



EMC® VNX® Series

Release 8.1

Installing Management Applications on VNX® for File

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EMC Corporation

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Preface

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

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

Special notice conventions

EMC uses the following conventions for special notices:

Note: Emphasizes content that is of exceptional importance or interest but does not relate to personal injury or business/data loss.

 Identifies content that warns of potential business or data loss.

 Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

 Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

 Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Where to get help

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

Product information—For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to EMC Online Support (registration required) at <http://Support.EMC.com>.

Troubleshooting—Go to EMC Online Support at <http://Support.EMC.com>. After logging in, locate the applicable Support by Product page.

Technical support—For technical support and service requests, go to EMC Customer Service on EMC Online Support at <http://Support.EMC.com>. After logging in, locate the applicable Support by Product page, and choose either **Live Chat** or **Create a service request**. To open a service request through EMC Online Support, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or with questions about your account.

Note: Do not request a specific support representative unless one has already been assigned to your particular system problem.

Your comments

Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications.

Please send your opinion of this document to:

techpubcomments@EMC.com

This document describes the installation and setup procedures for EMC VNX management applications. This document also describes how to access the command line interface (CLI) and the Unisphere software. This document neither gives a detailed description of the applications nor recommends which application is best suited for your purposes.

This document is part of the VNX documentation set and is intended for use by users who must install or access the CLI, the Unisphere software, Celerra Monitor, or the CIFS management snap-ins for the Microsoft Management Console (MMC).

The online help system for each application contains information about how to use each management application.

Topics included are:

- ◆ [Before installing or upgrading on page 8](#)
- ◆ [System requirements on page 8](#)
- ◆ [Related information on page 9](#)

Before installing or upgrading

Before you install or upgrade EMC® VNX® software, ensure that all browser windows are closed. Otherwise errors can occur.

System requirements

[Table 1 on page 8](#) describes VNX software, hardware, network, and storage configurations.

Table 1. System requirements for management applications

Software	<p>VNX version 8.1 or later.</p> <p>Management computer requirements apply to individual management applications.</p> <p>Unisphere software:</p> <ul style="list-style-type: none"> ◆ One of the following Internet browsers: <ul style="list-style-type: none"> ◆ Internet Explorer 6.0 SP2 or later ◆ Firefox 3.0 or later ◆ Java Runtime Environment (JRE) 1.6.0_13 <p>Celerra Monitor:</p> <ul style="list-style-type: none"> ◆ Windows or UNIX ◆ Java Web Start ◆ Any supported browser for the EMC Unisphere® software <p>Microsoft Management Console (MMC) snap-ins and tools:</p> <ul style="list-style-type: none"> ◆ Microsoft Windows Servers ◆ An Active Directory server as the domain controller ◆ Internet Explorer 6.0 SP2 or later
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Hardware	<p>The minimum hardware requirements apply according to platform.</p> <p>For Windows NT 4.0 and other Windows Servers:</p> <ul style="list-style-type: none"> ◆ 600 MHz processor ◆ 256 MB RAM ◆ 16 KB color graphics ◆ 20 MB disk space <p>For Linux:</p> <ul style="list-style-type: none"> ◆ 600 MHz Intel processor ◆ 256 MB RAM ◆ 16 KB graphics ◆ 30 MB disk space <p>For Sun Solaris:</p> <ul style="list-style-type: none"> ◆ Ultra 5 workstation ◆ 356 MB RAM ◆ 16 KB color graphics ◆ 30 MB disk space
Network	No specific network requirements.
Storage	No specific storage requirements.

Related information

The following documents provide specific information related to the features and functionality described in this document:

- ◆ *EMC VNX Command Line Interface Reference for File*
- ◆ *Security Configuration Guide for VNX*
- ◆ VNX for File man pages
- ◆ *Parameters Guide for VNX for File*
- ◆ *Using Unisphere in Your Web Browsing Environment: Browser and Security Setting to Improve Your Experience* white paper

EMC VNX documentation on EMC Online Support

The complete set of EMC VNX series customer publications is available on EMC Online Support. To search for technical documentation, go to <http://Support.EMC.com>. After logging in to the website, click **Support by Product** and type **VNX series** in the Find a Product text box. Then search for the specific feature required.

