cluster leave <input type="checkbox"/> Unload cluster software with the command uldncs	If the server is in a cluster Move cluster resources from server you want to upgrade. <input type="checkbox"/> Remove the first from the cluster with the command cluster leave <input type="checkbox"/> Unload cluster software with the command uldncs	NetWare documentation
3 Server and Client <i>Remove ATF or CDE</i>	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	Removing ATF or CDE instruction sheet
4 Server <i>Update Software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 5-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent • admsnap 	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 5-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent 	HBA documentation (see URL on page 5-6), Netware Host Agent and CLI installation guide, and Admsnap administrator's guide
5 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide and HBA documentation (see URL on page 5-6)

Task	With Access Logix	Without Access Logix	Reference Document
6 Storage System Update software	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 5-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p> <p>For a CX-Series or FC4700-Series storage system, continue to step 7, and for an FC4500 or FC5300 storage system, skip to step 8.</p>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (see page 5-3), update it: <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p> <p>For a CX-Series or FC4700-Series storage system, continue to step 7, and for an FC4500 or FC5300 storage system, skip to step 8.</p>	Manager administrator's guide and online help
7 CX-Series or FC4700-Series Storage System Set properties for PowerPath	For new HBAs <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h hostname systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h hostname systemtype -config 3 <p>CAUTION The above command reboots both SPs at the same time.</p>	For any HBAs <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h hostname systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h hostname systemtype -config 3 <p>CAUTION The above command reboots both SPs at the same time.</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
7 CX-Series or FC4700-Series Storage System Set properties for PowerPath (cont.)	<p>For new HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For existing HBAs</p> <p>An existing HBA is one that is registered with the storage system.</p> <p><input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's existing HBA ports (initiators):</p> <p>Initiator Type to Open CLARiiON</p> <p>Failover mode to 1</p> <p>Array commpath to Enabled</p>	<p>For any HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p>	<p>CLI reference</p> <p>Manager administrator's guide and online help</p>

Task	With Access Logix	Without Access Logix	Reference Document
8 FC4500 or FC5300 Storage System <i>Set properties for PowerPath</i>	<p><input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system.</p> <p>For new HBAs</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type:</p> <p>navicli -np -d device systemtype</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -np -d device systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <p>navicli -np -d device failovermode 1</p> <p>navicli -np -d device arraycommpath 1</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p><input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system.</p> <p>For any HBAs</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type:</p> <p>navicli -np -d device systemtype</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -np -d device systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <p>navicli -np -d device failovermode 1</p> <p>navicli -np -d device arraycommpath 1</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>Storage-system setup guide</p> <p>CLI reference</p>

Task	With Access Logix	Without Access Logix	Reference Document
8 FC4500 or FC5300 Storage System Set properties for PowerPath (cont.)	<p>For existing HBAs</p> <p>An existing HBA is one that is registered with the storage system.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the following storage-system properties for the server's existing HBA existing ports (initiators):</p> <pre>navicli -np -d device storagegroup -sethost -host servername systemtype -config 3</pre> <pre>navicli -np -d device storagegroup -sethost -host servername failovermode 1</pre> <pre>navicli -np -d device storagegroup -sethost -host servername arraycommpath 1</pre> <p>where</p> <p><i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p><i>servername</i> is the name of the server with the HBAs</p>		CLI reference
9 Server Install PowerPath	<p><input type="checkbox"/> Make sure the SCSISAN.CDM module is not installed.</p> <p><input type="checkbox"/> If the Navisphere Host Agent is running, unload the Navagent.nlm driver with the command</p> <pre>unload navagent</pre> <p><input type="checkbox"/> Install PowerPath.</p> <p>Note After PowerPath is installed on a NetWare 6 server, a device named EMC PowerPath Control Device appears under ConsoleOne > Tools > Disk Management > Devices. This device is always inactive and is unavailable for I/O.</p>	<p><input type="checkbox"/> Make sure the SCSISAN.CDM module is not installed.</p> <p><input type="checkbox"/> If the Navisphere Host Agent is running, stop it by unloading the Navagent.nlm driver with the command</p> <pre>unload navagent</pre> <p><input type="checkbox"/> Install PowerPath.</p> <p>Note After PowerPath is installed on a NetWare 6 server, a device named EMC PowerPath Control Device appears under ConsoleOne > Tools > Disk Management > Devices. This device is always inactive and is unavailable for I/O.</p>	<p>NetWare documentation</p> <p>NetWare Host Agent and CLI installation guide</p> <p>PowerPath release notes and PowerPath for NetWare installation and administrator's guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
9 Server Install PowerPath (cont.)	<p>CAUTION If you use the server -ns command to bring up NetWare, you must either load the PowerPath driver manually or remove all redundant paths. Failure to do so may result in LUN corruption.</p> <p><input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/netware</p>	<p>CAUTION If you use the server -ns command to bring up NetWare, you must either load the PowerPath driver manually or remove all redundant paths. Failure to do so may result in LUN corruption.</p> <p><input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/netware</p>	<p>PowerPath for NetWare installation and administrator's guide</p> <p>PowerPath release notes and PowerPath for NetWare installation and administrator's guide</p>
10 Server Cable additional HBAs to switches or storage system	<p><input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports.</p> <p><input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port.</p> <p>For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<p><input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports.</p> <p><input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port.</p> <p>For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<p>Storage-system setup guide.</p>
11 Switches Zone for additional HBAs	<p>For a SAN</p> <p><input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs.</p> <p><input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.</p>	<p>For a SAN</p> <p><input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs.</p> <p><input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.</p>	<p>Switch documentation</p>

Task	With Access Logix	Without Access Logix	Reference Document
12 Server <i>Register additional HBAs with storage system</i>	<input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each new HBA is registered with the storage system.	<input type="checkbox"/> Reboot the server.	Manager administrator's guide and online help
13 Server <i>Make LUNs available to additional HBAs</i>	<input type="checkbox"/> Use Navisphere Manager to disconnect and then reconnect the server and its Storage Group. <input type="checkbox"/> Reboot the server	N/A	Manager administrator's guide and online help
14 Server <i>Check paths to storage system</i>	<input type="checkbox"/> Checkpoint - Verify the paths to each LUN with the NetWare command list devices <input type="checkbox"/> Checkpoint - Verify that PowerPath sees the paths to each LUN using the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 7 or 8. For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	<input type="checkbox"/> Checkpoint - Verify the paths to each LUN with the NetWare command list devices <input type="checkbox"/> Checkpoint - Verify that PowerPath sees the paths to each LUN using the PowerPath command powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 7 or 8 For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	NetWare documentation PowerPath product guide Storage-system setup guide

Task	With Access Logix	Without Access Logix	Reference Document
15 Server <i>Remount volumes</i>	<p>If the server is <i>not</i> in a cluster</p> <p><input type="checkbox"/> Remount the volumes on the storage system.</p> <p>If the server is in a cluster</p> <p><input type="checkbox"/> Load cluster software on the server with the command</p> <p>ldnccs</p> <p><input type="checkbox"/> Move cluster resources back to the server.</p>	<p>If the server is <i>not</i> in a cluster</p> <p><input type="checkbox"/> Remount the volumes on the storage system.</p> <p>If the server is in a cluster</p> <p><input type="checkbox"/> Load cluster software on the server with the command</p> <p>ldnccs</p> <p><input type="checkbox"/> Move cluster resources back to the server.</p>	NetWare documentation
16 Server <i>Save PowerPath configuration</i>	<p><input type="checkbox"/> Save the server's PowerPath configuration with the PowerPath command</p> <p>powermt -save</p> <p>This command creates the powermt.ctm configuration file.</p>	<p><input type="checkbox"/> Save the server's PowerPath configuration with the PowerPath command</p> <p>powermt -save</p> <p>This command creates the powermt.ctm configuration file.</p>	PowerPath product guide
17 Server <i>Test PowerPath with a license key</i>	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p> <p><input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command</p> <p>powermt display dev=x every=2</p> <p>where x is pseudo device that represents the chosen LUN.</p> <p><input type="checkbox"/> Start I/O to the LUN.</p>	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p> <p><input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command</p> <p>powermt display dev=x every=2</p> <p>where x is pseudo device that represents the chosen LUN.</p> <p><input type="checkbox"/> Start I/O to the LUN.</p>	<p>NetWare documentation</p> <p>PowerPath product guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
17 Server Test PowerPath with a license key (cont.)	<input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

ATF or CDE Configurations for NetWare

Read this section if you are installing a NetWare ATF or CDE configuration with a new server and a new FC-Series storage system, defined as follows:

new server - A server running NetWare and *not* connected to any storage system.

new storage system - An FC-Series storage system that has the factory default settings and has *never* been connected to a server.

All storage systems connected to the server must be FC-Series storage systems. If any other type of storage system is connected to the server, the server cannot run ATF or CDE. Note that *pre-FC4700 storage system*, refers to an FC4500, FC5300, or FC5700 storage system.

Topics relating to the checklists for NetWare ATF or CDE configurations are

- ◆ Prerequisites 5-44
- ◆ Documentation..... 5-45
- ◆ ATF or CDE Checklist — New NetWare Server and New Storage System 5-46

Prerequisites

- ◆ All switches must be installed.
- ◆ Storage systems must be set up, initialized (if required), and connected to switches, and any optional storage-system software (Access Logix, SnapView, MirrorView) must be installed.
- ◆ If any storage systems have SnapView, the admsnap utility must be installed on the servers that will be the SnapView production and secondary hosts.
- ◆ If you will use Navisphere Manager 6.X, you must have a host that is
 - Running an operating system that can support the Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.
- ◆ If you will use Navisphere Manager 5.X, you must have it installed on a Windows 2000 or Windows NT host on a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.
- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4700 Configuration Planning Guide* (P/N 014003016)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

This checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop before starting the installation.

- ◆ Documentation that ships with
 - HBA and HBA driver

This documentation is also available from the following Qlogic website:

http://www.qlogic.com/support/drivers_software.asp
and select **EMC** in the **OEM-approved Drivers/Firmware** list at the bottom of the page.

- Switches
- NetWare® operating system
- ◆ *EMC Storage-System Host Utilities for NetWare Administrator's Guide* (P/N 069001139)
- ◆ *EMC Navisphere Application Transparent Failover (ATF) for NetWare Administrator's Guide* (P/N 069001132)
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide* (P/N 069001125)
or
EMC Navisphere Manager Version 5.X Administrator's Guide (P/N 069001143)
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide* (P/N 069001124)
- ◆ *EMC Host Connectivity Guide for Novell NetWare* (P/N 300-000-615)

ATF or CDE Checklist — New NetWare Server and New Storage System

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs, drivers, cables</i>	<input type="checkbox"/> Install the Fibre Channel HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports.	<input type="checkbox"/> Install the Fibre Channel HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports.	HBA documentation (see URL on page 5-45)
2 Server <i>Set HBA driver properties</i>	For a SAN <input type="checkbox"/> Set the SAN Topology value in the HBA driver. <input type="checkbox"/> Checkpoint - Verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	For a SAN <input type="checkbox"/> Set the SAN Topology value in the HBA driver. <input type="checkbox"/> Checkpoint - Verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Host connectivity guide and HBA documentation (see URL on page 5-45)
3 Switches <i>Zone</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each host initiator to an SP. <input type="checkbox"/> Checkpoint — Verify that each HBA sees only the targets (SPs) to which it is zoned.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each host initiator to an SP. <input type="checkbox"/> Checkpoint — Verify that each HBA sees only the targets (SPs) to which it is zoned.	Switch documentation

Task	With Access Logix	Without Access Logix	Reference Document
4 Server <i>Install CDE or ATF</i>	<input type="checkbox"/> Install CDE or ATF.	<input type="checkbox"/> Install CDE or ATF.	For CDE - Utilities administrator's guide For ATF - ATF administrator's guide
5 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent. <input type="checkbox"/> Edit the agent.config file as follows: <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where <i>SP_ip_address</i> is the address of the SP.	<input type="checkbox"/> Install the Navisphere Host Agent. <input type="checkbox"/> Edit the agent.config file as follows: <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where <i>SP_ip_address</i> is the address of the SP.	NetWare Host Agent and CLI installation guide
6 FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
7 Storage System Configure	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group. Now the LUNs in the Storage Group look like any other disks in the server.	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs. Now the LUNs look like any other disks in the server.	Manager administrator's guide and on-line help
8 Storage System Set up Event Monitor	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Using Navisphere Manger to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
9 Server Make LUNs available to NetWare	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs. If NetWare does not recognizes any LUNs, verify the connection to the Storage Group.	<input type="checkbox"/> Create partitions or the pertinent database file systems on the LUNs.	Host connectivity guide and NetWare documentation

You are now ready to set up any optional software, such as SnapView or MirrorView.

Solaris Installation Checklists

This chapter contains checklists of the tasks required to install a EMC CX400, CX600, or FC-Series storage system in a configuration with a Solaris[™] server and PowerPath[™], VERITAS DMP, or ATF/CDE failover software.

ATF/CDE failover software does not support CX-Series storage systems.

The sections for the different configurations are

- ◆ PowerPath Configurations for Solaris 6-2
- ◆ DMP Configurations for Solaris 6-49
- ◆ ATF or CDE Configurations for Solaris 6-58

PowerPath Configurations for Solaris

Read this section if you are installing a Solaris PowerPath configuration with a new or existing server and a new or existing CX400, CX600, FC4500, FC4700-Series, or FC5300 storage system. A new and existing server and a new and existing storage system are defined as follows:

new server - A server running Solaris and *not* connected to any storage system.

existing server - A server running Solaris and that is already connected to one or more storage systems.

new storage system - A CX400, CX600, FC4500, FC4700-Series, or FC5300 storage system that has the factory default settings and has *never* been connected to a server.

existing storage system - CX400, CX600, FC4500, FC4700-Series, or FC5300 that is already connected to one or more servers and is in a Navisphere domain.

All CLARiiON storage systems connected to the server must be CX400, CX600, FC4500, FC4700-Series, or FC5300 storage systems. If any other type of CLARiiON storage system is connected to the server, the server cannot run PowerPath.

Topics relating to the checklists for Solaris PowerPath configurations are

- ◆ Required Software Revisions 6-3
- ◆ Prerequisites 6-4
- ◆ Documentation..... 6-5
- ◆ PowerPath Checklist — New Solaris Server and New Storage System..... 6-7
- ◆ PowerPath Checklist — New Solaris Server and Existing Storage System..... 6-16
- ◆ PowerPath Checklist — Existing Solaris Server and New Storage System..... 6-27
- ◆ PowerPath Checklist — Existing Solaris Server and Existing Storage System 6-38

Required Software Revisions

- ◆ Solaris operating system revision and patches listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ HBA driver revision listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ Solaris PowerPath 3.0.0 with Patch 3.0.2 or higher, except for Solaris 9, which requires PowerPath 3.0.3.
- ◆ For CX400 storage systems
 - CX400 Access Logix version 02.02.1.40.5.004 or higher
or
CX400 Base Software version 02.02.0.40.5.004 or higher
 - Navisphere SP Agent version 6.2 or higher
 - Navisphere Host Agent version 6.2 or higher
 - Navisphere Manager version 6.2 or higher
- ◆ For CX600 storage systems
 - CX600 Access Logix version 02.01.1.60.5.006 or higher
or
CX600 Base Software version 02.01.0.60.5.006 or higher
 - Navisphere SP Agent version 6.1 or higher
 - Navisphere Host Agent version 6.1 or higher
 - Navisphere Manager version 6.1 or higher
- ◆ For FC4500 storage systems
 - FC4500 Access Logix version 6.32.16 or higher
or
FC4500 Base Software version 5.32.16 or higher
 - Navisphere SP Agent version 6.0.5 or higher
 - Navisphere Host Agent version 6.0.5 or higher
 - Navisphere Manager version 6.0.5 or higher

- ◆ For FC4700 storage systems
 - FC4700 Access Logix version 8.45.52 or higher or
FC4700 Base Software version 8.45.02 or higher
 - Navisphere SP Agent version 6.1 or higher
 - Navisphere Host Agent version 6.1 or higher
 - Navisphere Manager version 6.1 or higher
- ◆ For FC5300 storage systems
 - FC5300 Access Logix version 6.24.07 or higher or
FC5300 Base Software version 5.24.07 or higher
 - Navisphere SP Agent version 6.1 or higher
 - Navisphere Host Agent version 6.1 or higher
 - Navisphere Manager version 6.1 or higher

Prerequisites

- ◆ You must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system server and that you will connect to the SPs in CX400, CX600, or FC4700-Series storage system.
- ◆ For most configurations, you must also have a host that is
 - Running Navisphere 6.X
 - On a network that is connected to the storage-system server and that you will connect to SPs in CX400, CX600, or FC4700-Series storage systems.
- ◆ For an FC4500 or FC5300 storage system connected to a server on which you will install PowerPath, you must have a computer that is *not* a laptop and that you can connect to the storage system. This computer must run
 - Windows NT with Service Pack 5 or Windows 2000
 - Navisphere Host Agent and CLI version 6.1 or higher

- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

Each checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop or, for an FC4500 or FC4700, on the computer you will connect to the storage system, before starting the installation.

- ◆ Documentation that ships with the HBA and HBA driver.

This documentation is also available from the following websites

For Emulex HBAs and drivers:

<http://www.emulex.com/ts/docoem/framemc.htm>

For QLogic HBAs and drivers:

http://www.qlogic.com/support/drivers_software.asp

and select **EMC** in the **OEM-approved Drivers/Firmware** list at the bottom of the page.

