Coraid® EtherDrive® HBA for Windows Server

Administration Guide

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Introduction

Thank you for purchasing a Coraid® EtherDrive® Host Bus Adapter (HBA).

The EtherDrive HBA and HBA software driver deliver ATA-over-Ethernet (AoE) technology to your Windows host for fast and affordable Ethernet SAN performance.

This guide explains how to install and configure your EtherDrive HBA to work inside a Windows host that is running any of the following operating systems:

- Microsoft Windows Server 2008 R2 64-bit (standard and Server Core installations)
- Microsoft Windows Server 2003 R2, 32- and 64-bit
- Microsoft Windows Server 2003, 32- and 64-bit

The EtherDrive SAN is comprised of one or more LUNs providing shared storage. The EtherDrive HBA is installed in the Windows host and presents the LUN as a locally attached SCSI disk. The HBA driver and EtherDrive HBA translate disk requests to AoE requests and transmit the requests to the EtherDrive SAN. As responses return from the EtherDrive SAN, the reverse translation occurs in the HBA driver.

To use Coraid's Ethernet SAN with your host, one or more Coraid EtherDrive HBAs must be installed. The EtherDrive HBA's two network ports are dedicated specifically for communication with Coraid Ethernet SAN appliances. At least one port from the EtherDrive HBA must be connected to the SAN where the Ethernet SAN is located.

CorOS updates

You can copy a CorOS update file to an SR/SRX storage appliance using the HBA HostView tool that is installed along with the EtherDrive HBA driver (see Copying the CorOS update file to an SR/SRX appliance). The copied file must then be processed from the SR/SRX console to update the CorOS (as described in the *Coraid EtherDrive SR/SRX Administration Guide*).

Coraid Ethernet Console (CEC)

The HBA HostView tool that is installed with the EtherDrive HBA driver includes the CEC (Coraid Ethernet Console) utility. CEC allows you to establish a console connection to SR/SRX appliances from the host using standard Ethernet frames. Once the host is connected to the SAN through CEC, you can issue commands as though you are connected to the SR/SRX console (see Using CEC from HBA HostView).

Overview of Installation

To install your Coraid EtherDrive HBA for Windows Server:

- Configure the Coraid EtherDrive SAN. For instructions, see the *Coraid EtherDrive SR/SRX Administration Guide* and the *Coraid EtherDrive VSX Administration Guide*.
- Install the EtherDrive HBA card in your host. For instructions, see Installing an EtherDrive HBA Card.
- Determine the version of any previously installed EtherDrive HBA driver on your host. Depending on the version, you may have to uninstall it. For instructions, see To install the EtherDrive HBA driver and HBA HostView on your Windows host.
- Install the Coraid EtherDrive HBA driver and HBA HostView. For instructions, see Installing the EtherDrive HBA Driver and HBA HostView.
- Complete your storage configuration.

Requirements

- In order to manage storage with the EtherDrive HBA, one or more SR/SRX or VSX LUNs must be present and online on the Ethernet SAN.
- The Coraid EtherDrive HBA should only be used in conjunction with Coraid Ethernet SAN appliances (SR/SRX and VSX).
- The EtherDrive HBA requires an HBA driver. Install it as described in Installing the EtherDrive HBA Driver and HBA HostView.
- Make sure the host is running one of the following supported Windows operating systems:
  - Microsoft Windows Server 2008 R2 64-bit (standard and Server Core installations)
  - Microsoft Windows Server 2003 R2, 32- and 64-bit
  - Microsoft Windows Server 2003, 32- and 64-bit
- Because the AoE protocol is not routable, the EtherDrive HBA and the EtherDrive SAN must be connected to the same network broadcast domain.
- The EtherDrive HBA requires an available PCI Express (PCIe®) slot in the host.
- SAN Ethernet ports—HBA cards are available in the following SAN port configurations. Use high-quality cables when connecting to these ports.
  - EtherDrive EHBA-2-E-RJ45–2 x 1GbE UTP
  - EtherDrive EHBA-20-E-RJ45–2 x 10GbE UTP
  - EtherDrive EHBA-20-E-CX4–2 x 10GbE CX4
  - EtherDrive EHBA-20-E-SFP–2 x 10GbE SFP+
- The EtherDrive HBA must be connected to a network switch that supports flow control (IEEE 802.3) and jumbo frames with an MTU size of 9000 or greater.

Note: It is recommend that you isolate the SAN from other network traffic in order to dedicate it exclusively for storage.