VNX wizards

Unisphere software provides wizards for performing setup and configuration tasks. The Unisphere online help provides more details on the wizards.

VNX provides several management applications:

- ◆ [Command line interface on page 12](#)
- ◆ [Unisphere on page 12](#)
- ◆ [Celerra Monitor on page 13](#)
- ◆ [CIFS management MMC snap-ins on page 13](#)

Command line interface

VNX provides full management functionality through the CLI. The commands are typed through the Control Station. The commands follow Linux-like syntax for familiarity and usability.

The *EMC VNX Command Line Interface Reference for File* provides a full description of all CLI commands.

Some management operations can be performed only through the CLI.

Unisphere

Unisphere® is a web-based graphical user interface (GUI) that enables you to manage VNX and the EMC VNX for block without the knowledge of command syntax. You can select items, such as file systems from the list instead of remembering and typing their names. Unisphere software also includes several wizards that guide you through the procedures for creating and setting up components of the server. For example, there are wizards for creating file systems and CIFS servers. Unisphere also provides access to the CLI.

You can run the Unisphere software from any supported web browser. [Table 1 on page 8](#) lists the supported web browsers.

The Unisphere software supports Secure Sockets Layer (SSL) encryption and authentication to protect the connection between the user's web browser and VNX's Apache web server. Digital certificates, whose authenticity is verified by a Certificate Authority (CA), are used by SSL to identify and authenticate the server and, if required, the client. In the case of Unisphere, the Control Station serves as a limited purpose CA by signing the certificate provided by the Apache web server.

Interoperating with the CLI

If you use the CLI and the Unisphere software concurrently, you should refresh the Unisphere software display after making any related changes through the CLI. This ensures that the Unisphere software display reflects the current state of the system.

You can use the VNX CLI to create items, such as event notifications, with properties that prevent Unisphere from managing them. If you create such an item, you must manage it with the CLI. For example, Unisphere does not support event notifications that specify individual event identifiers. If you create such an event notification by using the CLI, you will be able to view, but not modify or delete it by using the Unisphere software.

EMC VNX Operating Environment for File Release Notes for your software version contain additional and more specific interoperability information.

Celerra Monitor

Celerra Monitor provides tools for monitoring activity on VNX and the attached storage devices.

Most of the Celerra Monitor capabilities are also available in the Unisphere software. If the monitoring functions in the Unisphere software meet your business requirements, you do not need to launch Celerra Monitor.

Celerra Monitor runs on Microsoft Windows or UNIX platforms and is available through the Unisphere software. Its graphical user interface is Java-based, which enables it to run on various browsers. The Celerra Monitor online help contains detailed information.

CIFS management MMC snap-ins

VNX supports a set of MMC snap-ins and programs for managing users and Data Mover security settings from a machine that is running a Windows Server. These tools for the CIFS environment enable you to manage users and Data Movers. [Table 2 on page 14](#) describes the CIFS MMC snap-ins.

The user management tools enable you to migrate UNIX attributes to the Windows Active Directory where you can then assign, remove, or modify UNIX attributes for Windows users or groups.

The Data Mover management tools consist of several MMC snap-ins to the Unisphere. You can use these snap-ins to manage virus checking, home directories, and security settings on Data Movers from a machine that is running a Windows Server.

For more detailed information, view the online help for the following features:

- ◆ VNX AntiVirus Management
- ◆ Data Mover Security Settings
- ◆ Home Directory Management
- ◆ UNIX Attributes Migration Tool
- ◆ UNIX Property Page Extensions in Active Directory Users and Computers
- ◆ UNIX User Management

You can install any of the CIFS management applications during the installation process.