- ◆ Documentation that ships with the
 - Switches
 - Solaris operating system
- ◆ *Removing ATF or CDE Software Before Installing Other Failover Software* (P/N 069001173)
- ◆ *PowerPath Version 3.0 Product Guide* (P/N 300-000-510)
- ◆ *PowerPath Version 3.0 for UNIX Installation and Administration Guide* (P/N 300-000-511)
- ◆ *EMC PowerPath Version 3.0 Installing and Configuring EMC Power Device with Solaris Applications* (P/N 300-000-786)

- ◆ *EMC ControlCenter Navisphere Agent and CLI for Solaris Version 5.X Installation Guide (P/N 069001150)*
- ◆ *EMC ControlCenter Navisphere Command Line Interface (CLI) Version 6.X Reference (P/N 069001038)*
- ◆ *Storage-System Host Utilities for Solaris Administrator's Guide (P/N 069001140)*
- ◆ *EMC SnapView admsnap Utility Administrator's Guide (P/N 069001039)*
- ◆ *EMC Storage Systems 40U Cabinet Configuration Guide (P/N 014003082)*
- ◆ *EMC 2-Gigabit Storage Processor Enclosure (DAE2) Model CX400 Setup Guide (P/N 014003105)*
- ◆ *EMC Storage Processor Enclosure (SPE) Model CX600 Setup Guide (P/N 014003078)*
- ◆ *EMC Storage Systems CX-Series Initialization Guide (P/N 014003112)*
- ◆ *EMC 2-Gigabit Disk Enclosure (DAE2) Setup Guide (P/N 014003104)*
- ◆ *FC4500 Setup Guide (P/N 014003102, revision A03 or higher)*
- ◆ *FC4700-2 Setup Guide (P/N 014003073)*
- ◆ *FC5300 Setup Guide (P/N 014003101, revision A03 or higher)*
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide (P/N 069001125)*
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide (P/N 069001124)*
- ◆ *EMC Host Connectivity Guide for Sun Solaris (P/N 300-000-607)*

PowerPath Checklist — New Solaris Server and New Storage System

Tasks highlighted with grey in the checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	HBA documentation (see URL on page 6-5)
2 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Set the HBA driver parameters, except for the persistent bindings, to the values required for CLARiiON and PowerPath. You will set the persistent bindings after the storage system is installed and the switches are zoned. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Set the HBA driver parameters, except for the persistent bindings, to the values required for CLARiiON and PowerPath. You will set the persistent bindings after the storage system is installed and the switches are zoned. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide For Emulex or QLogic HBAs - HBA documentation (see URL on page 6-5) For JNI HBAs - Solaris utilities administrator guide
3 Server <i>Install PowerPath</i>	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> If you have a PowerPath license key, register it. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/solaris	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> If you have a PowerPath license key, register it. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/solaris	PowerPath release notes and PowerPath for UNIX installation and administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
4 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	Solaris Host Agent and CLI installation guide
5 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install admsnap utility.	N/A	Admsnap administrator's guide
6 Switches <i>Install</i>	<p>For a SAN</p> <p><input type="checkbox"/> Install switches, if not already installed.</p> <p><input type="checkbox"/> Connect a cable from each host HBA port to a switch port.</p> <p><input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port.</p> <p>For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port.</p> <p>For a 2-Gigabit switch - One of the following:</p> <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gigabit HBA port is logged into the switch port. 	<p>For a SAN</p> <p><input type="checkbox"/> Install switches, if not already installed.</p> <p><input type="checkbox"/> Connect a cable from each host HBA port to a switch port.</p> <p><input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port.</p> <p>For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port.</p> <p>For a 2-Gigabit switch - One of the following:</p> <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gigabit HBA port is logged into the switch port. 	Rails, cabinet, switch documentation.
7 Storage System <i>Install</i>	<p><input type="checkbox"/> Install the storage system in the cabinet, if not already installed.</p> <p>For a CX400, CX600, or FC4700-Series storage system, continue to step 8, and for an FC4500 or FC5300 storage system, skip to step 9.</p>	<p><input type="checkbox"/> Install the storage system in the cabinet, if not already installed.</p> <p>For a CX400, CX600, or FC4700-Series storage system, continue to step 8, and for an FC4500 or FC5300 storage system, skip to step 9.</p>	Rails and cabinet documentation
8 CX400, CX600, or FC4700-Series Storage System <i>Initialize and install software</i>	<p><input type="checkbox"/> Initialize the storage system and install Access Logix.</p> <p><input type="checkbox"/> If you have SnapView and/or MirrorView, install it.</p>	N/A	Storage-system setup guide and Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
9 Storage System <i>Cable to switch or server and LAN or serial port</i>	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gigabit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gigabit SP port is logged into the switch port. For a CX400, CX600, or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 11.	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gigabit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gigabit SP port is logged into the switch port. For a CX400, CX600, or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 11.	Storage-system setup guide.
10 CX400, CX600, or FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
11 Storage System Set Properties for PowerPath	<p>For a CX400, CX600, or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3 navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycommpath 1 navicli -h <i>hostname</i> unitserialnumber lun</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3 navicli -np -d <i>device</i> failovermode 1 navicli -np -d <i>device</i> arraycommpath 1 navicli -np -d <i>device</i> unitserialnumber lun</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>For a CX400, CX600, or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3 navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycommpath 1 navicli -h <i>hostname</i> unitserialnumber lun</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3 navicli -np -d <i>device</i> failovermode 1 navicli -np -d <i>device</i> arraycommpath 1 navicli -np -d <i>device</i> unitserialnumber lun</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
12 Switches Zone	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	Switch documentation
13 Server Make target SPs available	<ul style="list-style-type: none"> <input type="checkbox"/> Add persistent bindings to the HBA driver configuration file. <input type="checkbox"/> Edit the sd.conf file to add LUNs and their targets. <input type="checkbox"/> Reboot the server using the reboot - - -r command so the HBA can see the targets (SPs). <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned. <input type="checkbox"/> Checkpoint - Use the inquiry option of the format command to verify that each path to the storage system has one arraycomppath device with an ID of <i>drive type unknown</i>. The output of this command should be <i>Vendor DGC, Product LUNZ</i>. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system. 	<ul style="list-style-type: none"> <input type="checkbox"/> Add persistent bindings to the HBA driver configuration file. <input type="checkbox"/> Edit the sd.conf file to add LUNs and their targets. <input type="checkbox"/> Reboot the server using the reboot - - -r command so the HBA can see the targets (SPs). <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned. <input type="checkbox"/> Checkpoint - Use the inquiry option of the format command to verify that each path to the storage system has one arraycomppath device with an ID of <i>drive type unknown</i>. The output of this command should be <i>Vendor DGC, Product LUNZ</i>. 	Solaris utilities kit administrator's guide Solaris driver.conf man page Solaris documentation Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
14 Storage System Configure	<p><input type="checkbox"/> Use Navisphere Manager to set general storage-system properties.</p> <p><input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups.</p> <p><input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group</p> <p><input type="checkbox"/> Reboot the server using the reboot - - -r command so that Solaris recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server.</p> <p><input type="checkbox"/> Checkpoint - Use the format command to verify that Solaris recognizes the LUNs. If Solaris does not recognize any LUNs, verify the server's connection to the Storage Group.</p> <p><input type="checkbox"/> For an FC4500 or FC5300, disconnect the computer from the serial port on the storage system.</p>	<p><input type="checkbox"/> Use Navisphere Manager to set general storage-system properties.</p> <p><input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs.</p> <p><input type="checkbox"/> Reboot the server using the reboot - - -r command so that Solaris recognizes the LUNs. Now the LUNs look like any other disks in the server.</p> <p><input type="checkbox"/> Checkpoint - Use the format command to verify that Solaris recognizes the LUNs.</p> <p><input type="checkbox"/> For an FC4500 or FC5300, disconnect the computer from the serial port on the storage system.</p>	<p>Manager administrator's guide and online help</p> <p>Solaris documentation</p> <p>Storage-system setup guide</p>
15 Storage System Set up Event Monitor	<p><input type="checkbox"/> Plan your monitoring configuration.</p> <p><input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.</p>	<p><input type="checkbox"/> Plan your monitoring configuration.</p> <p><input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.</p>	Manager administrator's guide and on-line help
16 Server Make LUNs available to Solaris	<p><input type="checkbox"/> Prepare the LUNs to receive data by</p> <ul style="list-style-type: none"> Specifying Solaris mount point names for them Labeling and partitioning them Mounting file systems on them Mounting them to the mount points 	<p><input type="checkbox"/> Prepare the LUNs to receive data by</p> <ul style="list-style-type: none"> Specifying Solaris mount point names for them Labeling and partitioning them Mounting file systems on them Mounting them to the joint points 	Host connectivity guide or Solaris documentation

Task	With Access Logix	Without Access Logix	Reference Document
17 Server Configure PowerPath for missing devices	<input type="checkbox"/> Use the following commands to configure PowerPath for any missing logical devices so all paths to LUNs are visible: powercf -i or powercf -q powermt config <input type="checkbox"/> Checkpoint - Use the following command to check that PowerPath sees all the paths to the LUNs: powermt display dev=all class=clarion If PowerPath cannot see all the paths, check that <ul style="list-style-type: none"> • You registered your PowerPath license key if you have one. • the storage-system properties are set as defined in step 11. 	<input type="checkbox"/> Use the following commands to configure PowerPath for any missing logical devices so all paths to LUNs are visible: powercf -i or powercf -q powermt config <input type="checkbox"/> Checkpoint - Use the following command to check that PowerPath sees all the paths to the LUNs: powermt display dev=all class=clarion If PowerPath cannot see all the paths, check that <ul style="list-style-type: none"> • You registered your PowerPath license key if you have one. • the storage-system properties are set as defined in step 11. 	PowerPath product guide
18 Server Test PowerPath with a license key	If you have a PowerPath license key Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clarion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN.	If you have a PowerPath license key Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clarion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN <input type="checkbox"/> Start I/O to the LUN.	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
18 Server Test PowerPath with a license key (cont.)	<input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide
19 Server VERITAS VxVM	For a server with VERITAS VxVM V3.1.1 or below <input type="checkbox"/> Before you reboot the server, edit the /etc/rcS.d/S24powerstartup file to add the following two lines to the bottom of the file after the last fi character: /etc/powermt set volume_open_policy=firstpath echo "PowerPath:powermt set volume_open_policy=firstpath" On the next reboot, the first path policy used by CLARiiON storage systems will take effect.	For a server with VERITAS VxVM V3.1.1 or below <input type="checkbox"/> Before you reboot the server, edit the /etc/rcS.d/S24powerstartup file to add the following two lines to the bottom of the file after the last fi character: /etc/powermt set volume_open_policy=firstpath echo "PowerPath:powermt set volume_open_policy=firstpath" On the next reboot, the first path policy used by CLARiiON storage systems will take effect.	VERITAS VxVM documentation and EMC manual on installing and configuring EMP power devices with Solaris applications

Task	With Access Logix	Without Access Logix	Reference Document
19 Server VERITAS VxVM (cont.)	<p>For a server with VERITAS VxVM V3.2 or above</p> <p><input type="checkbox"/> Issue the following command: vxddladm addjbod vid=DGC pagecode 0x83 offset=8 length=16</p> <p>You need to issue this command only once and it will take effect on the next reboot.</p>	<p>For a server with VERITAS VxVM V3.2 or above</p> <p><input type="checkbox"/> Issue the following command: vxddladm addjbod vid=DGC pagecode 0x83 offset=8 length=16</p> <p>You need to issue this command only once and it will take effect on the next reboot.</p>	VERITAS VxVM documentation and EMC manual on installing and configuring EMP power devices with Solaris applications

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — New Solaris Server and Existing Storage System

Tasks highlighted with grey in the checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	<input type="checkbox"/> Install HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure. <input type="checkbox"/> Install HBA driver.	HBA documentation (see URL on page 6-5).
2 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Set the HBA driver parameters, except for the persistent bindings, to the values required for CLARiiON and PowerPath. You will set the persistent bindings after the storage system is installed and the switches are zoned. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Set the HBA driver parameters, except for the persistent bindings, to the values required for CLARiiON and Power Path. You will set the persistent bindings after the storage system is installed and the switches are zoned. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide For Emulex or QLogic HBAs - HBA documentation (see URL on page 6-5) For JNI HBAs - Solaris utilities administrator guide
3 Server <i>Install PowerPath</i>	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> If you have a PowerPath license key, register it. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/solaris	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> If you have a PowerPath license key, register it <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/solaris	PowerPath release notes and PowerPath for UNIX installation and administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
4 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	Solaris Host Agent and CLI installation guide
5 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install admsnap utility.	N/A	Admsnap administrator's guide
6 Storage System <i>Update software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 6-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI • CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down. 	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 6-3), update it <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down. 	Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
7 Server <i>Cable to switches or storage system</i>	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gigabit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gigabit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gigabit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gigabit HBA port is logged into the switch port. 	Storage-system setup guide.
8 Switches <i>Zone</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	Switch documentation
9 Storage System <i>Register HBAs</i>	<input type="checkbox"/> On the server, restart the Navisphere Host Agent. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system.	N/A	Solaris Host Agent and CLI installation guide Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System <i>Set properties for PowerPath</i>	<p>For a CX400, CX600, or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's HBA ports (initiators):</p> <p>Initiator Type to Open CLARiiON</p> <p>Failover mode to 1</p> <p>Array commpath to Enabled</p> <p>Unit Serial Number to LUN</p>	<p>For a CX400, CX600, or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere command to determine the default storage system type:</p> <p>navicli -h <i>hostname</i> systemtype</p> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -h <i>hostname</i> systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate storage-system properties to the values for PowerPath:</p> <p>navicli -h <i>hostname</i> failovermode 1</p> <p>navicli -h <i>hostname</i> arraycommpath 1</p> <p>navicli -h <i>hostname</i> unitserialnumber lun</p> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p>	<p>Manager administrator's guide and online help or CLI reference</p> <p>CLI reference</p>

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System Set Properties for PowerPath (cont.)	<p>For an FC4500 or FC5300 storage system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. <input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the following storage-system properties for the server's HBA ports (initiators): <pre> navicli -np -d device storagegroup -sethost -host servername systemtype -config 3 navicli -np -d device storagegroup -sethost -host servername failovermode 1 navicli -np -d device storagegroup -sethost -host servername arraycommpath 1 navicli -np -d device storagegroup -sethost -host servername unitserialnumber lun </pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1). <i>servername</i> is the name of the server with the HBAs.</p> 	<p>For an FC4500 or FC5300 storage system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system <input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type: <pre> navicli -np -d device systemtype </pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use the following command to set it to 3:</p> <pre> navicli -np -d device systemtype -config 3 </pre> <p>CAUTION The above command reboots both SPs at the same time.</p> 	<p>Storage-system setup guide</p> <p>CLI reference</p>

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System Set Properties for PowerPath (cont.)		<p>For an FC4500 or FC5300 storage system (cont.)</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <p>navicli -np -d <i>device</i> failovermode 1</p> <p>navicli -np -d <i>device</i> arraycommpath 1</p> <p>navicli -np -d <i>device</i> unitserialnumber lun.</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
11 Server <i>Make target SPs available</i>	<input type="checkbox"/> Add persistent bindings to the HBA driver configuration file. <input type="checkbox"/> Edit the sd.conf file to add any additional LUNs you will bind and their targets. <input type="checkbox"/> Reboot the server using the reboot - - -r command so the HBA can see the targets (SPs). <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned.	<input type="checkbox"/> Add persistent bindings to the HBA driver configuration file. <input type="checkbox"/> Edit the sd.conf file to add any additional LUNs you will bind and their targets. <input type="checkbox"/> Reboot the server using the reboot - - -r command so the HBA can see the targets (SPs). <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned.	Solaris utilities kit administrator's guide Solaris driver.conf man page Solaris documentation
	<input type="checkbox"/> Checkpoint - Use the inquiry option of the format command to verify the paths to the storage system. Alternate paths will have a device with an ID of <i>drive type unknown</i> . Note The format command will display n+1 device entries for each LUN, where n is the number of paths to the LUN. One of these entries is a PowerPath device and the other n entries are native devices.	<input type="checkbox"/> Checkpoint - Use the inquiry option of the format command to verify the paths to the storage system. Alternate paths will have a device with an ID of <i>drive type unknown</i> . Note The format command will display n+1 device entries for each LUN, where n is the number of paths to the LUN. One of these entries is a PowerPath device and the other n entries are native devices.	

Task	With Access Logix	Without Access Logix	Reference Document
14 Server Configure PowerPath for missing devices	<input type="checkbox"/> Use the following commands to configure PowerPath for any missing logical devices so all paths to the LUNs are visible: powercrf -i or powercrf -q powermt config <input type="checkbox"/> Checkpoint - Use the following command to check that PowerPath sees all paths to the LUNs: powermt display dev=all class=clariion If PowerPath cannot see all the paths, check that <ul style="list-style-type: none"> • You registered your PowerPath license key. • The storage-system properties are set as defined in step 10. 	<input type="checkbox"/> Use the following commands to configure PowerPath for any missing logical devices so all paths to the LUNs are visible: powercrf -i or powercrf -q powermt config <input type="checkbox"/> Checkpoint - Use the following command to check that PowerPath sees all paths to the LUNs: powermt display dev=all class=clariion If PowerPath cannot see all the paths, check that <ul style="list-style-type: none"> • You registered your PowerPath license key. • The storage-system properties are set as defined in step 10. 	PowerPath product guide
15 Server Test PowerPath with a license key	If you have a PowerPath license key Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN.	If you have a PowerPath license key Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN.	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
15 Server Test PowerPath with a license key (cont.)	<input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide
16 Server VERITAS VxVM	For a server with VERITAS VxVM V3.1.1 or below <input type="checkbox"/> Before you reboot the server, edit the /etc/rcS.d/S24powerstartup file to add the following two lines to the bottom of the file after the last fi character: /etc/powermt set volume_open_policy=firstpath echo "PowerPath:powermt set volume_open_policy=firstpath" On the next reboot, the first path policy used by CLARiiON storage systems will take effect.	For a server with VERITAS VxVM V3.1.1 or below <input type="checkbox"/> Before you reboot the server, edit the /etc/rcS.d/S24powerstartup file to add the following two lines to the bottom of the file after the last fi character: /etc/powermt set volume_open_policy=firstpath echo "PowerPath:powermt set volume_open_policy=firstpath" On the next reboot, the first path policy used by CLARiiON storage systems will take effect.	VERITAS VxVM documentation and EMC manual on installing and configuring EMP power devices with Solaris applications

Task	With Access Logix	Without Access Logix	Reference Document
16 Server VERITAS VxVM (cont.)	<p>For a server with VERITAS VxVM V3.2 or above</p> <p><input type="checkbox"/> Issue the following command:</p> <p>vxddladm addjbod vid=DGC pagecode 0x83 offset=8 length=16</p> <p>You need to issue this command only once and it will take effect on the next reboot.</p>	<p>For a server with VERITAS VxVM V3.2 or above</p> <p><input type="checkbox"/> Issue the following command:</p> <p>vxddladm addjbod vid=DGC pagecode 0x83 offset=8 length=16</p> <p>You need to issue this command only once and it will take effect on the next reboot.</p>	

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — Existing Solaris Server and New Storage System

Tasks highlighted with grey in the checklist should be performed before the service provider arrives, except for the removal of ATF or CDE, which you can have done by EMC Professional Services.