Terminology

The information in this guide assumes familiarity with common data storage and networking concepts and familiarity with data center operations. Users unfamiliar with standard networking and storage terminology are encouraged to find definitions for unfamiliar terms using Web resources and reference documents.

This guide uses the following terms that might be unfamiliar to you or are specific to Coraid products.

Term	Definition
AoE	ATA-over-Ethernet protocol.
AoE Target	The shelf and LUN combination used to identify a block storage device on the Ethernet SAN.
Host	The computer accessing the storage over the Ethernet SAN.
CorOS	Operating system software that is embedded into—and distributed as an integral part of—the Coraid hardware storage solution.
EtherDrive SAN Manager (ESM)	ESM provides live monitoring and management of EtherDrive appliances that use the AoE protocol, such as the SR and SRX,
HBA (Host Bus Adapter)	An HBA connects a host computer to network storage. Coraid offers a range of HBAs with support for a variety of operating systems. For more information see www.coraid.com.
LUN (Logical Unit Number)	A grouping of uniquely numbered blocks of storage attached to a storage appliance by Ethernet SAN, in which each block contains 512 bytes of data. Each LUN contains one RAID or JBOD. An SR/SRX JBOD is a single-disk LUN. The terms “LUN,” “target,” “AoE Target,” “device,” and “disk” are used interchangeably in this document.
Windows standard installation option	Standard GUI-based Windows Server 2008 environment.
Windows Server Core installation option	Windows Server 2008 installation option featuring a scaled-back Windows environment with no Windows Explorer shell. All configuration and maintenance is done through a command line interface. For instructions on using an EtherDrive HBA within a Server Core installation, see Managing Storage from a Command Line Interface.

Ethernet SAN Configuration

Before you can manage storage on the Ethernet SAN using your EtherDrive HBA, one or more SR/SRX or VSX LUNs must already exist and be online on the SAN. For instructions, see the *Coraid EtherDrive SR/SRX Administration Guide* and the *Coraid EtherDrive VSX Administration Guide*.

Note: RAID performance is suboptimal while a RAID on a LUN is initializing. For optimal performance, wait until RAIDs have finished initializing before using them.

Installing an EtherDrive HBA Card

To use Coraid's Ethernet SAN with a Windows Server host, install one or more Coraid EtherDrive HBAs in the Windows host.

Seat the EtherDrive HBA(s) into an available PCIe slot with the host powered off. When the host is powered back on, each HBA port appears in Windows Device Manager as an unknown device.

After installing the EtherDrive HBA, install the EtherDrive HBA driver and HBA HostView software. For instructions, see Installing the EtherDrive HBA Driver and HBA HostView.

To install the EtherDrive HBA

1. **Follow ESD (electrostatic discharge) and other safety precautions when handling the EtherDrive HBA.**

   Static discharge can destroy the circuits etched in silicon microchips or dramatically shorten their life span. To protect the EtherDrive HBA from damage, observe standard ESD precautions.

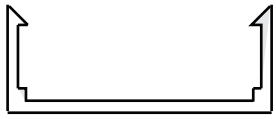
2. **Power off the host and disconnect the power cable.**
3. **Open the host chassis and locate an available PCIe slot.**
4. **Remove the slot cover (if any) by removing the screw or releasing the lever.**
5. **Seat the EtherDrive HBA firmly into the PCIe slot.**

   To access an available slot, you might need to remove and replace existing PCIe cards or other hardware.

6. **Attach the EtherDrive HBA retaining bracket using the existing screw or lever.**

   Note: Depending on whether you are using a full-height or half-height slot, you might need to change the retaining bracket on your EtherDrive HBA. Your EtherDrive HBA includes both a half-height and a full-height retaining bracket.

   - (SFP+ EtherDrive HBA only) You must remove both transceivers before you can remove the retaining bracket.
   - (CX4 EtherDrive HBA only) If you change the retaining bracket on your HBA, make sure you remove and replace the locking pin on each port carefully. Push on the pin one side at a time, alternating sides, until it comes loose or clicks back into place. The locking pin looks like this:

7. **Close the host chassis, and then connect the power cable(s).**
8. **Connect cables from the HBA SAN ports to an Ethernet switch connected to the SAN. The switch must support jumbo frames with an MTU size of 9000 (see Requirements).**

   Each EtherDrive HBA provides two ports for communication with Coraid EtherDrive storage appliances. At least one port must be connected to the SAN network where the Ethernet SAN is located. You can also connect directly to the ports on the SR/SRX appliance.