Table 2. CIFS MMC snap-ins

Snap-in/tool	Description
UNIX User Management	<p>UNIX User Management is installed as an MMC snap-in to the Unisphere. Use it to assign, remove, or modify UNIX attributes for a single Windows user or group on the local domain and on remote domains. You can also use it to manage domain access to the Active Directory located on the domain in which the attribute database is stored.</p>
AntiVirus Management	<p>Celerra AntiVirus Management is an MMC snap-in to the Unisphere. You can use the Celerra AntiVirus Management snap-in with the Common AntiVirus Agent (CAVA), third-party AntiVirus engines that run on a Windows NT or Windows 2000 or later, and a Data Mover to view or modify the VNX virus-checking parameters. The parameters are located in the viruschecker.conf file on each VNX in the Windows domain. You can use this snap-in instead of editing the viruschecker.conf file on the Control Station.</p> <p>The CAVA and third-party antivirus software must be installed on Windows Server 2003, Windows 2000, or later. <i>Using VNX Event Enabler</i> provides detailed information.</p>
Home Directory Management	<p>Home Directory Management is an MMC snap-in to the Unisphere, which you can install on a Windows Server.</p> <p>Home Directory Management allows you to associate a username with a directory that then acts as the user's home directory. Home Directory Management simplifies the administration of personal shares and the process of connecting to them. The home directory is mapped in a user's profile so that upon login, the home directory is connected to a network drive.</p> <p>Home directory feature allows you to use a single share name called HOME that all users connect to. You do not have to create individual shares for each user.</p>

Table 2. CIFS MMC snap-ins *(continued)*

Snap-in/tool	Description
Security Management	<p>Data Mover Security Settings consist of the Audit Policy node and the User Rights Assignment node.</p> <p>Audit Policy is a component of the Data Mover Security Settings snap-in, which is installed as an MMC snap-in into the Unisphere on a Windows Server.</p> <p>You can use audit policies to determine which Data Mover security events are logged in the Security log. You can select to log successful attempts, failed attempts, both, or neither. Audited events are viewed in the Security log of the Windows Event Viewer.</p> <p>User Rights Assignment is a component of the Data Mover Security Settings snap-in, which is installed as an MMC snap-in into the Unisphere on a Windows Server.</p> <p>You can use user rights assignments to manage which users and groups can log in to or execute tasks on a Data Mover. User rights assignments are local policies and apply only to the selected Data Mover.</p>

Installing VNX Management Applications

The tasks for installing and setting up VNX management applications are:

- ◆ [Installing JRE for the Unisphere software on page 18](#)
- ◆ [Installing digital certificates for the Unisphere software on page 18](#)
- ◆ [Launching Celerra Monitor on page 20](#)
- ◆ [Installing CIFS management MMC snap-ins on page 20](#)

Installing JRE for the Unisphere software

JRE is required to run the Unisphere software. EMC recommends JRE 1.6.0_13 or later. You can download the latest JRE from the downloads area at <http://www.oracle.com>.

After downloading JRE, install it on your Windows, Linux, or Solaris management computer.

Configure Java Web Start for a proxy server

When using a proxy server, you must configure the proxy settings in Java Web Start for Celerra Monitor to launch correctly.

To type the proxy settings into Java Web Start:

1. Open the browser and type the proxy information.

The online help on the browser contains more information.

2. Start the Java Web Start application.

3. Select **File** ► **Preferences**.

4. On the **General** tab, select **Use Browser**.

The field is filled in with the proxy information from the browser.

Note: To manually configure proxy settings in Java Web Start, select **Manual** on the **General** tab, and then type the proxy information.

Installing digital certificates for the Unisphere software

The VNX software automatically generates the CA certificate and a new Apache certificate signed by that CA certificate at system installation or software upgrade if these certificates do not exist.

Note: The white paper *Using Unisphere in Your Web Browsing Environment: Browser and Security Settings to Improve Your Experience*, available on <http://Support.EMC.com>, contains more specific information about how and why to install the certificates.