CAUTION

You cannot run ATF or CDE and PowerPath on the same server. Before you transition your server from ATF or CDE to PowerPath, you must

- ◆ **Back up your server configurations.**
- ◆ **Back up data on all storage systems connected to the server.**
- ◆ **Remove ATF or CDE, which EMC recommends that EMC Professional Services do, especially if your server configuration is complex. If you want to remove it yourself, you must use the procedure in the *Removing ATF or CDE Software Before Installing Other Failover Software* document (P/N 069001173), which is on the Powerlink website with this roadmap.**

Simply removing ATF or CDE using the uninstall procedure in the Solaris ATF administrator's guide or the Solaris utilities administrator's guide may not return the server to its original state, and may result in lost data.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install additional HBAs</i>	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	HBA documentation (see URL on page 6-60)
2 Server <i>Remove ATF or CDE</i>	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	Removing ATF or CDE
3 Server <i>Update Software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 6-3), update it <ul style="list-style-type: none"> • HBA driver (save the persistent bindings as you will need to add them to the new driver.) • Navisphere Host Agent • admsnap 	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 6-3), update it <ul style="list-style-type: none"> • HBA driver (save the persistent bindings as you will need to add them to the new driver.) • Navisphere Host Agent 	For Emulex or QLogic driver- HBA documentation (see URL on page 6-60) For JNI driver- Solaris utilities administrator guide Solaris Agent and CLI installation guide Admsnap administrator's guide
4 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Make sure the HBA driver parameters, except for the persistent bindings, are set to the values required for CLARiiON and PowerPath. You will set the persistent bindings after the storage system is installed and the switches are zoned. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Make sure the HBA driver parameters, except for persistent bindings, are set to the values required for CLARiiON and PowerPath. You will set the persistent bindingness after the storage system is installed and you have zoned the switches. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide For Emulex or QLogic HBAs - HBA documentation (see URL on page 6-5) For JNI HBAs - Solaris utilities administrator guide

Task	With Access Logix	Without Access Logix	Reference Document
5 Server <i>Install PowerPath</i>	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> If you have a PowerPath license key, register it. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. <p>Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected.</p> <p>Note The format command will display n+1 device entries for each LUN, where n is the number of paths to the LUN. One of these entries is a PowerPath device and the other n entries are native devices.</p> <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/solaris	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> If you have a PowerPath license key, register it. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. <p>Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected.</p> <p>Note The format command will display n+1 device entries for each LUN, where n is the number of paths to the LUN. One of these entries is a PowerPath device and the other n entries are native devices.</p> <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/solaris	PowerPath release notes and PowerPath for UNIX installation and administrator's guide
6 Storage System <i>Install</i>	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. <p>For a CX400, CX600, or FC4700-Series storage system, continue to 7, and for an FC4500 or FC5300, skip to step 8.</p>	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. <p>For a CX400, CX600, or FC4700-Series storage system, continue to 7, and for an FC4500 or FC5300, skip to step 8.</p>	Rails and cabinet documentation
7 CX400, CX600, or FC4600-Series Storage System <i>Initialize and install software</i>	<input type="checkbox"/> Initialize the storage system and install Access Logix. <input type="checkbox"/> If you have SnapView and/or MirrorView software, install it.	<input type="checkbox"/> Initialize the storage system.	Storage-system setup guide and Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
8 Storage System <i>Cable to switch or server and LAN or serial port</i>	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gigabit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gigabit SP port is logged into the switch port. For a CX400, CX600, or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 10.	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gigabit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gigabit SP port is logged into the switch port. For a CX400, CX600, or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 10.	Storage-system setup guide
9 CX400, CX600, or FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System Set Properties for PowerPath	<p>For a CX400, CX600, or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3 navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycomppath 1 navicli -h <i>hostname</i> unitserialnumber lun</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3 navicli -np -d <i>device</i> failovermode 1 navicli -np -d <i>device</i> arraycomppath 1 navicli -np -d <i>device</i> unitserialnumber lun</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>For a CX400, CX600, or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3 navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycomppath 1 navicli -h <i>hostname</i> unitserialnumber lun</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3 navicli -np -d <i>device</i> failovermode 1 navicli -np -d <i>device</i> arraycomppath 1 navicli -np -d <i>device</i> unitserialnumber lun</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
11 Server <i>Cable additional HBAs to switches or storage system</i>	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gigabit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gigabit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gigabit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gigabit HBA port is logged into the switch port. 	Storage-system setup guide.
12 Switches <i>Zone additional HBAs</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	Switch documentation
13 Server <i>Make target SPs available</i>	<input type="checkbox"/> Add persistent bindings for the new SPs and any new HBAs to the HBA driver configuration file. Note Removing ATF does not remove or change the persistent bindings. <input type="checkbox"/> Edit the sd.conf file to add LUNs and their targets.	<input type="checkbox"/> Add persistent bindings for the new SPs and any new HBAs to the HBA driver configuration file. Note Removing ATF does not remove or change the persistent bindings. <input type="checkbox"/> Edit the sd.conf file to add LUNs and their targets.	Solaris utilities kit administrator's guide Solaris driver.conf man page

Task	With Access Logix	Without Access Logix	Reference Document
13 Server <i>Make target SPs available (cont.)</i>	<input type="checkbox"/> Reboot the server using the reboot - - -r command so the HBA can see the targets (SPs). <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned. <input type="checkbox"/> Checkpoint - Use the inquiry option of the format command to verify that each path to the storage system has one arraycomppath device with an ID of <i>drive type unknown</i> . The output of this command should be <i>Vendor DGC, Product LUNZ</i> . <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system.	<input type="checkbox"/> Reboot the server using the reboot - - -r command so the HBA can see the targets (SPs). <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned. <input type="checkbox"/> Checkpoint - Use the inquiry option of the format command to verify that each path to the storage system has one arraycomppath device with an ID of <i>drive type unknown</i> . The output of this command should be <i>Vendor DGC, Product LUNZ</i> .	Solaris documentation Manager administrator's guide and online help
14 Storage System <i>Configure</i>	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group <input type="checkbox"/> Reboot the server using the reboot - - -r command so that Solaris recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server.	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs. <input type="checkbox"/> Reboot the server using the reboot - - -r command so that Solaris recognizes the LUNs. Now the LUNs look like any other disks in the server.	Manager administrator's guide and online help Solaris documentation

Task	With Access Logix	Without Access Logix	Reference Document
14 Storage System Configure (cont.)	<input type="checkbox"/> Checkpoint - Use the format command to verify that Solaris recognizes the LUNs. If Solaris does not recognize any LUNs, verify the server's connection to the Storage Group. For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	<input type="checkbox"/> Checkpoint - Use the format command to verify that Solaris recognizes the LUNs. For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	Solaris documentation Storage-system setup guide
15 Storage System Set up Event Monitor	<input type="checkbox"/> If you will monitor storage-system events, apply the desired event monitor templates to the storage system.	<input type="checkbox"/> If you will monitor storage-system events, apply the desired event monitor templates to the storage system.	Manager administrator's guide and on-line help
16 Server Make LUNs available to Solaris	<input type="checkbox"/> Prepare the LUNs to receive data by <ul style="list-style-type: none"> • Specifying Solaris mount point names for them • Labeling and partitioning them • Mounting file systems on them • Mounting them to the mount points 	<input type="checkbox"/> Prepare the LUNs to receive data by <ul style="list-style-type: none"> • Specifying Solaris mount point names for them • Labeling and partitioning them • Mounting file systems on them • Mounting them to the joint points 	Host connectivity guide or Solaris documentation

Task	With Access Logix	Without Access Logix	Reference Document
17 Server <i>Configure PowerPath for missing devices</i>	<p><input type="checkbox"/> Use the following commands to configure PowerPath for any missing logical devices so all paths to LUNs are visible:</p> <p>powercf -i or powercf -q</p> <p>powermt config</p> <p><input type="checkbox"/> Checkpoint - Use the following command to check that PowerPath sees all the paths to the LUNs:</p> <p>powermt display dev=all class=clariion</p> <p>If PowerPath cannot see all the paths, check that</p> <ul style="list-style-type: none"> You registered your PowerPath license key. The storage-system properties are set as defined in step 10. 	<p><input type="checkbox"/> Use the following commands to configure PowerPath for any missing logical devices so all paths to LUNs are visible:</p> <p>powercf -i or powercf -q</p> <p>powermt config</p> <p><input type="checkbox"/> Checkpoint - Use the following command to check that PowerPath sees all the paths to the LUNs:</p> <p>powermt display dev=all class=clariion</p> <p>If PowerPath cannot see all the paths, check that</p> <ul style="list-style-type: none"> You registered your PowerPath license key. The storage-system properties are set as defined in step 10. 	<p>PowerPath product guide</p> <p>PowerPath product guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
18 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes “dead.” • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes “dead.” • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
18 Server <i>Test PowerPath with a license key (cont.)</i>	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide
19 Server <i>Applications online</i>	<input type="checkbox"/> Bring any applications that you shutdown (such as clustering or databases) back online, and configure for PowerPath if required.	<input type="checkbox"/> Bring any applications that you shutdown (such as clustering or databases) back online, and configure for PowerPath if required.	PowerPath for Unix installation and administrator's guide
20 Server <i>VERITAS VxVM</i>	<p>For a server with VERITAS VxVM V3.1.1 or below</p> <input type="checkbox"/> Before you reboot the server, edit the <code>/etc/rcS.d/S24powerstartup</code> file to add the following two lines to the bottom of the file after the last <code>fi</code> character: <code>/etc/powermt set volume_open_policy=firstpath</code> <code>echo "PowerPath:powermt set volume_open_policy=firstpath"</code> On the next reboot, the first path policy used by CLARiiON storage systems will take effect.	<p>For a server with VERITAS VxVM V3.1.1 or below</p> <input type="checkbox"/> Before you reboot the server, edit the <code>/etc/rcS.d/S24powerstartup</code> file to add the following two lines to the bottom of the file after the last <code>fi</code> character: <code>/etc/powermt set volume_open_policy=firstpath</code> <code>echo "PowerPath:powermt set volume_open_policy=firstpath"</code> On the next reboot, the first path policy used by CLARiiON storage systems will take effect.	VERITAS VxVM documentation and EMC manual on installing and configuring EMP power devices with Solaris applications
	<p>For a server with VERITAS VxVM V3.2 or above</p> <input type="checkbox"/> Issue the following command: <code>vxddladm addjbod vid=DGC pagecode 0x83 offset=8 length=16</code> You need to issue this command only once and it will take effect on the next reboot.	<p>For a server with VERITAS VxVM V3.2 or above</p> <input type="checkbox"/> Issue the following command: <code>vxddladm addjbod vid=DGC pagecode 0x83 offset=8 length=16</code> You need to issue this command only once and it will take effect on the next reboot.	

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — Existing Solaris Server and Existing Storage System

This checklist assumes that the existing Solaris server and existing storage system are already connected in a SAN or direct attach configuration. Tasks highlighted with grey in the checklist should be performed before the service provider arrives, except for the removal of ATF or CDE, which you can have done by EMC Professional Services.



CAUTION

You cannot run ATF or CDE and PowerPath on the same server. Before you transition your server from ATF or CDE to PowerPath, you must

- ◆ **Back up your server configurations.**
- ◆ **Back up data on all storage systems connected to the server.**
- ◆ **Remove ATF or CDE, which EMC recommends that EMC Professional Services do, especially if your server configuration is complex. If you want to remove it yourself, you must use the procedure in the *Removing ATF or CDE Software Before Installing Other Failover Software* document (P/N 069001173), which is on the Powerlink website with this roadmap.**

Simply removing ATF or CDE using the uninstall procedure in the Solaris ATF administrator's guide or the Solaris utilities administrator's guide may not return the server to its original state, and may result in lost data.

If you are transitioning a SunCluster or VERITAS Cluster Server (VCS) configuration from ATF or CDE to PowerPath, perform the procedure in the checklist on each node in succession. While you perform the procedure on one node, you can leave the cluster services active on the other node, provided failure in a path to the storage system does not occur.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install additional HBAs</i>	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	HBA documentation (see URL on page 6-5)
2 Server <i>Remove ATF or CDE</i>	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it.	Removing ATF or CDE
3 Server <i>Update Software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 6-3), update it <ul style="list-style-type: none"> • HBA driver (save the persistent bindings as you will need to add them to the new driver.) • Navisphere Host Agent • admsnap 	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 6-3), update it <ul style="list-style-type: none"> • HBA driver (save the persistent bindings as you will need to add them to the new driver.) • Navisphere Host Agent 	For Emulex or QLogic driver- HBA documentation (see URL on page 6-5) For JNI driver- Solaris utilities administrator guide Solaris Agent and CLI installation guide Admsnap administrator's guide
4 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Make sure the HBA driver parameters, except for the persistent bindings, are set to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Make sure the HBA driver parameters, except for the persistent bindings, are set to the values required for CLARiiON and PowerPath. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide For Emulex or QLogic HBAs - HBA documentation (see URL on page 6-5) For JNI HBAs - Solaris utilities administrator guide

Task	With Access Logix	Without Access Logix	Reference Document
5 Storage System Update software	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 6-3), update it <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p> <p>For a CX400, CX600, or FC4700-Series storage system, continue to step 6, and for an FC4500 or FC5300 storage system, skip to step 7.</p>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 6-3), update it <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p> <p>For a CX400, CX600, or FC4700-Series storage system, continue to step 6, and for an FC4500 or FC5300 storage system, skip to step 7.</p>	Manager administrator's guide and online help
6 CX400, CX600, or FC4700-Series Storage System Set properties for PowerPath	<p>For new HBAs</p> <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h hostname systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h hostname systemtype -config 3 <p>CAUTION The above command reboots both SPs at the same time.</p>	<p>For any HBAs</p> <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h hostname systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h hostname systemtype -config 3 <p>CAUTION The above command reboots both SPs at the same time.</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
6 CX400, CX600, or FC4700-Series Storage System Set properties for PowerPath (cont.)	<p>For new HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <pre>navicli -h <i>hostname</i> serialnumber lun</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For existing HBAs</p> <p>An existing HBA is one that is registered with the storage system.</p> <p><input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's existing HBA ports (initiators):</p> <p>Initiator Type to Open CLARiiON</p> <p>Failover mode to 1</p> <p>Array commpath to Enabled</p> <p>Unit Serial Number to LUN</p>	<p>For any HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <pre>navicli -h <i>hostname</i> serialnumber lun</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p>	<p>CLI reference</p> <p>Manager administrator's guide and online help</p>

Task	With Access Logix	Without Access Logix	Reference Document
7 FC4500 or FC5300 Storage System Set properties for PowerPath	<p><input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system.</p> <p>For new HBAs</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type:</p> <p>navicli -np -d device systemtype</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -np -d device systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <p>navicli -np -d device failovermode 1</p> <p>navicli -np -d device arraycomppath 1</p> <p>navicli -np -d device serialnumber lun</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p><input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system.</p> <p>For any HBAs</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type:</p> <p>navicli -np -d device systemtype</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -np -d device systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <p>navicli -np -d device failovermode 1</p> <p>navicli -np -d device arraycomppath 1</p> <p>navicli -np -d device serialnumber lun</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>Storage-system setup guide</p> <p>CLI reference</p>

Task	With Access Logix	Without Access Logix	Reference Document
7 FC4500 or FC5300 Storage System Set properties for PowerPath (cont.)	<p>For existing HBAs</p> <p>An existing HBA is one that is registered with the storage system.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the following storage-system properties for the server's existing HBA existing ports (initiators):</p> <pre>navicli -np -d device storagegroup -sethost -host servername systemtype -config 3</pre> <pre>navicli -np -d device storagegroup -sethost -host servername failovermode 1</pre> <pre>navicli -np -d device storagegroup -sethost -host servername arraycommpath 1</pre> <pre>navicli -np -d device storagegroup -sethost -host servername serialnumber lun</pre> <p>where</p> <p><i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p><i>servername</i> is the name of the server with the HBAs.</p>		CLI reference
8 Server Install PowerPath	<p><input type="checkbox"/> Install PowerPath.</p> <p><input type="checkbox"/> If you have a PowerPath license key, register it.</p> <p><input type="checkbox"/> Reboot the server to complete the installation of PowerPath.</p> <p>Note The format command will display n+1 device entries for each LUN, where n is the number of paths to the LUN. One of these entries is a PowerPath device and the other n entries are native devices.</p>	<p><input type="checkbox"/> Install PowerPath.</p> <p><input type="checkbox"/> If you have a PowerPath license key, register it</p> <p><input type="checkbox"/> Reboot the server to complete the installation of PowerPath.</p> <p>Note The format command will display n+1 device entries for each LUN, where n is the number of paths to the LUN. One of these entries is a PowerPath device and the other n entries are native devices.</p>	PowerPath release notes and PowerPath for UNIX installation and administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
8 Server Install PowerPath (cont.)	<input type="checkbox"/> Checkpoint - Use the following PowerPath command to verify that PowerPath sees the paths to the LUNs: powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are set as defined in step 6. 	<input type="checkbox"/> Checkpoint - Use the following PowerPath command to verify that PowerPath sees the paths to the LUNs: powermt display dev=all class=clariion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are set as defined in step 6. 	PowerPath product guide
9 Server Cable additional HBAs to switches or storage system	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide.