9. **Power on the host.**
10. **Perform the procedure Installing the EtherDrive HBA Driver and HBA HostView.**

Installing the EtherDrive HBA Driver and HBA HostView

After you install the EtherDrive HBA in the host, install the appropriate EtherDrive HBA driver and HBA HostView software (32-bit or 64-bit). The host will not recognize the EtherDrive HBA until the HBA driver software is installed. In these instructions, the version and release numbers in the file names are replaced by **xxx**. When you install the driver, substitute the actual name of the package you downloaded.

The EtherDrive HBA translates disk commands to and from AoE commands. The translation is transparent to the Windows host.

To install the EtherDrive HBA driver and HBA HostView on your Windows host

1. **Download the latest Windows EtherDrive HBA driver installer package (32-bit or 64-bit) from:**

   http://www.coraid.com/support/downloads

2. **Uninstall any existing EtherDrive HBA driver, if necessary.**

   If an EtherDrive HBA driver is already installed on the Windows host, you may have to uninstall it, depending on the version. To determine the version of the installed driver:

   - Launch HBA HostView
   - Click **Help > About**
     - If the driver is **v5.0.0** or later, do not uninstall it manually. Skip to step 4.
     - If the driver is earlier than **v5.0.0**, you must uninstall it manually as described in step 3.

3. **To uninstall an EtherDrive HBA driver earlier than 5.0.0, do the following:**

   This step is intended to ensure that no data is lost and that the Windows host does not crash when you uninstall a pre-v5.0.0 driver.

   - Quiesce the applications running on the LUN(s) claimed by the Windows host.
   - Flush cached data to disk using a utility such as Sync (available from Windows Sysinternals. Administrator privileges are required).
   - Use the uninstall utility in Windows Control Panel to uninstall the Coraid EtherDrive HBA driver and HBA HostView tool.

4. **Launch the driver installer package using the appropriate method:**

   - ***Microsoft Windows Server 2003 or 2008, standard installation:***

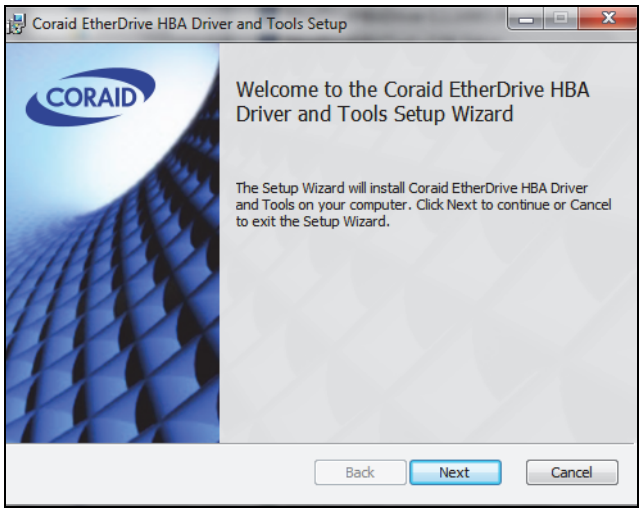
     Double-click **etherdrive-hba-windows-x.x.x-Rx-xxbit.msi**

   - ***Microsoft Windows Server 2008, Server Core installation:***
     - Log on to the host as Administrator. From the command line, change directories to the location of the installer package and type,

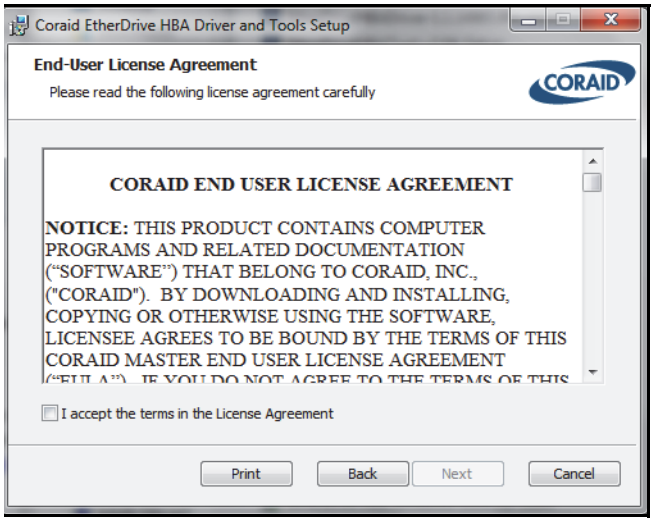
     "msiexec /i <yourpath>\etherdrive-hba-windows-x.x.x-x1-xxbit.msi"

     - Type the password when prompted.