Regenerate the CA and Apache certificates

If you change the VNX hostname, you have to regenerate the Control Station's CA and Apache certificates. When you generate a new CA certificate, a matching Apache certificate

is also generated. After you regenerate the certificates, any browsers or systems that use the previous certificates must install the new certificates.

To regenerate the CA and Apache certificates:

1. Log in to the Control Station CLI with your username and password. You must have root privileges to execute the required commands.
2. To generate updated CA and Apache keys and certificates, type:


```
/nas/sbin/nas_ca_certificate -generate
```
3. Import the Control Station CA certificate into your web browser for the certificate verification to succeed. After importing, you will not receive any security warnings when opening a new browser session to Unisphere.

In addition, when you start the Unisphere software after performing this setup, you must install the new Apache certificate. For example, if you are using Internet Explorer 6, install the certificate when prompted by the Security Alert pop-up by clicking **View Certificate** and then **Install Certificate**.

Regenerate the Apache certificate only

If you change VNX domain name or IP address, you must regenerate the Apache web server's certificate.

To regenerate the Apache certificate:

1. Log in to the Control Station CLI with your username and password. You must have root privileges to execute the required commands.
2. To generate an updated Apache certificate, type:

```
/nas/sbin/nas_config -ssl
```

3. Restart the Apache web server when prompted:

```
Installing a new SSL certificate requires restarting the Apache web server.
```

```
Do you want to proceed? [y|n]: y
```

```
New SSL certificate has been generated and installed successfully.
```

4. When you start the Unisphere software after performing this setup, you must install the new Apache certificate. For example, if using Internet Explorer 6, install the certificate when prompted by the Security Alert pop-up by clicking **View Certificate** and then **Install Certificate**.

Launching Celerra Monitor

Celerra Monitor is available through the Unisphere software.

Before installing Celerra Monitor

Ensure that JRE and Java Web Start are properly installed on the management computer.

Launch Celerra Monitor

1. In a browser, open Unisphere.
2. Select **System ► Monitoring and Alerts ► Statistics for File**.
3. Under **Tools**, select **Launch Celerra Monitor**.
4. If you receive a message to download a file, perform the following:
 - a. Select **Open using JNLP File**.
 - b. Clear **Always ask before opening this type of file**.
 - c. Click **OK**.

In the **Saving File** dialog box, clear **Keep this window open after download is complete**.

If you are prompted to overwrite a file, click **Yes** to proceed with the installation.

5. After the Celerra Monitor files have been downloaded through the Java Web Start application, click **Start** on the **Security Warning** dialog box.

The **Celerra Monitor Login** dialog box appears.

Installing CIFS management MMC snap-ins

To install MMC snap-ins and tools for managing a CIFS environment:

1. Go to <http://Support.EMC.com>, select **Support by Product ► VNX Series**. Search for VNX for File/Celerra CIFS Management MMC snap-ins under Downloads.
2. Download the executable file on your system and run it.
3. On the **Welcome** screen, click **Next**.
4. On the **License Agreement** screen, click **Yes**.
5. On the **Select Installation Folder** screen, verify the displayed folder name.

To install the program files here, click **Next**.

To select a different folder, click **Browse**, locate the folder, and then click **Next**.

6. On the **Features** screen, select the features to install and clear the features that you do not want to install. Click **Next**.
7. On the **Start Copying Files** screen, click **Next**.
8. On the **InstallShield Wizard Complete** screen, click **Finish**.

Install the UNIX Management snap-in

After installing the UNIX User Management snap-in, you must set the cifs useADMap parameter. Set the cifs useADMap parameter to 1 if you are using UNIX User Management snap-in. Otherwise, set the parameter to 0.

Access problems can occur if you set the useADMap parameter to 1, but you have not extended the Active Directory schema.