Task	With Access Logix	Without Access Logix	Reference Document
10 Switches <i>Zone for additional HBAs</i>	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system 	Switch documentation
11 Server <i>Make target SPs available</i>	<ul style="list-style-type: none"> <input type="checkbox"/> If you updated the driver or added additional HBAs, add persistent bindings to the HBA driver configuration file. Note Removing ATF does not remove or change the persistent bindings. <input type="checkbox"/> Edit the sd.conf file to add LUNs for the new targets. <input type="checkbox"/> If you added persistent bindings, reboot the server using the reboot - - -r command so the HBAs can see the targets (SPs). <input type="checkbox"/> Checkpoint - Use the inquiry option of the format command to verify the paths to the storage system. Alternate paths will have a device with an ID of <i>drive type unknown</i>. 	<ul style="list-style-type: none"> <input type="checkbox"/> If you updated the driver or added additional HBAs, add persistent bindings to the HBA driver configuration file. Note Removing ATF does not remove or change the persistent bindings. <input type="checkbox"/> Edit the sd.conf file to add LUNs with new targets. <input type="checkbox"/> If you added persistent bindings, reboot the server using the reboot - - -r command so the HBAs can see the targets (SPs). <input type="checkbox"/> Checkpoint - Use the inquiry option of the format command to verify the paths to the storage system. Alternate paths will have a device with an ID of <i>drive type unknown</i>. 	Solaris utilities kit administrator's guide Solaris driver.conf man page Solaris documentation
12 Server <i>Make paths to additional HBAs available</i>	<ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere Manager to disconnect and then reconnect the server and its Storage Group. <input type="checkbox"/> Reboot the server using the reboot - - -r command so the HBAs can see the LUNs in the Storage Group. 	N/A	Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
13 Server Configure PowerPath for missing devices	<p><input type="checkbox"/> Use the following commands to configure PowerPath for any missing logical devices so all paths to the LUNs are visible:</p> <p>powercf -i or powercf -q</p> <p>powermt config</p> <p><input type="checkbox"/> Checkpoint - Use the following command to check that PowerPath sees all paths to the LUNs:</p> <p>powermt display dev=all class=clariion</p> <p>If PowerPath cannot see all the paths, check that</p> <ul style="list-style-type: none"> You registered your PowerPath license key. The storage-system properties are set as defined in steps 6 or 7. <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> Disconnect the computer from the serial port on the storage system.</p>	<p><input type="checkbox"/> Use the following commands to configure PowerPath for any missing logical devices so all paths to the LUNs are visible:</p> <p>powercf -i or powercf -q</p> <p>powermt config</p> <p><input type="checkbox"/> Checkpoint - Use the following command to check that PowerPath sees all paths to the LUNs:</p> <p>powermt display dev=all class=clariion</p> <p>If PowerPath cannot see all the paths, check that</p> <ul style="list-style-type: none"> You registered your PowerPath license key. The storage-system properties are set as defined in step 6 or 7. <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> Disconnect the computer from the serial port on the storage system.</p>	<p>PowerPath product guide</p> <p>Storage-system setup guide</p>
14 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p>	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> Stop all applications accessing the storage system and disable user logins to the server.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p>	<p>PowerPath product guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
14 Server Test PowerPath with a license key (cont.)	<input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where <i>x</i> is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where <i>x</i> is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide
15 Server Applications online	<input type="checkbox"/> Bring any applications that you shutdown (such as clustering or databases) back online, and configure for PowerPath if required.	<input type="checkbox"/> Bring any applications that you shutdown (such as clustering or databases) back online, and configure for PowerPath if required.	PowerPath for Unix installation and administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
16 Server VERITAS VxVM	<p>For a server with VERITAS VxVM V3.1.1 or below</p> <p><input type="checkbox"/> Before you reboot the server, edit the <code>/etc/rcS.d/S24powerstartup</code> file to add the following two lines to the bottom of the file after the last <code>fi</code> character:</p> <pre><code>/etc/powermt set volume_open_policy=firstpath echo "PowerPath:powermt set volume_open_policy=firstpath"</code></pre> <p>On the next reboot, the first path policy used by CLARiiON storage systems will take effect.</p>	<p>For a server with VERITAS VxVM V3.1.1 or below</p> <p><input type="checkbox"/> Before you reboot the server, edit the <code>/etc/rcS.d/S24powerstartup</code> file to add the following two lines to the bottom of the file after the last <code>fi</code> character:</p> <pre><code>/etc/powermt set volume_open_policy=firstpath echo "PowerPath:powermt set volume_open_policy=firstpath"</code></pre> <p>On the next reboot, the first path policy used by CLARiiON storage systems will take effect.</p>	VERITAS VxVM documentation and EMC manual on installing and configuring EMP power devices with Solaris applications
	<p>For a server with VERITAS VxVM V3.2 or above</p> <p><input type="checkbox"/> Issue the following command:</p> <pre><code>vxddladm addjbod vid=DGC pagecode 0x83 offset=8 length=16</code></pre> <p>You need to issue this command only once and it will take effect on the next reboot.</p>	<p>For a server with VERITAS VxVM V3.2 or above</p> <p><input type="checkbox"/> Issue the following command:</p> <pre><code>vxddladm addjbod vid=DGC pagecode 0x83 offset=8 length=16</code></pre> <p>You need to issue this command only once and it will take effect on the next reboot.</p>	

DMP Configurations for Solaris

Read this section if you are installing a Solaris DMP configuration with a new server and a new CX400, CX600, or FC4700-Series storage system. A new server and a new storage system are defined as follows:

new server - A server running Solaris and *not* connected to any storage system.

new storage system - A CX400, CX600, or FC4700-Series storage system that has factory default settings and has never been connected to a server.

Topics relating to the checklist for Solaris DMP configurations are

- ◆ Required Software Revisions 6-49
- ◆ Prerequisites 6-50
- ◆ Documentation..... 6-51
- ◆ DMP Checklist - New Solaris Server and New Storage System6-53

Required Software Revisions

- ◆ Solaris operating system revision and patches listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ HBA driver revision listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ VxVM 3.2 patch 2 or higher
- ◆ For CX400 storage systems
 - CX400 Access Logix shipping version
or
CX400 Base software shipping version
 - Navisphere SP Agent version 6.2 or higher
 - Navisphere Host Agent version 6.2 or higher
 - Navisphere Manager version 6.2 or higher

- ◆ For CX600 storage systems
 - CX600 Access Logix shipping version
or
CX600 Base software shipping version
 - Navisphere SP Agent version 6.1 or higher
 - Navisphere Host Agent version 6.1 or higher
 - Navisphere Manager version 6.1 or higher
- ◆ For FC4700 storage systems
 - FC4700 Access Logix version 8.46.56 or higher
or
FC4700 Base software version 8.46.06 or higher
 - Navisphere SP Agent version 6.1 or higher
 - Navisphere Host Agent version 6.1 or higher
 - Navisphere Manager version 6.1 or higher

Prerequisites

- ◆ You have installed the storage systems and, for FC4700 storage systems, initialized them (see storage-system setup guide).
- ◆ You have set up storage-system security (see Security administrator's guide and Navisphere Manager online help).
- ◆ You have installed any switches and connected the storage system SPs to switch ports (see switch documentation)
- ◆ You have installed Navisphere Manager.
- ◆ You have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system server that you will connect to the SPs in the CX400, CX600, or FC4700-Series storage system.

- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)

Documentation

This checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop before starting the installation.

- ◆ Documentation that ships with the HBA and HBA driver.

This documentation is also available from the following websites

For Emulex HBAs and drivers:

<http://www.emulex.com/ts/docoem/framemc.htm>

For QLogic HBAs and drivers:

http://www.qlogic.com/support/drivers_software.asp

and select **EMC** in the **OEM-approved Drivers/Firmware** list at the bottom of the page.

- ◆ Documentation that ships with
 - Switches
 - Sun Solaris® operating system
 - VERITAS Volume Manager
- ◆ *Storage-System Host Utilities for Solaris Administrator's Guide* (P/N 069001140)
- ◆ *EMC ControlCenter Navisphere Agent and CLI for Solaris Version 5.X Installation Guide* (P/N 069001150)
- ◆ *EMC ControlCenter Navisphere Command Line Interface (CLI) Version 6.X Reference* (P/N 069001038)
- ◆ *EMC Storage Systems 40U Cabinet Configuration Guide* (P/N 014003082)
- ◆ *EMC 2-Gigabit Storage Processor Enclosure (DAE2) Model CX400 Setup Guide* (P/N 014003105)

- ◆ *EMC Storage Processor Enclosure (SPE) Model CX600 Setup Guide (P/N 014003078)*
- ◆ *EMC Storage Systems CX-Series Initialization Guide (P/N 014003112)*
- ◆ *EMC 2-Gigabit Disk Enclosure (DAE2) Setup Guide (P/N 014003104)*
- ◆ *FC4700-2 Setup Guide (P/N 014003073)*
- ◆ *FC4700-2 Rackmount Model Hardware Reference (P/N 014003072)*
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide (P/N 069001125)*
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide (P/N 069001124)*
- ◆ *CLARiiON Host Connectivity Guide (P/N 014003106)*

DMP Checklist - New Solaris Server and New Storage System

Tasks highlighted with grey in the checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs, drivers, cables</i>	<input type="checkbox"/> Install the Fibre Channel HBAs, and, if needed, install the optical GBIC connector on the 1Gbit PCI HBA. <input type="checkbox"/> Install the HBA driver <input type="checkbox"/> Connect cables from the host HBA port to a switch port	<input type="checkbox"/> Install the Fibre Channel HBAs, and, if needed, install the optical GBIC connector on the 1Gbit PCI HBA. <input type="checkbox"/> Install the HBA driver <input type="checkbox"/> Connect cables from the host HBA port to a switch port	Documentation that ships with the HBA (see URL on page 6-5)
2 Server <i>Edit the HBA driver file</i>	<input type="checkbox"/> Set the HBA driver parameters to the settings required for CLARiiON, except for the persistent bindings, which you will set after you have zoned the switches. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays	<input type="checkbox"/> Set the HBA driver parameters to the settings required for CLARiiON, except for the persistent bindings, which you will set after you have zoned the switches. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays	For Emulex or Qlogic HBAs - HBA documentation (see URL on page 6-5) For JNI HBAs - Solaris utilities administrator guide
3 Server <i>Add LUNs to the sd.conf file</i>	<input type="checkbox"/> Add LUNs to the sd.conf file <input type="checkbox"/> Reboot the server using the reboot -- -r command.	<input type="checkbox"/> Add LUNs to the sd.conf file <input type="checkbox"/> Reboot the server using the reboot -- -r command.	Documentation that ships with the HBA
4 Server <i>Install the Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent <input type="checkbox"/> If not already done, connect the LAN to the server and perform any needed LAN configuration.	<input type="checkbox"/> Install the Navisphere Host Agent. <input type="checkbox"/> If not already done, connect the LAN to the server and perform any needed LAN configuration.	Server Software document for Solaris
5 Storage System <i>Configure</i>	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties, <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups.	<input type="checkbox"/> Use Navisphere Manager to set general storage system properties, <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, and bind LUNs.	Manager administrator's guide and on-line help Manager administrator's guide and online help.

Task	With Access Logix	Without Access Logix	Reference Document
6 Storage System <i>Set up Event Monitor</i>	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Set user options, create templates, and set up your monitoring configuration.	Event Monitor administrator's guide and on-line help.
7 Storage System <i>Set the arraycompath mode</i>	<input type="checkbox"/> Use Navisphere CLI to set the default storage-system arraycompath property with the following command: navicli -h sp -arraycompath 1 where <i>sp</i> is the IP address or network name of the SP in the storage system.	Use Navisphere CLI to set the default storage-system arraycompath property with the following command: navicli -h sp -arraycompath 1 where <i>sp</i> is the IP address or network name of the SP in the storage system.	Navisphere CLI reference manual
8 Switch <i>Connect servers and SPs</i>	<input type="checkbox"/> Verify that the servers and SPs are connected to the switch	<input type="checkbox"/> Verify that the servers and SPs are connected to the switch	Documentation that ships with the switches
9 Switch <i>Zone switches</i>	For a SAN <input type="checkbox"/> Zone switches. This provides a path from the host initiator to the SP. You will need to know the WWPN of the host initiators - available in the switch's name server table. <input type="checkbox"/> Reboot the server using the reboot -- -r command to load the drivers and perform a login of the host initiators and SPs to the fabric ports on the switch. <input type="checkbox"/> Checkpoint - Use switch management software to verify that the HBAs and storage systems are logged into the switch as fabric ports, and to verify that each HBA sees only the targets (SPs) to which it is zoned.	For a SAN <input type="checkbox"/> Zone switches. This provides a path from the host initiator to the SP. You will need to know the WWPN of the host initiators - available in the switch's name server table. <input type="checkbox"/> Reboot the server using the reboot -- -r command to load the drivers and perform a login of the host initiators and SPs to the fabric ports on the switch. <input type="checkbox"/> Checkpoint - Use switch management software to verify that the HBAs and storage systems are logged into the switch as fabric ports, and to verify that each HBA sees only the targets (SPs) to which it is zoned.	Documentation that ships with the switches
10 Server <i>Add persistent bindings</i>	<input type="checkbox"/> Add persistent bindings to the HBA driver configuration file.	<input type="checkbox"/> Add persistent bindings to the HBA driver configuration file.	Solaris utilities administrator guide

Task	With Access Logix	Without Access Logix	Reference Document
11 Storage System <i>Verify host initiators are registered</i>	<input type="checkbox"/> Before you connect the server to a storage group, use the Connectivity Status dialog in Navisphere Manager to verify that the host initiators are registered.	N/A	Manager administrator's guide and on-line help
12 Storage System <i>Connect host initiators to Storage Groups</i>	<input type="checkbox"/> Use Navisphere Manager to connect servers to Storage Groups <input type="checkbox"/> Reboot the server using the reboot -- -r command so that Solaris recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server. <input type="checkbox"/> Checkpoint - Use the format command to verify that the operating system sees all the LUNs and label any new LUNs.	N/A <input type="checkbox"/> Reboot the server using the reboot -- -r command so the HBA can see the targets (SPs) that you configured through zoning <input type="checkbox"/> Use the format command to verify that the operating system sees all the LUNs and label any new LUNs.	Manager administrator's guide and on-line help
13 Server <i>Install Volume Manager and DMP</i>	<input type="checkbox"/> Use the pkgadd command to add Volume Manager and DMP to the server <input type="checkbox"/> Install any recommended VERITAS patches Important To install the CLR-ASL package, you must install VERITAS 3.2 patch 2. Be sure to label all LUNs in order to make them visible to VERITAS DMP.	<input type="checkbox"/> Use the pkgadd command to add Volume Manager and DMP to the server <input type="checkbox"/> Install any recommended VERITAS patches Important To install the CLR-ASL package, you must install VERITAS 3.2 patch 2. Be sure to label all LUNs in order to make them visible to VERITAS DMP.	Volume Manager documentation
14 Server <i>Install the CLARiiON CLR-ASL package</i>	<input type="checkbox"/> Use the pkgadd command to install the CLARiiON ASL package (CLR-ASL) on the server. Note Until rootdg is created (part of vxinstall command) on at least one disk, vxinstall is installed on at least one disk, DMP displays an error message looking for the config daemon.	<input type="checkbox"/> Use the pkgadd command to install the CLARiiON ASL package (CLR-ASL) on the server. Note Until rootdg is created (part of vxinstall command) on at least one disk, vxinstall is installed on at least one disk, DMP displays an error message looking for the config daemon.	Volume Manager documentation

Task	With Access Logix	Without Access Logix	Reference Document
15 Storage System Set the system type and failover mode	<input type="checkbox"/> Use Navisphere CLI to set the default storage-system type and failover mode properties with the following commands: navicli -h <i>host</i> systemtype -config 3 navicli -h <i>host</i> storagegroup -sethost -host <i>solaris host</i> -failovermode 2 where <i>host</i> is the IP address or network name of the SP in the storage system.	<input type="checkbox"/> Use Navisphere CLI to set the default storage-system type and failover mode properties with the following commands: navicli -h <i>host</i> systemtype -config 3 navicli -h <i>host</i> failovermode 2 where <i>host</i> is the IP address or network name of the SP in the storage system.	navicli man page or Navisphere CLI reference manual
16 Server Reboot	<input type="checkbox"/> Reboot the server using the reboot -- -r command <ul style="list-style-type: none"> to make LUNs available to the OS to make LUNs accessible via both SPs Important If you do not set the failover mode to 2, you will only see half of the expected paths to the SPs.	<input type="checkbox"/> Reboot the server using the reboot -- -r command <ul style="list-style-type: none"> to make LUNs available to the OS to make LUNs accessible via both SPs Important If you do not set the failover mode to 2, you will only see half of the expected paths to the SPs.	
17 Server Configure Volume Manager	<input type="checkbox"/> Run vxinstall to configure Volume Manager and place at least one LUN under VxVM control	<input type="checkbox"/> Run vxinstall to configure Volume Manager and place at least one LUN under VxVM control	Volume Manager documentation
18 Server Verify VxVM installation	<input type="checkbox"/> Use Volume Manager Storage Administrator (VMSA) to verify that DMP is installed and operating correctly <ul style="list-style-type: none"> Double-click a disk icon In the list of disks, double-click a disk you know belongs to the CLARiiON storage system. Click the disks tab to verify there are the expected number of Primary and Secondary paths. Run vxdisk list device, to verify that it displays the correct number of paths 	<input type="checkbox"/> Use Volume Manager Storage Administrator (VMSA) to verify that DMP is installed and operating correctly <ul style="list-style-type: none"> Double-click a disk icon In the list of disks, double-click a disk you know belongs to the CLARiiON storage system. Click the disks tab to verify there are the expected number of Primary and Secondary paths. Run vxdisk list device, to verify that it displays the correct number of paths 	Volume Manager documentation

You are now ready to install and set up any optional software, such as MirrorView.



CAUTION

After DMP is installed and running, and before you install any new or upgrade any existing storage-system software, be sure to refer to the "Special NDU Procedure" in the Storage-System Host Utilities for Solaris Administrator's Guide (P/N 069001140).

ATF or CDE Configurations for Solaris

Read this section if you are installing a Solaris ATF or CDE configuration with a with a new server and a new FC-Series storage system. A new server and new storage system are defined as follows:

new server - A server running Solaris and *not* connected to any storage system.

new storage system - An FC-Series storage system that has the factory default settings and has *never* been connected to a server.

All storage systems connected to the server must be FC-Series storage systems. If any other type of storage system connected to the server, the server cannot run PowerPath. Note that *pre-FC4700 storage system*, refers to an FC4500, FC5300, or FC5700 storage system.

Topics relating to the checklist for Solaris ATF or CDE configurations are

- ◆ Prerequisites 6-59
- ◆ Documentation..... 6-60
- ◆ ATF or CDE Checklist — New Solaris Server and New Storage System..... 6-61

Prerequisites

- ◆ All switches must be installed.
- ◆ Storage systems must be set up, initialized (if required), and connected to switches, and any optional storage-system software (Access Logix, SnapView, MirrorView) must be installed.
- ◆ If any storage systems have SnapView, the admsnap utility must be installed on the servers that will be the SnapView production and secondary hosts.
- ◆ If you will use Navisphere Manager 6.X, you must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.
- ◆ If you will use Navisphere Manager 5.X, you must have it installed on a Windows 2000 or Windows NT host on a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.
- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4700 Configuration Planning Guide* (P/N 014003016)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

This checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop before starting the installation

- ◆ Documentation that ships with
 - HBA and HBA driver

This documentation is also available from the following websites:

For Emulex HBAs and drivers:

<http://www.emulex.com/ts/docoem/framemc.htm>

For QLogic HBAs and drivers:

http://www.qlogic.com/support/drivers_software.asp

and select **EMC** in the **OEM-approved Drivers/Firmware** list at the bottom of the page.