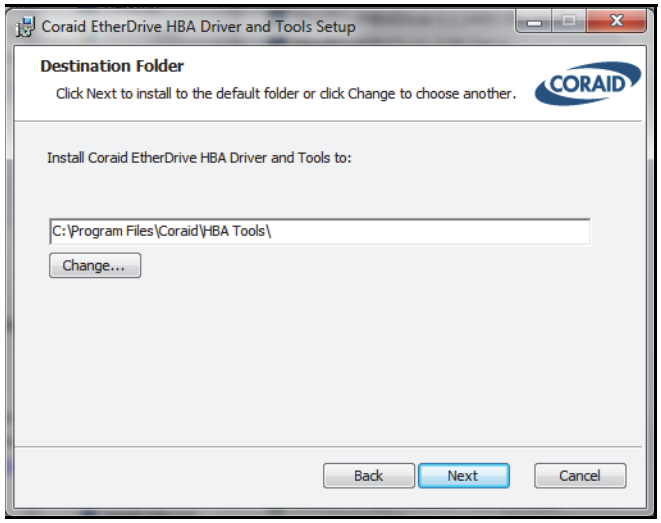
5. **Click Next in the Setup Wizard screen.**



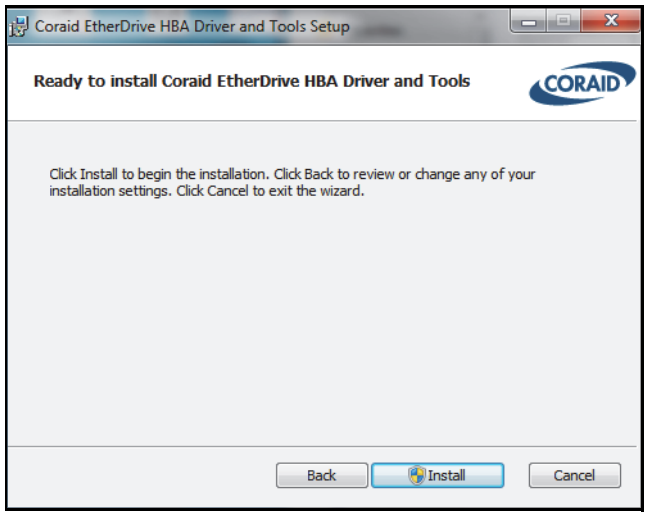
6. **Review and accept the license agreement, then click Next.**



7. **Specify where to install the software, then click Next.**



8. **Click Install to begin the installation.**



9. **If notified that your Windows Server host does not already have the .NET Framework installed, install it. When you are finished, launch the EtherDrive-HBA file to resume installation.**
10. **Click OK at the message "Please attach your device to this computer any time after the installation has finished."**
11. **Click Finish.**
12. **If prompted to do so, restart the host computer.**

    After the Install Wizard is finished, the Windows host detects any connected AoE storage and the Ethernet SAN is available through Windows Disk Management.

Managing Storage from HBA HostView

Note: HBA HostView is not supported in the **Windows Server Core** installation environment. To manage storage on your SAN from a command line interface (CLI) in either the standard Windows Server 2008 installation environment or the Windows Server 2008 Server Core installation environment, see Managing Storage from a Command Line Interface.

HBA HostView allows you to:

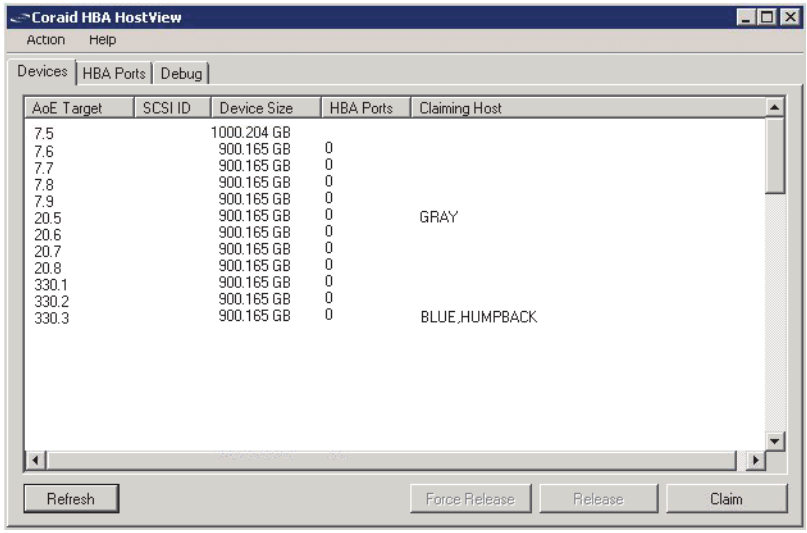
- Claim and release LUNs (see Claiming and releasing devices with HBA HostView).
- View the status of HBA ports (see Viewing the status of HBA ports with HBA HostView).
- Establish a console connection to SR/SRX appliances through the CEC (Coraid Ethernet Console) utility (see Using CEC from HBA HostView).
- Gather debug information useful for working with Coraid Technical Support to resolve any issues (see Viewing and capturing debug information with HBA HostView).
- Copy a CorOS update file to an SR/SRX appliance. After you have copied the file to the SR/SRX, you can process it from the SR/SRX console to update the CorOS (see Copying the CorOS update file to an SR/SRX appliance).
- Access and use Windows Server Disk Management (see Using Windows Disk Management with HBA HostView).