To set the cifs useADMap parameter:

1. On the Control Station, use this command syntax:

```
server_param {<movename>|ALL} - facility cifs -modify useADMap -value 0
```

where:

<movename> = name of the Data Mover (or type ALL for all Data Movers)

2. Restart the Data Mover by using this command syntax:

```
server_cpu {<movename>|ALL} - reboot now
```

where:

<movename> = name of the Data Mover (or type ALL for all Data Movers)

Open Unisphere

To open the Unisphere:

1. From the **Start** menu, select **Settings > Control Panel**.
2. Double-click **Administrative Tools**.
3. Double-click **Celerra Management**.

General usage notes

Before using the MMC snap-ins:

- ◆ You must be logged in as a user with Administrator rights.
- ◆ The CIFS service must be configured and started on the Data Mover. *Configuring and Managing CIFS on VNX* provides useful information.
- ◆ When you try to open the Celerra Management MMC snap-ins, the following error message may appear:

The RPC server is unavailable

This occurs if:

- The CIFS server does not exist.
 - The CIFS service is not running. The DNS entry for the CIFS server is not correct. There are network or routing problems.
- ◆ The instructions in the online help describe the default installation of the Unisphere. You can select to install the snap-ins into a different MMC. If you do so, any references to the Unisphere in the online help will no longer apply.

Topics included are:

- ◆ [Using the CLI on page 24](#)
- ◆ [Starting a Unisphere session on page 25](#)

Using the CLI

To use the CLI, you must establish a connection with the Control Station. After logging in, you can type CLI commands at the Control Station prompt. The commands that are available depend on the privileges assigned to your user account.

The *EMC VNX Command Line Interface Reference for File* provides detailed information about all CLI commands. The *Security Configuration Guide for File* provides information about the privileges that can be associated with user accounts.

You can connect to the Control Station in several ways:

- ◆ Local — Log in to the Control Station directly.
- ◆ Remote — Use a secure, encrypted, remote login application to connect to the Control Station IP address, and log in remotely.
- ◆ RS232 — Use the modem or terminal server to connect to the COM2 port of the Control Station.

Log in locally

To log in to the Control Station directly:

Log in to the Control Station with your username and password.

Log in remotely

To log in to the Control Station remotely:

1. Type the name of a secure, encrypted, remote login application followed by the IP address of the Control Station.

Use the following syntax:

```
<remote_app> <IPAddr>
```

where:

<remote_app> = a secure, encrypted, remote login application

<IPAddr> = IP address of the Control Station

2. When prompted, type your username and password.

Log in through RS232

The documentation for your modem or terminal server contains instructions.

Starting a Unisphere session

Use this procedure to begin a Unisphere software session by connecting to VNX.

Before starting a Unisphere session

Ensure that the JRE is installed on the management computer, and that you are using a supported browser.

Ensure that the browser is configured to accept first-party and third-party cookies, and that any password management feature is disabled.

Start a Unisphere session

To start a Unisphere session to manage VNX:

1. Start the browser and type the hostname or the IP address of the Control Station. For example, `http://10.48.73.124`.
2. Respond to any certificate security dialog boxes that appear.

Note: The white paper *Using Unisphere in Your Web Browsing Environment: Browser and Security Settings to Improve Your Experience*, available on <http://Support.EMC.com>, contains more information about accepting security certificates.

Once you are logged in to Unisphere, the Unisphere online help provides additional information about certificate management.

3. The Unisphere login dialog box is displayed. Type a username and password.
Select **Use LDAP** if you are using an LDAP-based directory server to authenticate user credentials.
Select **Scope, Global** (domain) or **Local**, to specify the scope of the systems to be managed.
4. Click **Login**.
The Unisphere **All Systems** view is displayed.
5. Select a system from the system selector drop-down list or from **All Systems > System List**.

For additional information, click the (?) icon. The (?) icon within a view displays the help topic for that view. The (?) icon in the title bar opens the entire help system.

Enable a license

Some VNX licensed features and products can be managed with the Unisphere software only after you purchase a license for them and enable them in Unisphere.

Enabling VNX licensed feature in the Unisphere software activates support for that feature.