- Switches
- Sun Solaris® operating system
- ◆ *EMC Storage-System Host Utilities for Solaris Administrator's Guide* (P/N 069001140)
- ◆ *EMC Navisphere Application Transparent Failover (ATF) for Solaris Administrator's Guide* (P/N 069001163)
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide* (P/N 069001125)
- or
EMC Navisphere Manager Version 5.X Administrator's Guide (P/N 069001143)
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide* (P/N 069001124)
- ◆ *CLARiiON Host Connectivity Guide* (P/N 014003106)

ATF or CDE Checklist — New Solaris Server and New Storage System

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs, drivers, cables</i>	<input type="checkbox"/> Install the HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports. <input type="checkbox"/> Install the HBA driver.	<input type="checkbox"/> Install the HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or an SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports. <input type="checkbox"/> Install the HBA driver.	HBA documentation (see URL on page 6-60)
2 Server <i>Add LUNs to sd.conf file</i>	Note: EMC does not support the clsp driver in a SAN environment. <input type="checkbox"/> If installing the clsp driver in a direct attach environment, you <i>must</i> add LUNs to the sd.conf file.	Note: EMC does not support the clsp driver in a SAN environment. <input type="checkbox"/> If installing the clsp driver in a direct attach environment, you <i>must</i> add LUNs to the sd.conf file.	Utilities administrator's guide
3 Server <i>Edit HBA driver file</i>	For Emulex HBAs and drivers <input type="checkbox"/> In the PCI lpfc.conf or SBus lpfs.conf file, set the topology to fabric for a SAN and to loop for a direct attach. <input type="checkbox"/> Set any other driver variables required for ATF or CDE. <input type="checkbox"/> Reboot the server using the reboot -- -r command so the server recognizes the new driver and the switch recognizes the HBA's WWPN for a SAN and the new driver for a direct attach. <input type="checkbox"/> Checkpoint — For a SAN, verify that the HBAs and the storage systems are logged into the switch as fabric ports (f-port or n-port).	For Emulex HBAs and drivers <input type="checkbox"/> In the PCI lpfc.conf or SBus lpfs.conf file, set the topology to fabric for a SAN and to loop for a direct attach. <input type="checkbox"/> Set any other driver variables required for ATF or CDE. <input type="checkbox"/> Reboot the server using the reboot -- -r command so the server recognizes the new driver and the switch recognizes the HBA's WWPN for a SAN and the new driver for a direct attach. <input type="checkbox"/> Checkpoint — For a SAN, verify that the HBAs and the storage systems are logged into the switch as fabric ports (f-port or n-port).	Host connectivity guide HBA documentation (see URL on page 6-60) Switch documentation

Task	With Access Logix	Without Access Logix	Reference Document
3 Server Edit HBA driver file (cont.)	<p>For Qlogic HBAs and drivers</p> <ul style="list-style-type: none"> <input type="checkbox"/> In the cPCI qla2200.conf file, set the topology to fabric for a SAN and loop for a direct attach. <input type="checkbox"/> Set any other driver variables. <input type="checkbox"/> Reboot the server using the reboot -- -r command so the server recognizes the new driver and the switch recognizes the HBA's WWPN (SAN only). <input type="checkbox"/> Checkpoint — For a SAN, verify that the HBAs and the storage systems are logged into the switch as fabric ports (f-port or n-port). 	<p>For Qlogic HBAs and drivers</p> <ul style="list-style-type: none"> <input type="checkbox"/> In the cPCI qla2200.conf file, set the topology to fabric for a SAN and loop for a direct attach. <input type="checkbox"/> Set any other driver variables. <input type="checkbox"/> Reboot the server using the reboot -- -r command so the server recognizes the new driver and the switch recognizes the HBA's WWPN (SAN only). <input type="checkbox"/> Checkpoint — For a SAN, verify that the HBAs and the storage systems are logged into the switch as fabric ports (f-port or n-port). 	<p>HBA documentation (see URL on page 6-60)</p> <p>Switch documentation</p>
4 Switches Zone	<p>For a SAN</p> <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to an SP. <input type="checkbox"/> Reboot the server using the reboot -- -r command so the HBA can see the targets (SPs) that you configured through zoning. <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned. 	<p>For a SAN</p> <p>Zone the switches to provide a path from each HBA port (host initiator) to an SP.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reboot the server using the reboot -- -r command so the HBA can see the targets (SPs) that you configured through zoning. <input type="checkbox"/> Checkpoint - Verify that each HBA sees only the targets (SPs) to which it is zoned. 	<p>Switch documentation</p> <p>Solaris documentation</p>
5 Server Install disk-array utilities	<ul style="list-style-type: none"> <input type="checkbox"/> Install the disk-array utilities: trespass_array and rescan_array. 	<ul style="list-style-type: none"> <input type="checkbox"/> Install the disk-array utilities: trespass_array and rescan_array. 	<p>Solaris Utilities administrator's guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
6 Server <i>Install CDE, ATF, or clsp driver</i>	<p><input type="checkbox"/> Install CDE or ATF.</p> <p>Important EMC does not support the clsp driver in a SAN environment. You must install CDE or ATF.</p> <p><input type="checkbox"/> If you want CDE or ATF to support more than 31 LUNs, change the number of LUNs that it supports.</p> <p><input type="checkbox"/> Reboot the server using the reboot -- -r command to create clsp entries.</p>	<p><input type="checkbox"/> Install CDE or ATF. -or- If you are <i>not</i> installing CDE or ATF, install the clsp driver.</p> <p>Important EMC does not support the clsp driver in a SAN environment. You must install CDE or ATF.</p> <p><input type="checkbox"/> If you want CDE or ATF to support more than 31 LUNs, change the number of LUNs that it supports.</p> <p><input type="checkbox"/> Reboot the server using the reboot -- -r command to create clsp entries.</p>	<p>For CDE and clsp driver - Solaris Utilities administrator's guide</p> <p>For ATF - Solaris ATF administrator's guide</p>
7 Server <i>Install Host Agent</i>	<p><input type="checkbox"/> Install the Navisphere Host Agent.</p> <p><input type="checkbox"/> Edit the agent.config file as follows:</p> <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <p><input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where <i>SP_ip_address</i> is the address of the SP.</p> <p><input type="checkbox"/> Checkpoint for SAN - In the /kernel/drv/atf.conf file, verify that the total number of SPs and targets is accurate. If the number is inaccurate, check cabling and zoning.</p>	<p><input type="checkbox"/> Install the Navisphere Host Agent.</p> <p><input type="checkbox"/> Edit the agent.config file as follows:</p> <ul style="list-style-type: none"> • Add the following entry if it does not already exist: device auto auto • For pre-FC4700 storage systems, add at least one privileged user. <p><input type="checkbox"/> For pre-FC4700 storage systems, if you know the IP addresses of the portal storage-system SPs, add an entry with the following format for each SP to the agent.config file: system@SP_ip_address where <i>SP_ip_address</i> is the address of the SP.</p> <p><input type="checkbox"/> Checkpoint for SAN - In the /kernel/drv/atf.conf file, verify that the total number of SPs and targets is accurate. If the number is inaccurate, check cabling and zoning.</p>	<p>Solaris Agent and CLI installation guide</p> <p>Solaris documentation</p>

Task	With Access Logix	Without Access Logix	Reference Document
7 Server <i>Install Host Agent (cont.)</i>	<input type="checkbox"/> Checkpoint for Direct Attach - With ATF or CDE - In the <code>/kernel/drv/atf.conf</code> file, verify that the total number of SPs and targets is accurate. If the number is inaccurate: With ATF or CDE - Check cabling and zoning. Without ATF or CDE - Check cabling, zoning, and any entries in <code>sd.conf</code> file. <input type="checkbox"/> Checkpoint - Verify that each SP has a <code>/dev/clsp</code> entry. <input type="checkbox"/> Stop and start the Host Agent.	<input type="checkbox"/> Checkpoint for Direct Attach - With ATF or CDE - In the <code>/kernel/drv/atf.conf</code> file, verify that the total number of SPs and targets is accurate. If the number is inaccurate: With ATF or CDE - Check cabling and zoning. Without ATF or CDE - Check cabling, zoning, and any entries in <code>sd.conf</code> file. <input type="checkbox"/> Checkpoint - Verify that each SP has a <code>/dev/clsp</code> entry. <input type="checkbox"/> Stop and start the Host Agent.	Solaris documentation Solaris Agent and CLI installation guide
8 Server <i>Add persistent bindings</i>	For a SAN <input type="checkbox"/> Run <code>atf_configure</code> to add persistent bindings to the HBA driver configuration file. <input type="checkbox"/> Checkpoint - Verify that target IDs are present in the <code>atf.conf</code> file. <input type="checkbox"/> If needed, edit the target IDs. <input type="checkbox"/> Reboot the server using the <code>reboot -- -r</code> command so the driver recognizes the persistent bindings. <input type="checkbox"/> Checkpoint - Re-verify your <code>clsp</code> entries.	For a SAN <input type="checkbox"/> Run <code>atf_configure</code> to add persistent bindings to the HBA driver configuration file. <input type="checkbox"/> Checkpoint - Verify that target IDs are present in the <code>atf.conf</code> file. <input type="checkbox"/> If needed, edit the target IDs. <input type="checkbox"/> Reboot the server using the <code>reboot -- -r</code> command so the driver recognizes the persistent bindings. <input type="checkbox"/> Checkpoint - Re-verify your <code>clsp</code> entries.	For CDE - Utilities administrator's guide For ATF - ATF administrator's guide
9 FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System Configure	<p><input type="checkbox"/> Use Navisphere Manager to set general storage-system properties.</p> <p><input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups.</p> <p><input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group.</p> <p><input type="checkbox"/> Reboot the server using the reboot - - -r command so that Solaris recognizes the LUNs.</p> <p>Now the LUNs in the Storage Group look like any other disks in the server.</p> <p><input type="checkbox"/> Checkpoint - Use the format command to verify that Solaris recognizes the LUNs.</p> <p>If Solaris does not recognize any LUNs, verify the connection to the Storage Group.</p> <p>If Solaris still does not recognize any LUNs, add your LUNs to the sd.conf file, remove ATF or CDE, and reboot the server using reboot - - -r.</p> <p>If Solaris does not recognize any LUNs any LUNs, check your hardware.</p> <p>If Solaris recognizes LUNs now, without ATF or CDE installed, call service.</p>	<p><input type="checkbox"/> Use Navisphere Manager to set general storage-system properties.</p> <p><input type="checkbox"/> Create RAID Groups and bind LUNs.</p> <p><input type="checkbox"/> Reboot the server using the reboot - - -r command so that Solaris recognizes the LUNs.</p> <p>Now the LUNs look like any other disks in the server.</p> <p><input type="checkbox"/> Checkpoint - Use the format command to verify that Solaris recognizes the LUNs.</p> <p>If Solaris does not recognize any LUNs, add your LUNs to the sd.conf file, remove ATF or CDE, reboot the server using reboot - - -r.</p> <p>If Solaris still does not recognize any LUNs, check your hardware.</p> <p>If Solaris recognizes LUNs now, without ATF or CDE installed, call service.</p>	<p>Manager administrator's guide and on-line help</p> <p>Solaris documentation</p>
11 Storage System Set up Event Monitor	<p><input type="checkbox"/> Plan your monitoring configuration.</p> <p><input type="checkbox"/> Set user options, create templates, and set up your monitoring configuration.</p>	<p><input type="checkbox"/> Plan your monitoring configuration.</p> <p><input type="checkbox"/> Set user options, create templates, and set up your monitoring configuration.</p>	<p>Manager administrator's guide and on-line help</p>

Task	With Access Logix	Without Access Logix	Reference Document
12 Server <i>Make LUNs available to Solaris</i>	<input type="checkbox"/> Prepare the LUNs to receive data by <ul style="list-style-type: none"> • Specifying Solaris mount point names for them. • Labeling and partitioning them. • Mounting file systems on them. • Mounting them to the mount points. <input type="checkbox"/> Checkpoint - Use the format command to verify that Solaris recognizes the LUNs. If Solaris does not recognize any LUNs and the storage system has Access Logix, verify the connection to the Storage Group.	<input type="checkbox"/> Prepare the LUNs to receive data by <ul style="list-style-type: none"> • Specifying Solaris mount point names for them. • Labeling and partitioning them. • Mounting file systems on them. • Mounting them to the mount points. <input type="checkbox"/> Checkpoint - Use the format command to verify that Solaris recognizes the LUNs.	Solaris documentation

You are now ready to set up any optional software, such as SnapView or MirrorView.

Tru64 UNIX Installation Checklist

This chapter contains a checklist of the tasks required to install a new EMC CX400, CX600, or FC-Series storage system in a configuration with a new Tru64® UNIX® server.

Topics are

- ◆ Tru64 UNIX Configurations7-2
- ◆ Checklist - New Tru64 UNIX Server and New Storage System
Without Boot Disk.....7-4
- ◆ Checklist - New Tru64 UNIX Server and New Storage System
With Boot Disk.....7-6

Tru64 UNIX Configurations

Read this section if you are installing a Tru64 UNIX configuration with a new server and a new storage system. A new server and storage system are defined as follows:

New server - A server running Tru64 UNIX and *not* connected to any storage system.

New storage system - A CX400, CX600, or FC-Series storage system that has the factory default settings and has *never* been connected to a server.

Prerequisites

- ◆ All switches must be installed.
- ◆ Storage systems must be set up, initialized (if required), and connected to switches, and any optional storage-system software (Access Logix, SnapView, MirrorView) is installed.
- ◆ If you will use Navisphere Manager 6.X, you must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system servers and that will be connected to the SPs in CX400, CX600, or FC4700-Series storage systems.
- ◆ If you will use Navisphere Manager 5.X, you must have it installed on a Windows 2000 or Windows NT host on a network that is connected to the storage-system servers and that will be connected to the SPs in FC4700-Series storage systems.
- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4700 Configuration Planning Guide* (P/N 014003016)

Documentation

This checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop before starting the installation.

- ◆ Documentation that ships with
 - HBA and HBA driver
 - Switches
 - Tru64® UNIX® operating system
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide* (P/N 069001125)
or
EMC Navisphere Manager Version 5.X Administrator's Guide (P/N 069001143)
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide* (P/N 069001124)
- ◆ *EMC Host Connectivity Guide for Compaq Tru64 UNIX* (P/N 300-000-616)

Checklist - New Tru64 UNIX Server and New Storage System Without Boot Disk

This checklist is for a new storage system that will *not* contain a Tru64 UNIX boot disk. If you want the new storage system to contain a boot disk, use the procedure that starts on page 7-6.

Task	With Access Logix	Reference Document
1 Server <i>Install HBAs, drivers, and cables</i>	<input type="checkbox"/> Install the Fibre Channel HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port. <input type="checkbox"/> Create an entry in /etc/ddr.dbase to provide support for CLARiiON LUNs. <input type="checkbox"/> Install the HBA driver. <input type="checkbox"/> Checkpoint — Verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	HBA documentation Host connectivity guide for Tru64 UNIX and Tru64 UNIX documentation HBA documentation
2 Switches <i>Zone</i>	<input type="checkbox"/> Zone the switches to provide a path from each HBA (host initiator) to an SP.	Switch documentation
3 Storage System <i>Set Base UDID</i>	<input type="checkbox"/> Set the Base UDID (UUID on screen) for the storage system. If necessary, you can determine the available UDID ranges for the server or cluster with the command wwidmgr -show wwid	Host connectivity guide for Tru64 UNIX and Tru64 UNIX documentation

Task	With Access Logix	Reference Document										
4 Storage System <i>Set connection properties</i>	<ul style="list-style-type: none"><input type="checkbox"/> Determine the port name and node name of each HBA connected to the storage system.<input type="checkbox"/> Use Navisphere Manager to register the connection for each HBA with the following Initiator Record properties:<table><tr><td><u>Property</u></td><td><u>Value</u></td></tr><tr><td>Initiator Type</td><td>Compaq/Tru64</td></tr><tr><td>ArrayCommPath</td><td>Selected</td></tr><tr><td>Failover Mode</td><td>0</td></tr><tr><td>Unit Serial Number</td><td>Array</td></tr></table>	<u>Property</u>	<u>Value</u>	Initiator Type	Compaq/Tru64	ArrayCommPath	Selected	Failover Mode	0	Unit Serial Number	Array	Host connectivity guide for Tru64 UNIX Manager administrator's guide and on-line help
<u>Property</u>	<u>Value</u>											
Initiator Type	Compaq/Tru64											
ArrayCommPath	Selected											
Failover Mode	0											
Unit Serial Number	Array											
5 Storage System <i>Set up security</i>	<ul style="list-style-type: none"><input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help										
6 Storage System <i>Configure</i>	<ul style="list-style-type: none"><input type="checkbox"/> Use Navisphere Manager to set general storage-system properties.<input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups.<input type="checkbox"/> After the binding of all LUNs is completed, use Navisphere Manager to connect the server to its Storage Group.	Host connectivity guide for Tru64 UNIX Manager administrator's guide and on-line help										
7 Storage System <i>Set up Event Monitor</i>	<ul style="list-style-type: none"><input type="checkbox"/> Plan your monitoring configuration.<input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help										
8 Server <i>Make LUNs available to Tru64 UNIX</i>	<ul style="list-style-type: none"><input type="checkbox"/> Scan for new LUNs with the command hwmgr -scan scsi<input type="checkbox"/> Checkpoint — Verify that all LUNs in the Storage Group are visible to the server with the command hwmgr -show scsi<input type="checkbox"/> Create partition tables and the appropriate utilities for the file systems you will be using with the disklabel command.	Host connectivity guide for Tru64 UNIX and Tru64 UNIX documentation										

You are now ready to set up any optional software, such as SnapView or MirrorView.

Checklist - New Tru64 UNIX Server and New Storage System With Boot Disk

This checklist is for a new storage system that will contain a Tru64 UNIX boot disk. If you do not want the new storage system to contain a boot disk, use the procedure that starts on page 7-4.

