



Installing EMC NaviSphere

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To communicate with VNX, Cisco UCS Director supports Windows-based EMC NaviSphere and Linux-based EMC NaviSphere.

Before using NaviSphere, you must install and configure a Secure Shell (SSH) server on it.

Installing and Configuring Windows-Based Navisphere

Guidelines for SSHD Server Configuration

To set up an SSHD server, we recommend that you install Cygwin version 1.7.27, and use the SSH daemon on the host. Cygwin provides a Linux-like environment on Microsoft Windows.

After you install the SSHD server on the Windows-based EMC NaviSphere, modify the Path variable under System Variables to include the NaviSphere `bin` folder. This update ensures that anyone who uses SSH to access Windows-based NaviSphere can execute VNX commands.

After you configure the SSHD server, set up new default paths to enable the user-installed software to override the system software.

Installing a Cygwin Package

Ensure that you install the `openssh`, `openssl`, and `TCL` Cygwin packages on a Windows host.

Step 1 Download the Cygwin executable from <http://www.cygwin.com/>.

Step 2 While installing the Cygwin package on the package selection screen, choose the following packages:

- `openssh`
- `openssl`

- TCL

Configuring the SSHD Server

- Step 1** Navigate to the `C:\Cygwin-Install-Dir.` directory,
- Step 2** Open the `Cygwin.bat` file in edit mode, using any editor, and add the following line: `set CYGWIN=binmode ntsec`. The following example shows the contents of the `Cygwin.bat` file after adding the above line:
- ```
@echo off
C:
chdir C:\<Cygwin-Install-Dir>\bin
set CYGWIN=binmode ntsec
bash --login -i
```
- Step 3** Configure the SSHD service by running the `C:\Cygwin-Install-Dir\Cygwin.bat` file in a command prompt and enter the following command: `$ ssh-host-config.`

- a) Answer the following questions:

| Question                                                    | Recommended Response                                                                                 |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Should privilege separation be used?<br><yes/no>            | Yes                                                                                                  |
| New local account 'sshd'? <yes/no>                          | Yes                                                                                                  |
| Do you want to install sshd as a service? <yes/no>          | No if SSHD is already installed as a service.<br>Yes if SSH has not yet been installed as a service. |
| Enter the value of CYGWIN for the daemon: [ ] binmode ntsec | Enter the value as binmode ntsec                                                                     |
| Do you want to use a different name? (yes/no)               | Yes                                                                                                  |
| Enter the new username:<br><new-username>                   | Enter the new username.                                                                              |
| Reenter: <new-username>                                     | Reenter the new username.                                                                            |
| Replace cloupia with new-username? (yes/no)                 | Yes                                                                                                  |
| Please enter the password:<br><password>                    | Enter the password for this account.                                                                 |

| Question            | Recommended Response                   |
|---------------------|----------------------------------------|
| Reenter: <password> | Reenter the password for this account. |

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## Configuring System Environment Variables

- Step 1** On the Windows host, right-click the **Computer** icon on the desktop and choose **Properties**.
- Step 2** If you don't have a computer icon on your desktop, do the following:
- Click **Start**.
  - Right-click the **Computer** option in the Start menu.
  - Choose **Properties**.
- Step 3** Click **Advanced System Settings**.
- Step 4** On the **Advanced** tab, choose **Environment Variables**.
- Step 5** Under **System Variables** choose the **Path** variable and append the following two binary paths: `c:\Program Files (x86)\EMC\Navisphere CLI;c:\<Cygwin-Install-Dir>\bin`.  
The following is an example of the path variable with the binary paths added:
- ```
Variable Name: Path
Variable Value: <Existing Folders Path>;c:\Program Files(x86)\EMC\Navisphere CLI;c:\cygwin
64\bin
```
- Step 6** Add the following new system variable:
- System Variable Name: `CYGWIN`
 - System Variable Value: `binmode tty ntsec`
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Starting the Cygwin SSHD Service

- Step 1** Start the Cygwin SSHD service manually under Window Services.
- Step 2** Configure the Cygwin SSHD service to start automatically every time the computer is restarted.
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Verifying SSH Access

Ensure that you can run the `naviseccli` commands without providing the absolute path at the command prompt. You can use any SSH client to verify SSH access.

Step 1 In your SSH client, access another machine that has the SSH client running and execute one of the following commands:

- `ssh USERNAME@host-ipaddress 'date'`
- `ssh -l USERNAME@host-ipaddress 'date'`

Example:

For example, `ssh -l user@host-ipaddress 'date'`

Step 2 Enter the password for the account when prompted.
After you enter the correct password, the command returns the current date.

Configuring the Navisphere Path for Windows

By default, Cisco UCS Director executes NavisecCLI commands with an explicit path that does not exist in Windows. You must create a softlink to that path through the Cygwin shell.

Before You Begin

Install Cygwin on the same Windows server as NavisecCLI.

Step 1 Open the Cygwin shell.

Step 2 In the Cygwin shell, create the following directory: `/opt/Navisphere`

Step 3 Create a softlink for the Navisphere directory.

Example:

For example, if you installed Navisphere in the `C:\Program Files (x86)\EMC\NavisphereCLI` directory, execute the following command to create a softlink:

```
ln -s /cygdrive/c/Program\ Files\ \(x86\)EMC/NavisphereCLI /opt/Navisphere/bin
cd /opt/Navisphere/bin
chmod 775 Naviseccli.exe
```

Installing and Configuring a Linux Based Navisphere

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- Step 1** Search and download the **naviseccli** package for VNX from EMC Support for your specific platform.
For example,
`NaviCLI-Linux-64-x86-en_US-7.33.2.0.51-1.x86_64.rpm.`
- Step 2** Switch to root user using `su [username]` if you are not already.
- Step 3** Install the **naviseccli** package using the **rpm** command.
For example,
`rpm -i NaviCLI-Linux-64-x86-en_US-7.33.2.0.51-1.x86_64.rpm`
- Step 4** You are prompted to enter a certificate verifying level. Give verifying level as `medium[m]`.
- Step 5** Add the **naviseccli** bin directory, which is usually `/opt/Navisphere/bin`, to your system PATH. For example, add the following line to `~/.bash_profile` & `~/.bashrc` and then execute this file to make the setting effective by running `source ~/.bash_profile` or `source ~/.bashrc`.
`PATH=$PATH:/opt/Navisphere/bin`
`export PATH`
- Step 6** You must configure this installation of **the naviseccli** to work with each storage processor on each array that it connects to. For all storage processors on all arrays from which this agent collects data, run the following command:
`naviseccli -user username -password password -h sp_ip -scope 0 -np getagent`
- Step 7** . When you reach the security prompt, save the certificate (option 2).
- Step 8** Run the same command for each of the storage processors to be used, with a script if necessary. The security prompt should not show again.
- Step 9** Log in to UCS Director using an SSH Client as 'root' user. Run the following command against the **Navisphere** host where **Naviseccli** is installed.
This step must be done before adding a VNX Storage Array as an account in UCS Director.
`# ssh <navicli-user>@<navicli-host-ip> naviseccli -User sysadmin -Password <sysadmin-pass> -Scope 0 -Address <SP-A-IP> port -list`
- Step 10** Enter the password at the login prompt (after accepting the SSH certificate)
It should list VNX Storage Array port configuration. If it first asks to save the certificate, choose option-2
- Step 11** Run the same command shown in Step 9 against the SP-B IP Address as well to save the certificate.
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