To enable a licensed feature:

1. Select **System**.
2. From the task list, under **System**, select **Manage Licenses**.
3. Select the licensed feature to enable.
4. Click **Apply**.
5. Click **OK** to confirm that you have a license for this feature and you want to enable its use.

Disable a licensed feature

To disable a licensed feature:

1. Select **System**.
2. From the task list, under **System**, select **Manage Licenses**.
3. Clear the licensed feature to disable.
4. Click **Apply**.
5. Click **OK** to confirm that you want to disable use of this feature.

After the license is disabled, you have to restart the management application to see this change take effect in the user interface.

View the list of licensed features

To view the licensed features:

1. Select **System**.
2. From the task list, under **System**, select **Manage Licenses**.

If a feature is enabled, this feature can be managed in Unisphere.

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If a product does not function properly or does not function as described in this document, contact your EMC Customer Support Representative.

Problem Resolution Roadmap for VNX contains additional information about using EMC Online Support and resolving problems.

Topics included in this chapter are:

- ◆ [EMC E-Lab Interoperability Navigator on page 30](#)
- ◆ [VNX user customized documentation on page 30](#)
- ◆ [EMC Training and Professional Services on page 30](#)

EMC E-Lab Interoperability Navigator

The EMC E-Lab™ Interoperability Navigator is a searchable, web-based application that provides access to EMC interoperability support matrices. It is available on EMC Online Support at <http://Support.EMC.com>. After logging in, in the right pane under **Product and Support Tools**, click **E-Lab Navigator**.

VNX user customized documentation

EMC provides the ability to create step-by-step planning, installation, and maintenance instructions tailored to your environment. To create VNX user customized documentation, go to: <https://mydocs.emc.com/VNX>.

EMC Training and Professional Services

EMC Customer Education courses help you learn how EMC storage products work together within your environment to maximize your entire infrastructure investment. EMC Customer Education features online and hands-on training in state-of-the-art labs conveniently located throughout the world. EMC customer training courses are developed and delivered by EMC experts. Go to EMC Online Support at <http://Support.EMC.com> for course and registration information.

EMC Professional Services can help you implement your system efficiently. Consultants evaluate your business, IT processes, and technology, and recommend ways that you can leverage your information for the most benefit. From business plan to implementation, you get the experience and expertise that you need without straining your IT staff or hiring and training new personnel. Contact your EMC Customer Support Representative for more information.

A

Active Directory (AD)

Advanced directory service included with Windows operating systems. It stores information about objects on a network and makes this information available to users and network administrators through a protocol such as Lightweight Directory Access Protocol (LDAP).

B

browser

Program used to access information over the Internet or an intranet.

C

Celerra Monitor

Java client/server application that lets an administrator observe the performance of a system attached to VNX for file and the performance of any Data Movers mounted in VNX for file cabinet.

Certificate Authority (CA)

Trusted third-party that creates and digitally signs public key certificates.

command line interface (CLI)

Interface for typing commands through the Control Station to perform tasks that include the management and configuration of the database and Data Movers and the monitoring of statistics for VNX for file cabinet components.

Control Station

Hardware and software component of VNX for file that manages the system and provides the user interface to all VNX for file components.

D

Data Mover

In VNX for file, a cabinet component that is running its own operating system that retrieves data from a storage device and makes it available to a network client. This is also referred to as a blade.

G

GUI

See graphical user interface.

H

Hypertext Transfer Protocol (HTTP)

Communications protocol used to connect to servers on the World Wide Web.

M

Microsoft Management Console (MMC)

Extensible common presentation service for management applications included in the Windows operating system.

See also *MMC snap-in*.

MMC snap-in

Management tool an administrator can add to the interface of a Microsoft Management Console (MMC).

See also *Microsoft Management Console*.

S

Secure Sockets Layer (SSL)

Security protocol that provides encryption and authentication. It encrypts data and provides message and server authentication. It also supports client authentication if required by the server.

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