Task	With Access Logix	Reference Document
1 Server <i>Install HBAs and cables</i>	<input type="checkbox"/> Install the Fibre Channel HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port. <input type="checkbox"/> Checkpoint — Verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	HBA documentation
2 Storage System <i>Set Base UDID</i>	<input type="checkbox"/> Set the Base UDID (UUID on screen) for the storage system. If necessary, you can determine the available UDID ranges for the server or cluster with the command wwidmgr -show wwid	Host connectivity guide for Tru64 UNIX and Tru64 UNIX documentation
3 Switches <i>Zone single path to SP</i>	<input type="checkbox"/> Zone the switches to provide a single path from one HBA (host initiator) to one SP in the storage system. Note EMC recommends that the SP be the default owner of the LUN that will be the Tru64 UNIX boot disk. <input type="checkbox"/> Checkpoint — Verify that the HBA connection is visible. If it is not visible, execute the init command at the server's console.	Switch documentation Host connectivity guide for Tru64 UNIX and Tru64 UNIX documentation

Task	With Access Logix	Reference Document										
4 Storage System <i>Set connection properties</i>	<ul style="list-style-type: none"><input type="checkbox"/> Determine the port name and node name of each HBA connected to the storage system.<input type="checkbox"/> Use Navisphere Manager to register the connection for each HBA with the following Initiator Record properties:<table><tr><td><u>Property</u></td><td><u>Value</u></td></tr><tr><td>Initiator Type</td><td>Compaq/Tru64</td></tr><tr><td>ArrayCommPath</td><td>Selected</td></tr><tr><td>Failover Mode</td><td>0</td></tr><tr><td>Unit Serial Number</td><td>Array</td></tr></table>	<u>Property</u>	<u>Value</u>	Initiator Type	Compaq/Tru64	ArrayCommPath	Selected	Failover Mode	0	Unit Serial Number	Array	Host connectivity guide for Tru64 UNIX Manager administrator's guide and on-line help
<u>Property</u>	<u>Value</u>											
Initiator Type	Compaq/Tru64											
ArrayCommPath	Selected											
Failover Mode	0											
Unit Serial Number	Array											
5 Storage System <i>Bind Boot LUN</i>	<ul style="list-style-type: none"><input type="checkbox"/> Use Navisphere Manager to create a RAID Group for the LUN that will be the system disk and bind that LUN.<input type="checkbox"/> Create a Storage Group for the boot LUN.<input type="checkbox"/> After the binding of the boot LUN is completed, use Navisphere Manager to connect the server to its Storage Group.	Manager administrator's guide and on-line help										
6 Server <i>Prepare SRM Console for Boot LUN</i>	<ul style="list-style-type: none"><input type="checkbox"/> At the SRM console, execute the init command.<input type="checkbox"/> Verify that the boot LUN is visible to the console with the command wwidmgr -show wwid<input type="checkbox"/> Execute the command wwidmgr -quickset -udid <i>udid-num</i> where <i>udid-num</i> is the UDID number of the boot LUN.<input type="checkbox"/> At the SRM console, execute the init command.<input type="checkbox"/> Checkpoint — Verify that the boot LUN is visible with the command show device	Host connectivity guide for Tru64 UNIX and Tru64 UNIX documentation										
7 Server <i>Install Tru64 UNIX on boot LUN</i>	<ul style="list-style-type: none"><input type="checkbox"/> Install Tru64 UNIX on the boot LUN.<input type="checkbox"/> Apply any required patches and driver updates.<input type="checkbox"/> Create an entry in /etc/ddr.dbase to provide support for CLARiiON LUNs.<input type="checkbox"/> Shut down the server.	Host connectivity guide for Tru64 UNIX and Tru64 UNIX documentation										

Task	With Access Logix	Reference Document										
8 Switches <i>Zone additional paths</i>	<input type="checkbox"/> Create the rest of the zones between the SPs and the appropriate HBAs on the server.	Switch documentation										
9 Storage System <i>Update connection information</i>	<input type="checkbox"/> Use Navisphere Manager to disconnect the server from the Storage Group containing the boot LUN. <input type="checkbox"/> Use Navisphere Manager to register the remaining connections for each HBA with the following Initiator Record properties: <table><tr><td><u>Property</u></td><td><u>Value</u></td></tr><tr><td>Initiator Type</td><td>Compaq/Tru64</td></tr><tr><td>ArrayCommPath</td><td>Selected</td></tr><tr><td>Failover Mode</td><td>0</td></tr><tr><td>Unit Serial Number</td><td>Array</td></tr></table> <input type="checkbox"/> Reconnect the server to the Storage Group containing the boot LUN.	<u>Property</u>	<u>Value</u>	Initiator Type	Compaq/Tru64	ArrayCommPath	Selected	Failover Mode	0	Unit Serial Number	Array	Manager administrator's guide and on-line help
<u>Property</u>	<u>Value</u>											
Initiator Type	Compaq/Tru64											
ArrayCommPath	Selected											
Failover Mode	0											
Unit Serial Number	Array											
10 Server <i>Update SRM Console for Boot LUN</i>	<input type="checkbox"/> At the SRM console, execute the init command. <input type="checkbox"/> Execute the command wwidmgr -quickset -udid <i>udid-num</i> where <i>udid-num</i> is the UDID number of the boot LUN. <input type="checkbox"/> At the SRM console, execute the init command again. <input type="checkbox"/> Checkpoint — Verify that the boot LUN is visible with the command show device Only one entry for the LUN should appear in the device list for each path between the server and the storage system. <input type="checkbox"/> Set the boot LUN as default boot device with the command set bootdef_dev being sure to include all paths to the boot LUN. <input type="checkbox"/> Boot the server with the command boot	Host connectivity guide for Tru64 UNIX and Tru64 UNIX documentation										
11 Storage System <i>Set up security</i>	<input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help										

Task	With Access Logix	Reference Document
12 Storage System <i>Configure</i>	<input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create additional RAID Groups (if desired), bind LUNs, and assign the LUNs to the Storage Group.	
13 Storage System <i>Set up Event Monitor</i>	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
14 Server <i>Make LUNs available to Tru64 UNIX</i>	<input type="checkbox"/> After the binding of all LUNs is completed, scan for new LUNs with the command hwmgr -scan scsi <input type="checkbox"/> Checkpoint — Verify that all LUNs in the Storage Group are visible to the server with the command hwmgr -show scsi <input type="checkbox"/> Create partition tables and the appropriate utilities for the file systems you will be using with the disklabel command.	Host connectivity guide for Tru64 UNIX and Tru64 UNIX documentation

You are now ready to set up any optional software, such as SnapView or MirrorView.

Windows Installation Checklists

This chapter contains checklists of the tasks required to install an EMC CX-Series or FC4700-Series storage system in a configuration with a Microsoft Windows® 2000 or Windows NT® server and PowerPath or ATF/CDE failover software.

ATF/CDE failover software does not support CX-Series storage systems.

The sections for the different configurations are

- ◆ PowerPath Configurations for Windows8-2
- ◆ ATF or CDE Configurations for Windows8-52

PowerPath Configurations for Windows

Read this section if you are installing a Windows 2000 or Windows NT PowerPath configuration with a new or existing server and a new or existing CX-Series, FC4500, FC4700-Series, or FC5300 storage system. A new and existing server and a new and existing storage system are defined as follows:

new server - A server running Windows 2000 or Windows NT and *not* connected to any storage system.

existing server - A server running Windows 2000 or Windows NT and that is already connected to one or more storage systems.

new storage system - A CX-Series, FC4500, FC4700-Series, or FC5300 storage system that has the factory default settings and has *never* been connected to a server.

existing storage system - A CX-Series, FC4500, FC4700-Series, or FC5300 storage system that is already connected to one or more servers and is in a Navisphere domain.

All CLARiiON storage systems connected to the server must be CX-Series, FC4500, FC4700-Series, or FC5300 storage systems. If any other type of CLARiiON storage system is connected to the server, the server cannot run PowerPath.

Topics in this section are

- ◆ Required Software Revisions 8-3
- ◆ Prerequisites 8-5
- ◆ Documentation..... 8-6
- ◆ PowerPath Checklist — New Windows Server and New Storage System..... 8-8
- ◆ PowerPath Checklist — New Windows Server and Existing Storage System Without Boot Disk 8-16
- ◆ PowerPath Checklist — New Windows Server and Existing Storage System With Boot Disk 8-23
- ◆ PowerPath Checklist — Existing Windows Server and New Storage System 8-33
- ◆ PowerPath Checklist — Existing Windows Server and Existing Storage System 8-42

Required Software Revisions

- ◆ Windows 2000 or Windows NT operating system revision and service pack listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ HBA driver revision listed in the *EMC Support Matrix* on the Powerlink website (<http://powerlink.emc.com>)
- ◆ Windows 2000 PowerPath 3.0.0, and for an FC4500 or FC5300 storage system Patch 3.0.1
or
Windows NT PowerPath 3.0.0 with Patch 3.0.1 or higher
- ◆ For CX200 storage systems
 - CX200 Access Logix version 02.03.1.20.5.001 or higher
or
CX200 Base Software version 02.03.0.20.5.001 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.2.0.7 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.2 or higher
 - EMC ControlCenter Navisphere Manager Base version 6.2.1 and Management Server 6.2.
or
EMC ControlCenter Navisphere Manager version 6.2 or higher and Management Server 6.2 or higher
- ◆ For CX400 storage systems
 - CX400 Access Logix version 02.02.1.40.5.004 or higher
or
CX400 Base Software version 02.02.0.40.5.004 or higher
EMC ControlCenter Navisphere SP Agent version 6.2 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.2 or higher
 - EMC ControlCenter Navisphere Manager version 6.2 or higher

- ◆ For CX600 storage systems
 - CX600 Access Logix version 02.01.1.60.5.006 or higher
or
CX600 Base Software version 02.01.1.60.5.006 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.1 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
 - EMC ControlCenter Navisphere Manager version 6.1 or higher
- ◆ For FC4500 storage systems
 - FC4500 Access Logix version 6.32.17 or higher
or
FC4500 Base Software version 5.32.17 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.1 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
 - EMC ControlCenter Navisphere Manager version 6.1 or higher
- ◆ For FC4700-Series storage systems
 - FC4700 Access Logix version 8.45.52 or higher
or
FC4700 Base Software version 8.45.02 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.0.5 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.0.5 or higher
 - EMC ControlCenter Navisphere Manager version 6.0.5 or higher

- ◆ For FC5300 storage systems
 - FC5300 Access Logix version 6.24.07 or higher
or
FC5300 Base Software version 5.24.07 or higher
 - EMC ControlCenter Navisphere SP Agent version 6.1 or higher
 - EMC ControlCenter Navisphere Host Agent and CLI version 6.1 or higher
 - EMC ControlCenter Navisphere Manager version 6.1 or higher

Prerequisites

- ◆ You must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network that is connected to the storage-system server and that you will connect to the SPs in the CX-Series or FC4700-Series storage system.
- ◆ For most configurations, you must also have a host that is
 - Running Navisphere 6.X CLI
 - On a network that is connected to the storage-system server and that you will connect to SPs in CX-Series or FC4700-Series storage systems.
- ◆ For an FC4500 or FC5300 storage system connected to a server on which you will install PowerPath, you must have a computer that is *not* a laptop and that you can connect to the storage system. This computer must run
 - Windows NT with Service Pack 5 or Windows 2000
 - Navisphere Host Agent and CLI version 6.1 or higher

- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System CX200 Configuration Planning Guide* (P/N 014003115)
 - *EMC Fibre Channel Storage System CX-Series Configuration Planning Guide* (P/N 014003113)
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

Each checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop or, for an FC4500 or FC4700, on the computer you will connect to the storage system, before starting the installation.

- ◆ Documentation that ships with the HBA and HBA driver.

This documentation is also available from the following websites.

For Emulex HBAs and drivers:

<http://www.emulex.com/ts/docoem/framemc.htm>

For QLogic HBAs and drivers:

http://www.qlogic.com/support/drivers_software.asp

and select **EMC** in the **OEM-approved Drivers/Firmware** list at the bottom of the page.

- ◆ Documentation that ships with the
 - Switches
 - Microsoft Windows 2000 or Windows NT operating system
- ◆ *Removing ATF or CDE Software Before Installing Other Failover Software* (P/N 069001173)
- ◆ *PowerPath Version 3.0 Product Guide* (P/N 300-000-510)
- ◆ *PowerPath Version 3.0 Installation and Administration Guide for Windows* (P/N 300-000-512)

- ◆ *EMC ControlCenter Navisphere Host Agent and CLI for Windows 2000 and NT Version 6.X Installation Guide (P/N 069001151)*
- ◆ *EMC ControlCenter Navisphere Command Line Interface (CLI) Version 6.X Reference (P/N 069001038)*
- ◆ *Storage-System Host Utilities for Windows 2000 and NT Administrator's Guide (P/N 069001141)*
- ◆ *EMC SnapView admsnap Utility Administrator's Guide (P/N 069001039)*
- ◆ *EMC Storage Systems 40U Cabinet Configuration Guide (P/N 014003082)*
- ◆ *EMC 2-Gigabit Storage Processor Enclosure (DPE2) Model CX200 Setup Guide (P/N 014003116)*
- ◆ *EMC Storage Systems CX200 Initialization Guide (P/N 014003117)*
- ◆ *EMC 2-Gigabit Storage Processor Enclosure (DAE2) Model CX400 Setup Guide (P/N 014003105)*
- ◆ *EMC Storage Processor Enclosure (SPE) Model CX600 Setup Guide (P/N 014003078)*
- ◆ *EMC Storage Systems CX-Series Initialization Guide (P/N 014003112)*
- ◆ *EMC 2-Gigabit Disk Enclosure (DAE2) Setup Guide (P/N 014003104)*
- ◆ *FC4500 Setup Guide (P/N 014003102, revision A03 or higher)*
- ◆ *FC4700-2 Setup Guide (P/N 0140373)*
- ◆ *FC5300 Setup Guide (P/N 014003101, revision A03 or higher)*
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide (P/N 069001125)*
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide (P/N 069001124)*
- ◆ *EMC Host Connectivity Guide for Windows 2000 and Windows NT (P/N 300-000-603)*

PowerPath Checklist — New Windows Server and New Storage System

Tasks highlighted with grey in the checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Install HBA driver.	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Install HBA driver.	HBA documentation (see URL on page 8-6)
2 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide and HBA documentation (see URL on page 8-6)
3 Server <i>Install PowerPath</i>	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	PowerPath release notes and PowerPath for Windows installation and administrator's guide
4 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	Windows Host Agent and CLI installation guide
5 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install the admsnap utility.	N/A	Admsnap administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
6 Switches <i>Install</i>	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Install switches, if not already installed. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port. <input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. <p>For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Install switches, if not already installed. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port. <input type="checkbox"/> Checkpoint - Verify the HBA connection to the switch by checking the LED(s) for the switch port connected to the HBA port. <p>For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Rails, cabinet, and switch documentation
7 Storage System <i>Install</i>	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 8, and for an FC4500 or FC5300 storage system, skip to step 9.	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 8, and for an FC4500 or FC5300 storage system, skip to step 9.	Rails and cabinet documentation
8 CX-Series or FC4700-Series Storage System <i>Initialize and install software</i>	<ul style="list-style-type: none"> <input type="checkbox"/> Initialize the storage system and install Access Logix. <input type="checkbox"/> If you have SnapView and/or MirrorView software, install it. 	<input type="checkbox"/> Initialize the storage system.	Storage-system setup guide and Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
9 Storage System <i>Cable to switch or server and LAN or serial port</i>	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 11.	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 11.	Storage-system setup guide.
10 CX-Series or FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> Use Navisphere Manager to define a global administrator (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
11 Storage System <i>Set Properties for PowerPath</i>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
12 Switches Zone	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	Switch documentation
13 Server Make target SPs available	<ul style="list-style-type: none"> <input type="checkbox"/> For a Windows 2000 server, restart the Host Agent, then use the Disk Management tool to scan for disks. <input type="checkbox"/> For a Windows NT server, reboot the server. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system. 	<ul style="list-style-type: none"> <input type="checkbox"/> For a Windows 2000 server, use the Disk Management tool to scan for disks. <input type="checkbox"/> For a Windows NT server, reboot the server. 	Windows 2000 documentation Windows NT documentation Manager administrator's guide and online help
14 Storage System Configure	<ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups, and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group <input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server. 	<ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs. <input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs look like any other disks in the server. 	Manager administrator's guide and online help Windows 2000 or Windows NT documentation

Task	With Access Logix	Without Access Logix	Reference Document
14 Storage System <i>Configure (cont.)</i>	<input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs: <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clariion <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 11. <p>For an FC4500 or FC5300 storage system</p> <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	<input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs: <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clariion <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 11. <p>For an FC4500 or FC5300 storage system</p> <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	<p>PowerPath product guide</p> <p>Storage-system setup guide</p>
15 Storage System <i>Set up Event Monitor</i>	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
16 Server <i>Make LUNs available to Windows</i>	<input type="checkbox"/> Prepare the LUNs to receive data by creating partitions on them.	<input type="checkbox"/> Prepare the LUNs to receive data by creating partitions on them.	Host connectivity guide or Windows 2000 or Windows NT documentation

Task	With Access Logix	Without Access Logix	Reference Document
17 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p> <p><input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command</p> <p>powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN.</p> <p><input type="checkbox"/> Start I/O to the LUN.</p> <p><input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.</p> <p><input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that</p> <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <p><input type="checkbox"/> Reconnect the cable that you disconnected from the HBA.</p>	<p>If you have a PowerPath license key</p> <p>Note If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p> <p><input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command</p> <p>powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN.</p> <p><input type="checkbox"/> Start I/O to the LUN.</p> <p><input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.</p> <p><input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that</p> <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <p><input type="checkbox"/> Reconnect the cable that you disconnected from the HBA.</p>	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
17 Server <i>Test PowerPath with a license key (cont.)</i>	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — New Windows Server and Existing Storage System Without Boot Disk

This checklist is for an existing storage system that will *not* contain a Windows 2000 or Windows NT boot disk. If you want the existing storage system to contain a boot disk, use the procedure that starts on page 8-23.

Tasks highlighted with grey in the 1checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Install HBA driver.	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Install HBA driver.	HBA documentation (see URL on page 8-6)
2 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide and HBA documentation (see URL on page 8-6)
3 Server <i>Install PowerPath</i>	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	PowerPath release notes and PowerPath for Windows installation and administrator's guide
4 Server <i>Install Host Agent</i>	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	<input type="checkbox"/> Install the Navisphere Host Agent and CLI.	Windows Host Agent and CLI installation guide

Task	With Access Logix	Without Access Logix	Reference Document
5 Server <i>Install admsnap</i>	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install the admsnap utility.	N/A	Admsnap administrator's guide
6 Storage System <i>Update software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	Manager administrator's guide and online help
7 Server <i>Cable to switches or storage system</i>	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each HBA port. <p>For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each HBA port. <p>For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port.</p> <p>For a 2-Gbit switch - One of the following:</p> <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide.

Task	With Access Logix	Without Access Logix	Reference Document
8 Switches Zone	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system. 	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to the appropriate SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system 	Switch documentation Switch documentation
9 Storage System Register HBAs	<ul style="list-style-type: none"> <input type="checkbox"/> On the server, restart the Navisphere Host Agent. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system. 	N/A	Windows Host Agent and CLI installation guide Manager administrator's guide and online help
10 Storage System Set properties for PowerPath	For a CX-Series or FC4700-Series storage system <ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's HBA ports (initiators): Initiator Type to Open CLARiiON Failover mode to 1 Array commpath to Enabled 	For a CX-Series or FC4700-Series storage system <ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h <i>hostname</i> systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h <i>hostname</i> systemtype -config 3 CAUTION The above command reboots both SPs at the same time. 	Manager administrator's guide and online help or CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System Set properties for PowerPath (cont.)		<input type="checkbox"/> Use Navisphere CLI to set the default failover mode and array commpath properties to the values for PowerPath: navicli -h <i>hostname</i> failovermode 1 navicli -h <i>hostname</i> arraycommpath 1 navicli -h <i>hostname</i> unitserialnumber lun where <i>hostname</i> is the IP address or network name of an SP in the storage system.	CLI reference
	For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. <input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the following storage-system properties for the server's HBA ports (initiators): navicli -np -d <i>device</i> storagegroup -sethost -host <i>servername</i> systemtype -config 3 navicli -np -d <i>device</i> storagegroup -sethost -host <i>servername</i> failovermode 1 navicli -np -d <i>device</i> storagegroup -sethost -host <i>servername</i> arraycommpath 1 where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1). <i>servername</i> is the name of the server with the HBAs.	For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system <input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type: navicli -np -d <i>device</i> systemtype where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1). If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -np -d <i>device</i> systemtype -config 3 CAUTION The above command reboots both SPs at the same time.	Storage-system setup guide CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System <i>Set Properties for PowerPath (cont.)</i>		<input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: navicli -np -d device failovermode 1 navicli -np -d device arraycomppath 1 navicli -np -d device unitserialnumber lun where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).	CLI reference
11 Server <i>Make target SPs available</i>	<input type="checkbox"/> For a Windows 2000 server, use the Disk Management tool to scan for disks. <input type="checkbox"/> For a Windows NT server, reboot the server.	<input type="checkbox"/> For a Windows 2000 server, use the Disk Management tool to scan for disks. <input type="checkbox"/> For a Windows NT server, reboot the server.	Windows 2000 documentation Windows NT documentation
12 Storage System <i>Configure</i>	<input type="checkbox"/> If the server will use an <i>existing</i> Storage Group, use Navisphere Manager to connect the server to the Storage Group. <input type="checkbox"/> If the server will use a <i>new</i> Storage Group, use Navisphere Manager to create RAID Groups, bind LUNs, create the Storage Group, and assign LUNs to the Storage Group. <input type="checkbox"/> Use Navisphere Manager to connect the server to the Storage Group. <input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server.	<input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs look like any other disks in the server.	Manager administrator's guide and online help Windows 2000 or Windows NT documentation

Task	With Access Logix	Without Access Logix	Reference Document
12 Storage System Configure (cont.)	<p><input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs:</p> <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clariion <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> Disconnect the computer from the serial port on the storage system.</p>	<p><input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs:</p> <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clariion <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> Disconnect the computer from the serial port on the storage system.</p>	<p>PowerPath product guide</p> <p>Storage-system setup guide</p>
13 Server Make LUNs available to Windows	<p><input type="checkbox"/> Prepare any new LUNs to receive data by creating partitions on them.</p>	<p><input type="checkbox"/> Prepare any new LUNs to receive data by creating partitions on them.</p>	<p>Host connectivity guide or Windows 2000 or Windows NT documentation</p>
14 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p>	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <p><input type="checkbox"/> View the LUNs available to the server using the PowerPath command</p> <p>powermt display dev=all class=clariion</p> <p><input type="checkbox"/> Choose one available LUN to receive I/O for the test.</p>	<p>PowerPath product guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
14 Server Test PowerPath with a license key (cont.)	<input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — New Windows Server and Existing Storage System With Boot Disk

This checklist is for an existing storage system that will contain a Windows 2000 or Windows NT boot disk. If you do not want the existing storage system to contain a boot disk, use the procedure that starts on page 8-16.

Tasks highlighted with grey in the checklist should be completed before the service provider arrives.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs</i>	<input type="checkbox"/> Install HBAs.	<input type="checkbox"/> Install HBAs.	HBA documentation (see URL on page 8-6)
2 Storage System <i>Update software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p>	Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
3 Server Cable to switches or storage system	For SAN <ul style="list-style-type: none"> <input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. For Direct Attach <ul style="list-style-type: none"> <input type="checkbox"/> Cable the server to the storage system so only a maximum of one path exists from the server to each SP exists. This means that for a multiple-HBA port server, you cable just one HBA port one SP. You will cable additional HBA ports to the SPs after you set up the boot disk. 	For SAN <ul style="list-style-type: none"> <input type="checkbox"/> Cable the HBA ports to the switch connected to the storage system. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. For Direct Attach <ul style="list-style-type: none"> <input type="checkbox"/> Cable the server to the storage system so only a maximum of one path exists from the server to each SP exists. This means that for a multiple-HBA port server, you cable just one HBA port one SP. You will cable additional HBA ports to the SPs after you set up the boot disk. 	Storage-system setup guide.
4 Storage System Configure	<ul style="list-style-type: none"> <input type="checkbox"/> If the server will use an <i>existing</i> Storage Group, use Navisphere Manager to connect the server to the Storage Group. <input type="checkbox"/> If the server will use a <i>new</i> Storage Group, use Navisphere Manager to create RAID Groups, bind LUNs, create the Storage Group, and assign LUNs to the Storage Group. 		Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
4 Storage System Configure (cont.)	<input type="checkbox"/> Use Navisphere Manager to connect the server to the Storage Group. <input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server.	<input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs look like any other disks in the server.	Manager administrator's guide and online help Windows 2000 or Windows NT documentation
5 Server Create HBA driver diskette	<input type="checkbox"/> Create a diskette with the EMC HBA driver from the HBA vendor's web site.	<input type="checkbox"/> Create a diskette with the EMC HBA driver from the HBA vendor's web site	URL on page 8-6
6 Server Set up HBA BIOS	<input type="checkbox"/> If required, either update the Emulex HBA firmware and/or BIOS or update the QLogic HBA firmware and/or NVRAM. <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Setup HBA BIOS.	<input type="checkbox"/> If required, either update the Emulex HBA firmware and/or BIOS or update the QLogic HBA firmware and/or NVRAM. <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Setup HBA BIOS.	HBA documentation (see URL on page 8-6)
7 Switches Zone	For a SAN <input type="checkbox"/> Zone the switches to provide a single from the server to each SP. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN <input type="checkbox"/> Zone the switches to provide a single from the server to each SP. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system	Switch documentation
8 Storage System Register HBAs	<input type="checkbox"/> Use Navisphere Manager's Connectivity Status dialog box to register that each HBA with the storage system.	N/A	Manager administrator's guide and online help
9 Server Prepare for installing operating system	<input type="checkbox"/> Disconnect any SCSI hard disk connected to the server. <input type="checkbox"/> Configure the HBA boot BIOS.	<input type="checkbox"/> Disconnect any SCSI hard disk connected to the server. <input type="checkbox"/> Configure the HBA boot BIOS.	HBA documentation (see URL on page 8-6)

Task	With Access Logix	Without Access Logix	Reference Document
10 Server <i>Install Windows 2000 or Windows NT</i>	<input type="checkbox"/> Install Windows 2000 or Window NT and the HBA driver on the boot LUN in the storage system. Note: During the installation procedure you will partition the boot LUN.	<input type="checkbox"/> Install Windows 2000 or Window NT and the HBA driver on the boot LUN in the storage system. Note: During the installation procedure you will partition the boot LUN	HBA documentation (see URL on page 8-6)
11 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Reinstall HBA driver. <input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Reinstall HBA driver. <input type="checkbox"/> Set the HBA driver parameters to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	HBA documentation (see URL on page 8-6)
12 Storage System <i>Set properties for PowerPath</i>	For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's HBA ports (initiators): Initiator Type to Open CLARiiON Failover mode to 1 Array comppath to Enabled	For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h <i>hostname</i> systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h <i>hostname</i> systemtype -config 3 CAUTION The above command reboots both SPs at the same time.	Manager administrator's guide and online help or CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
12 Storage System <i>Set properties for PowerPath (cont.)</i>	<p>For an FC4500 or FC5300 storage system</p> <ul style="list-style-type: none"> ❑ Connect a computer (not a laptop) to the serial port on the storage system. ❑ From the computer connected to the storage system's serial port, use Navisphere CLI to set the following storage-system properties for the server's HBA ports (initiators): <pre>navicli -np -d <i>device</i> storagegroup -sethost -host <i>servername</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> storagegroup -sethost -host <i>servername</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> storagegroup -sethost -host <i>servername</i> arraycomppath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p><i>servername</i> is the name of the server with the HBAs.</p> 	<ul style="list-style-type: none"> ❑ Use Navisphere CLI to set the default failover mode and array comppath properties to the values for PowerPath: <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycomppath 1</pre> <pre>navicli -h <i>hostname</i> unitserialnumber lun</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <ul style="list-style-type: none"> ❑ Connect a computer (not a laptop) to the serial port on the storage system ❑ From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type: <pre>navicli -np -d <i>device</i> systemtype</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <p>CAUTION The above command reboots both SPs at the same time.</p> 	<p>CLI reference</p> <p>Storage-system setup guide</p> <p>CLI reference</p>

Task	With Access Logix	Without Access Logix	Reference Document
12 Storage System Set Properties for PowerPath (cont.)		For an FC4500 or FC5300 storage system <input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath: navicli -np -d device failovermode 1 navicli -np -d device arraycomppath 1 navicli -np -d device unitserialnumber lun where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).	CLI reference
13 Server Install PowerPath	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	PowerPath release notes and PowerPath for Windows installation and administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
14 Switches <i>Zone additional paths</i>	<input type="checkbox"/> Zone the switches to provide an additional paths from the server to each SP. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	<input type="checkbox"/> Zone the switches to provide an additional paths from the server to each SP. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system	Switch documentation
	<input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs: <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clarion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. 	<input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs: <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clarion If PowerPath does not see the LUNs <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. 	PowerPath product guide
	For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	Storage-system setup guide

Task	With Access Logix	Without Access Logix	Reference Document
15 Server (Direct Attach only) Cable additional paths	<input type="checkbox"/> For a direct attach configuration, cable any additional HBA ports to SP ports. <input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs: <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clariion <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. <p>For an FC4500 or FC5300 storage system</p> <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	<input type="checkbox"/> For a direct attach configuration, cable any additional HBA ports to SP ports. <input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs: <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clariion <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. <p>For an FC4500 or FC5300 storage system</p> <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	Storage-system setup guide PowerPath product guide Storage-system setup guide
16 Server Install Host Agent	<input type="checkbox"/> Install the Navisphere Host Agent and CLI <input type="checkbox"/> Start Navisphere Host Agent.	<input type="checkbox"/> Install the Navisphere Host Agent and CLI. <input type="checkbox"/> Start Navisphere Host Agent.	Windows Host Agent and CLI installation guide
17 Server Install admsnap	<input type="checkbox"/> If the server will be a SnapView production or secondary host, install the admsnap utility.	N/A	Admsnap administrator's guide

Task	With Access Logix	Without Access Logix	Reference Document
18 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <ul style="list-style-type: none"> <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. 	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
18 Server <i>Test PowerPath with a license key (cont.)</i>	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide
19 Server <i>Make new LUNs available to Windows</i>	<input type="checkbox"/> Prepare any new LUN, other than the boot LUN, to receive data by creating partitions on them. Note You partitioned the boot LUN when you installed Window 2000 or Windows NT on it.	<input type="checkbox"/> Prepare any new LUN, other than the boot LUN, to receive data by creating partitions on them. Note You partitioned the boot LUN when you installed Window 2000 or Windows NT on it.	Host connectivity guide or Windows 2000 or Windows NT documentation

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — Existing Windows Server and New Storage System

Tasks highlighted with grey in the checklist should be performed before the service provider arrives, except for the removal of ATF or CDE, which you can have done by EMC Professional Services.



CAUTION

You cannot run ATF or CDE and PowerPath on the same server. Before you transition your server from ATF or CDE to PowerPath, you must

- ◆ **Back up your server configurations.**
- ◆ **Back up data on all storage systems connected to the server.**
- ◆ **Remove ATF or CDE, which EMC recommends that EMC Professional Services do, especially if your server configuration is complex. If you want to remove it yourself, you must use the procedure in the *Removing ATF or CDE Software Before Installing Other Failover Software* document (P/N 069001173), which is on the Powerlink website with this roadmap.**

Simply removing ATF or CDE using the uninstall procedure in the Windows ATF administrator's guide or the Windows utilities administrator's guide may not return the server to its original state, and may result in lost data.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Remove ATF or CDE</i>	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it. CAUTION When you are prompted to restart the system during the ATF removal procedure, answer No and then click Finish . Do not reboot until you install PowerPath, even if the instructions for installing software (e.g. HBA driver) tell you to do so.	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it. CAUTION When you are prompted to restart the system during the ATF removal procedure, answer No and then click Finish . Do not reboot until you install PowerPath, even if the instructions for installing software (e.g. HBA driver) tell you to do so.	Removing ATF or CDE
2 Server <i>Install additional HBAs</i>	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	HBA documentation (see URL on page 8-6)
3 Server <i>Update Software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent • admsnap 	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent 	HBA documentation (see URL on page 8-6), Windows Agent and CLI installation guide, and Admsnap administrator's guide
4 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Make sure the HBA driver parameters are set to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	HBA documentation (see URL on page 8-6)

Task	With Access Logix	Without Access Logix	Reference Document
5 Server <i>Install PowerPath</i>	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. Contrary to what the PowerPath documentation states, PowerPath will not see any logical disks (LUNs) in the storage system at this point because the storage system has not been connected. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	PowerPath release notes and PowerPath for Windows installation and administrator's guide
6 Storage System <i>Install</i>	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 7, and for an FC4500 or FC5300, skip to step 8.	<input type="checkbox"/> Install the storage system in the cabinet, if not already installed. For a CX-Series or FC4700-Series storage system, continue to step 7, and for an FC4500 or FC5300, skip to step 8.	Rails and cabinet documentation
7 CX-Series or FC4700-Series Storage System <i>Initialize and install software</i>	<input type="checkbox"/> Initialize the storage system and install Access Logix. <input type="checkbox"/> If you have SnapView and/or MirrorView software, install it.	<input type="checkbox"/> Initialize the storage system.	Storage-system setup guide and Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
8 Storage System <i>Cable to switch or server and LAN or serial port</i>	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the SP is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 10.	<input type="checkbox"/> Connect the storage system to the switch or HBA ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the storage system connections to the switch by checking the LED(s) for the switch port connected to each SP port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit SP port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit SP port is logged into the switch port. For a CX-Series or FC4700-Series storage system <input type="checkbox"/> Cable each SP to the LAN connected to the hosts from which you will manage the storage system. For an FC4500 or FC5300 storage system <input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system. Skip to step 10.	Storage-system setup guide.
9 CX-Series or FC4700-Series Storage System <i>Set up security</i>	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	<input type="checkbox"/> Use Navisphere Manager to define a global administrator and domain (if not already defined) and any additional users.	Security administrator's guide and Manager on-line help

Task	With Access Logix	Without Access Logix	Reference Document
10 Storage System <i>Set Properties for PowerPath</i>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>For a CX-Series or FC4700-Series storage system</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> systemtype -config 3</pre> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For an FC4500 or FC5300 storage system</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -np -d <i>device</i> systemtype -config 3</pre> <pre>navicli -np -d <i>device</i> failovermode 1</pre> <pre>navicli -np -d <i>device</i> arraycommpath 1</pre> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
11 Server <i>Cable additional HBAs to switches or storage system</i>	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide
12 Switches <i>Zone additional HBAs</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> If MirrorView is installed, create any required zones for it. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system	Switch documentation

Task	With Access Logix	Without Access Logix	Reference Document
13 Server <i>Make target SPs available</i>	<ul style="list-style-type: none"> <input type="checkbox"/> For a Windows 2000 server, restart the Host Agent, then use the Disk Management tool to scan for disks. <input type="checkbox"/> For a Windows NT server, reboot the server. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system. 	<ul style="list-style-type: none"> <input type="checkbox"/> For a Windows 2000 server, use the Disk Management tool to scan for disks. <input type="checkbox"/> For a Windows NT server, reboot the server. 	<p>Windows 2000 documentation</p> <p>Windows NT documentation</p> <p>Manager administrator's guide and online help</p>
14 Storage System <i>Configure</i>	<ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups, and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group <input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server. <p>For an FC4500 or FC5300 storage system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Disconnect the computer from the serial port on the storage system. 	<ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs. <input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs look like any other disks in the server. <p>For an FC4500 or FC5300 storage system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Disconnect the computer from the serial port on the storage system. 	<p>Manager administrator's guide and online help</p> <p>Windows 2000 or Windows NT documentation</p> <p>Storage-system setup guide</p>

Task	With Access Logix	Without Access Logix	Reference Document
14 Storage System Configure (cont.)	<input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs: <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clariion <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Verify the server's connection to the Storage Group. • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. 	<input type="checkbox"/> Checkpoint - Use one of the following ways to check that PowerPath sees all the paths to the LUNs: <ul style="list-style-type: none"> • PowerPath Administrator (Start → Programs → EMC → PowerPath Administrator) • PowerPath command powermt display dev=all class=clariion <p>If PowerPath does not see the LUNs</p> <ul style="list-style-type: none"> • Check that you registered your PowerPath license key if you have one. • Check that the storage-system properties are as defined in step 10. 	PowerPath product guide
15 Storage System Configure Event Monitor	<input type="checkbox"/> If you will monitor storage-system events, use Navisphere Manager to apply the desired event monitor templates to the storage system.	<input type="checkbox"/> If you will monitor storage-system events, use Navisphere Manager to apply the desired event monitor templates to the storage system.	Manager administrator's guide and online help.
16 Server Make LUNs available to Windows	<input type="checkbox"/> Prepare the LUNs to receive data by creating partitions on them.	<input type="checkbox"/> Prepare any LUNs to receive data by creating partitions on them.	Host connectivity guide or Windows 2000 or Windows NT documentation
17 Server Test PowerPath with a license key	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion	<p>If you have a PowerPath license key</p> <p>If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover.</p> <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion	PowerPath product guide
	<input type="checkbox"/> Choose one available LUN to receive I/O for the test.	<input type="checkbox"/> Choose one available LUN to receive I/O for the test.	

Task	With Access Logix	Without Access Logix	Reference Document
17 Server Test PowerPath with a license key (cont.)	<input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where <i>x</i> is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where <i>x</i> is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA. <input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

You are now ready to set up any optional software (such as SnapView or MirrorView) on a CX400, CX600, or FC4700-series storage system.

PowerPath Checklist — Existing Windows Server and Existing Storage System

This checklist assumes that the existing Windows server and existing storage system are already connected in a SAN or direct attach configuration. Tasks highlighted with grey in the checklist should be performed before the service provider arrives, except for the removal of ATF or CDE, which you can have done by EMC Professional Services.



CAUTION

You cannot run ATF or CDE and PowerPath on the same server. Before you transition your server from ATF or CDE to PowerPath, you must

- ◆ **Back up your server configurations.**
- ◆ **Back up data on all storage systems connected to the server.**
- ◆ **Remove ATF or CDE, which EMC recommends that EMC Professional Services do, especially if your server configuration is complex. If you want to remove it yourself, you must use the procedure in the *Removing ATF or CDE Software Before Installing Other Failover Software* document (P/N 069001173), which is on the Powerlink website with this roadmap.**

Simply removing ATF or CDE using the uninstall procedure in the Windows ATF administrator's guide or the Windows utilities administrator's guide may not return the server to its original state, and may result in lost data.

If you are transitioning a MicroSoft Cluster Server (MSCS) configuration from ATF or CDE to PowerPath, perform the procedure in the checklist on each node in succession. While you perform the procedure on one node, you can leave the cluster services active on the other node, provided failure in a path to the storage system does not occur.

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install additional HBAs</i>	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	<input type="checkbox"/> If you need additional HBAs to provide more paths to the storage system, install these HBAs. CAUTION Do not connect cables to the HBAs until you are told to do so later in this procedure.	HBA documentation (see URL on page 8-6)
2 Server <i>Remove ATF or CDE</i>	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it. CAUTION When you are prompted to restart the system during the ATF removal procedure, answer No and then click Finish . Do not reboot until you install PowerPath, even if the instructions for installing software (e.g. HBA driver) tell you to do so.	<input type="checkbox"/> If ATF or CDE is installed, then before continuing either remove it yourself (see caution before this checklist) or arrange to have EMC Professional Services remove it. CAUTION When you are prompted to restart the system during the ATF removal procedure, answer No and then click Finish . Do not reboot until you install PowerPath, even if the instructions for installing software (e.g. HBA driver) tell you to do so.	Removing ATF or CDE instruction sheet
3 Server <i>Update Software</i>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent • admsnap 	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • HBA driver • Navisphere Host Agent 	HBA documentation (see URL on page 8-6), Windows Host Agent and CLI installation guide, and Admsnap administrator's guide
4 Server <i>Set HBA driver properties</i>	<input type="checkbox"/> Make sure the HBA driver properties are set to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	<input type="checkbox"/> Make sure the HBA driver properties are set to the values required for CLARiiON. CAUTION Using improper settings can cause erratic failover behavior, such as greatly increased I/O delays.	Host connectivity guide and HBA documentation (see URL on page 8-6)

Task	With Access Logix	Without Access Logix	Reference Document
5 Storage System Update software	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • Access Logix • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI • SnapView driver and UI • MirrorView driver and UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p> <p>For a CX-Series or FC4700-Series storage system, continue to step 6, and for an FC4500 or FC5300 storage system, skip to step 7.</p>	<input type="checkbox"/> If the following software is currently installed and not at the required minimum revision (page 8-3), update it: <ul style="list-style-type: none"> • Base Software • Navisphere SP Agent • Navisphere Storage Management Server Software • Navisphere Manager UI <p>CAUTION During the software update, hosts connected to the storage system will lose access to data if they do not have failover software or all paths to an SP are down.</p> <p>For a CX-Series or FC4700-Series storage system, continue to step 6, and for an FC4500 or FC5300 storage system, skip to step 7.</p>	Manager administrator's guide and online help
6 CX-Series or FC4700-Series Storage System Set properties for PowerPath	<p>For new or replacement HBAs</p> <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h <i>hostname</i> systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h <i>hostname</i> systemtype -config 3 <p>CAUTION The above command reboots both SPs at the same time.</p>	<p>For any HBAs</p> <input type="checkbox"/> Use Navisphere CLI to determine the default storage system type: navicli -h <i>hostname</i> systemtype where <i>hostname</i> is the IP address or network name of an SP in the storage system. If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3: navicli -h <i>hostname</i> systemtype -config 3 <p>CAUTION The above command reboots both SPs at the same time.</p>	CLI reference

Task	With Access Logix	Without Access Logix	Reference Document
6 CX-Series or FC4700-Series Storage System Set properties for PowerPath (cont.)	<p>For new or replacement HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p> <p>For existing HBAs</p> <p>An existing HBA is one that is registered with the storage system.</p> <p><input type="checkbox"/> Use Navisphere Manager's Failover Setup Wizard (selected from the Tools menu on the toolbar) to set the following storage-system properties for the server's existing HBA ports (initiators):</p> <p>Initiator Type to Open CLARiiON</p> <p>Failover mode to 1</p> <p>Array commpath to Enabled</p>	<p>For any HBAs (cont.)</p> <p><input type="checkbox"/> Use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <pre>navicli -h <i>hostname</i> failovermode 1</pre> <pre>navicli -h <i>hostname</i> arraycommpath 1</pre> <p>where <i>hostname</i> is the IP address or network name of an SP in the storage system.</p>	<p>CLI reference</p> <p>Manager administrator's guide and online help</p>

Task	With Access Logix	Without Access Logix	Reference Document
7 FC4500 or FC5300 Storage System <i>Set properties for PowerPath</i>	<p><input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system.</p> <p>For new HBAs</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type:</p> <p>navicli -np -d device systemtype</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -np -d device systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <p>navicli -np -d device failovermode 1</p> <p>navicli -np -d device arraycommpath 1</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p><input type="checkbox"/> Connect a computer (not a laptop) to the serial port on the storage system.</p> <p>For any HBAs</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to determine the default storage system type:</p> <p>navicli -np -d device systemtype</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p> <p>If the default storage-system type is <i>not</i> 3 (CLARiiON Open), use Navisphere CLI to set it to 3:</p> <p>navicli -np -d device systemtype -config 3</p> <p>CAUTION The above command reboots both SPs at the same time.</p> <p><input type="checkbox"/> From the computer connected to the storage system's serial port, use Navisphere CLI to set the appropriate default storage-system properties to the values for PowerPath:</p> <p>navicli -np -d device failovermode 1</p> <p>navicli -np -d device arraycommpath 1</p> <p>where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1).</p>	<p>Storage-system setup guide</p> <p>CLI reference</p>

Task	With Access Logix	Without Access Logix	Reference Document
7 FC4500 or FC5300 Storage System Set properties for PowerPath (cont.)	For existing HBAs An existing HBA is one that is registered with the storage system. <input type="checkbox"/> From the computer connected to the storage system's serial port, use the Navisphere CLI to set the following storage-system properties for the server's existing HBA existing ports (initiators): navicli -np -d device storagegroup -sethost -host servername systemtype -config 3 navicli -np -d device storagegroup -sethost -host servername failovermode 1 navicli -np -d device storagegroup -sethost -host servername arraycomppath 1 where <i>device</i> is the name of the computer port connected to the storage-system serial port (for example, com1). <i>servername</i> is the name of the server with the HBAs		CLI reference
8 Server Install PowerPath	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	<input type="checkbox"/> Install PowerPath. <input type="checkbox"/> Reboot the server to complete the installation of PowerPath. <input type="checkbox"/> Install any PowerPath patches from the anonymous ftp URL: ftp://ftp.emc.com/pub/elab/powerpath/w2k or ftp://ftp.emc.com/pub/elab/powerpath/nt	PowerPath release notes and PowerPath for Windows installation and administrator's guide

[illegible]

Task	With Access Logix	Without Access Logix	Reference Document
9 Server <i>Cable additional HBAs to switches or storage system</i>	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	<input type="checkbox"/> Cable any additional HBA ports to the switch connected to the storage system or to SP ports. <input type="checkbox"/> Checkpoint - For a SAN, verify the HBA connections to the switch by checking the LED(s) for the switch port connected to each additional HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA port is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	Storage-system setup guide.
10 Switches <i>Zone for additional HBAs</i>	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system.	For a SAN <input type="checkbox"/> Zone the switches to provide a path from each additional HBA port (host initiator) to the SPs. <input type="checkbox"/> Checkpoint - Use switch management software to verify the switch connections to the storage system	Switch documentation
11 Server <i>Register additional HBAs with storage system</i>	<input type="checkbox"/> For a Windows 2000 server, restart the Host Agent, then use the Disk Management tool to scan for disks. <input type="checkbox"/> For a Windows NT server, reboot the server. <input type="checkbox"/> Checkpoint - Use Navisphere Manager's Connectivity Status dialog box to verify that each HBA is registered with the storage system.	<input type="checkbox"/> For a Windows 2000 server, use the Disk Management tool to scan for disks. <input type="checkbox"/> For a Windows NT server, reboot the server.	Windows 2000 documentation Windows NT documentation Manager administrator's guide and online help

Task	With Access Logix	Without Access Logix	Reference Document
12 Server <i>Make LUNs available to additional HBAs</i>	<input type="checkbox"/> Use Navisphere Manager to disconnect and then reconnect the server and its Storage Group. <input type="checkbox"/> For a Windows 2000 server, restart the Host Agent, then use the Disk Management tool to scan for disks. <input type="checkbox"/> For a Windows NT server, reboot the server. For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	N/A For an FC4500 or FC5300 storage system <input type="checkbox"/> Disconnect the computer from the serial port on the storage system.	Manager administrator's guide and online help Windows 2000 documentation Windows NT documentation Storage-system setup guide
13 Server <i>Test PowerPath with a license key</i>	If you have a PowerPath license key If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.	If you have a PowerPath license key If your PowerPath license key is not registered, the load balancing policy is restricted to basic failover. <input type="checkbox"/> View the LUNs available to the server using the PowerPath command powermt display dev=all class=clariion <input type="checkbox"/> Choose one available LUN to receive I/O for the test. <input type="checkbox"/> View the paths to the chosen LUN using the PowerPath command powermt display dev=x every=2 where x is pseudo device that represents the chosen LUN. <input type="checkbox"/> Start I/O to the LUN. <input type="checkbox"/> Identify the HBA sending I/O to LUN by viewing the output of the powermt display dev=x every=2 command, and disconnect the cable to that HBA.	PowerPath product guide

Task	With Access Logix	Without Access Logix	Reference Document
13 Server Test PowerPath with a license key (cont.)	<input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	<input type="checkbox"/> View the output of the powermt display dev=x every=2 command, and verify that <ul style="list-style-type: none"> • The state of the uncabled path(s) becomes "dead." • I/O continues to the remaining path(s) to LUN, indicating that the path failover was successful, and PowerPath is working properly. <input type="checkbox"/> Reconnect the cable that you disconnected from the HBA. <input type="checkbox"/> If you did not follow the above steps exactly and caused any LUNs to trespass, restore the LUNs to their original SP with the PowerPath command powermt restore	PowerPath product guide

ATF or CDE Configurations for Windows

Read this section if you are installing a Windows 2000 or Windows NT ATF or CDE configuration with a new server and a new FC-Series storage system, defined as follows:

new server - A server running Windows 2000 or Windows NT and *not* connected to any storage system.

new storage system - A FC-Series storage system that has the factory default setting and has *never* been connected to a server.

All storage systems connected to the server must be FC-Series storage systems. If any other type of storage system is connected to the server, the server cannot run ATF or CDE. Note that *pre-FC4700 storage system*, refers to an FC4500, FC5300, or FC5700 storage system.

Topics for this section are

- ◆ Prerequisites 8-53
- ◆ Documentation..... 8-54
- ◆ ATF or CDE Checklist — New Windows Server and New Storage System..... 8-55

Prerequisites

- ◆ All switches must be installed.
- ◆ Storage systems must be set up, initialized (if required), and connected to switches, and any optional storage-system software (Access Logix, SnapView, MirrorView) you have must be installed.
- ◆ If any storage systems have SnapView, the admsnap utility must be installed on the servers that will be the SnapView production and secondary hosts.
- ◆ If you will use Navisphere Manager 6.X, you must have a host that is
 - Running an operating system that can support the Navisphere Manager 6.X browser-based client. For an up-to-date list of such operating systems, refer to the Navisphere Manager 6.X release notes on <http://powerlink.emc.com>.
 - On a network connected to the storage-system servers and to the SPs in FC4700-Series storage systems.
- ◆ If you will use Navisphere Manager 5.X, you must have it installed on a Windows 2000 or Windows NT host on a network connected to the storage-system servers and to the SPs in FC4700 Series storage systems.
- ◆ You must have planned your LUNs and RAID Groups, and Storage Groups if you have Access Logix. Be sure to consider requirements for SnapView and MirrorView if you have this software. The following documents will help you with this planning:
 - *EMC Fibre Channel Storage System Model FC4700-2 Configuration Planning Guide* (P/N 014003087)
 - *EMC Fibre Channel Storage System Model FC4700 Configuration Planning Guide* (P/N 014003016)
 - *EMC Fibre Channel Storage System Model FC4500, FC5300, and FC5700 Configuration Planning Guide* (P/N 014003039)

Documentation

This checklist refers to some or all of the documents listed below. We recommend that you load these documents on your service laptop before starting the installation.

- ◆ Documentation that ships with
 - HBA and HBA driver

This documentation is also available from the following websites:

For Emulex HBAs and drivers:

<http://www.emulex.com/ts/docoem/framehc.htm>

For QLogic HBAs and drivers:

http://www.qlogic.com/support/drivers_software.asp

and select **EMC** in the **OEM-approved Drivers/Firmware** list at the bottom of the page.

- Switches
- Microsoft Windows 2000 or Windows NT operating system
- ◆ *EMC Navisphere Application Transparent Failover (ATF) for Window 2000 and NT Administrator's Guide* (P/N 069001164)
- ◆ *EMC ControlCenter Navisphere Manager Version 6.X Administrator's Guide* (P/N 069001125)
or
EMC Navisphere Manager Version 5.X Administrator's Guide (P/N 069001143)
- ◆ *EMC ControlCenter Navisphere Security Version 6.X Administrator's Guide* (P/N 069001124)
- ◆ *EMC Host Connectivity Guide for Windows 2000 and Windows NT* (P/N 300-000-603)

ATF or CDE Checklist — New Windows Server and New Storage System

Task	With Access Logix	Without Access Logix	Reference Document
1 Server <i>Install HBAs and driver</i>	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports. <input type="checkbox"/> Install HBA driver.	<input type="checkbox"/> Install HBAs. <input type="checkbox"/> Connect a cable from each host HBA port to a switch port or SP port. Note FC5300s require MIAs (Media Interface Adapters) on the SP ports. <input type="checkbox"/> Install HBA driver.	HBA documentation (see URL on page 8-54)
2 Server <i>Set HBA driver parameters</i>	<input type="checkbox"/> Set the HBA driver parameters to the required settings. <input type="checkbox"/> Reboot the server to complete the installation of the drivers.	<input type="checkbox"/> Set the HBA driver parameters to the required settings. <input type="checkbox"/> Reboot the server to complete the installation of the drivers	Host connectivity guide and HBA documentation (see URL on page 8-54)
3 Server <i>Verify switch connections</i>	For a SAN <input type="checkbox"/> Verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	For a SAN <input type="checkbox"/> Verify the server connections to the switch by checking the LED(s) for the switch port connected to each HBA port. For a 1-Gbit switch - LED is green, which indicates that the HBA is logged into the switch port. For a 2-Gbit switch - One of the following: <ul style="list-style-type: none"> • Only the left LED is green, which indicates that a 1-Gbit HBA port is logged into the switch port. • Both LEDs are green, which indicates that a 2-Gbit HBA port is logged into the switch port. 	

Task	With Access Logix	Without Access Logix	Reference Document
4 Switches Zone	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to an SP. <input type="checkbox"/> Reboot the server. <input type="checkbox"/> Checkpoint - Verify that each HBA port sees only the targets (SPs) to which it is zoned. 	For a SAN <ul style="list-style-type: none"> <input type="checkbox"/> Zone the switches to provide a path from each HBA port (host initiator) to an SP. <input type="checkbox"/> Reboot the server. Checkpoint - Verify that each HBA port sees only the targets (SPs) to which it is zoned. 	Switch documentation
5 Server Install CDE or ATF	<ul style="list-style-type: none"> <input type="checkbox"/> Install CDE or ATF 	<ul style="list-style-type: none"> <input type="checkbox"/> Install CDE or ATF 	For CDE - Windows Utilities administrator's guide For ATF - Windows ATF administrator's guide
6 Server Install Host Agent	<ul style="list-style-type: none"> <input type="checkbox"/> Install the Navisphere Host Agent. <input type="checkbox"/> For pre-FC4700 storage systems, use the Navisphere Manager remote agent configuration feature to configure communications channels for managing the storage system. 	<ul style="list-style-type: none"> <input type="checkbox"/> Install the Navisphere Host Agent. <input type="checkbox"/> For pre-FC4700 storage systems, use the Navisphere Manager remote agent configuration feature to configure communications channels for managing the storage system. 	Windows Host Agent and CLI installation guide
7 FC4700-Series Storage System Set up security	<ul style="list-style-type: none"> <input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator (if not already defined) and any additional users. 	<ul style="list-style-type: none"> <input type="checkbox"/> For Navisphere 6.X, use Navisphere Manager to define a global administrator (if not already defined) and any additional users. 	Security administrator's guide and Manager on-line help
8 Storage System Configure	<ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups, bind LUNs, create Storage Groups and assign LUNs to Storage Groups. <input type="checkbox"/> Use Navisphere Manager to connect the server to a Storage Group. 	<ul style="list-style-type: none"> <input type="checkbox"/> Use Navisphere Manager to set general storage-system properties. <input type="checkbox"/> Use Navisphere Manager to create RAID Groups and bind LUNs. 	Manager online help

Task	With Access Logix	Without Access Logix	Reference Document
8 Storage System Configure (cont.)	<input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs in the Storage Group look like any other disks in the server. <input type="checkbox"/> Checkpoint - Verify that Windows 2000 or Windows NT recognizes the LUNs.	<input type="checkbox"/> Reboot the server so Windows_2000 or Windows NT recognizes the LUNs. Now the LUNs look like any other disks in the server. <input type="checkbox"/> Checkpoint - Verify that Windows 2000 or Windows NT recognizes the LUNs.	Windows 2000 or Windows NT documentation
9 Storage System Set up Event Monitor	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	<input type="checkbox"/> Plan your monitoring configuration. <input type="checkbox"/> Use Navisphere Manager to set user options, create templates, and set up your monitoring configuration.	Manager administrator's guide and on-line help
10 Server Make LUNs available to Windows	<input type="checkbox"/> Prepare the LUNs to receive data by creating partitions on them.	<input type="checkbox"/> Prepare the LUNs to receive data by creating partitions on them.	Host connectivity guide and Windows 2000 or Windows NT documentation

You are now ready to set up any optional software, such as SnapView or MirrorView.