To start HBA HostView

- **From the Windows Start menu, choose HBA HostView.**

  The appearance of the Start menu varies depending on the version of Windows you are using and the number of applications installed on your Windows host. If you do not see HBA HostView on the Start menu, navigate to **All Programs > Coraid > HBA HostView**.

  The HBA HostView screen appears with the Devices tab displayed.



Note: If you do not see the LUN(s) you expect to see in the Devices tab, perform the actions detailed in Frequently Asked Questions.

The Devices tab allows you to see and use available LUNs on your storage devices. The Devices tab also displays the mapping of LUNs-to-SCSI devices, the size of each device, and the HBA port through which each device is connected.

Note: LUN sizes are displayed in base 10 (consistent with the practice of hard drive manufacturers and storage vendors) in the Devices tab. Windows Server Disk Management reports disk sizes in base 2. As a result, the capacity displayed in the Device Size column of HBA HostView may differ from the capacity displayed in Windows Server Disk Management, but the actual capacity of the device is the same.

Claiming and releasing devices with HBA HostView

Before you can use an AoE target (LUN) with your Windows host, you must claim it with HBA HostView. When viewed from HBA HostView running on your host, LUNs claimed by your host appear in the Devices tab with a SCSI ID.

Note: In a non-clustering environment, a claimed LUN can be used only by the host that claimed it. In a clustering environment, a claimed LUN can be used by more than one host (see To claim an already-claimed LUN in a Windows clustering environment).

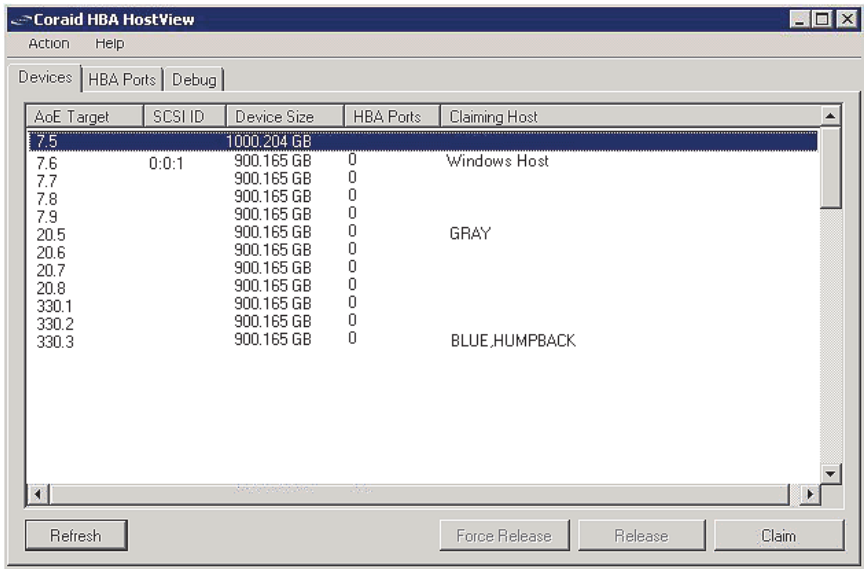
To claim a LUN (AoE Target)

1. **Click the Devices tab.**
2. **Click Refresh to update the AoE Targets column.**

   Refresh clears from the Devices tab LUNs that have been removed and/or placed offline. For best results, wait a few minutes after removing or offlining a LUN before clicking Refresh to update the Devices tab.

3. **Select the LUN (AoE Target) you want to claim.**

   Shift-click or Control-click to select multiple LUNs.

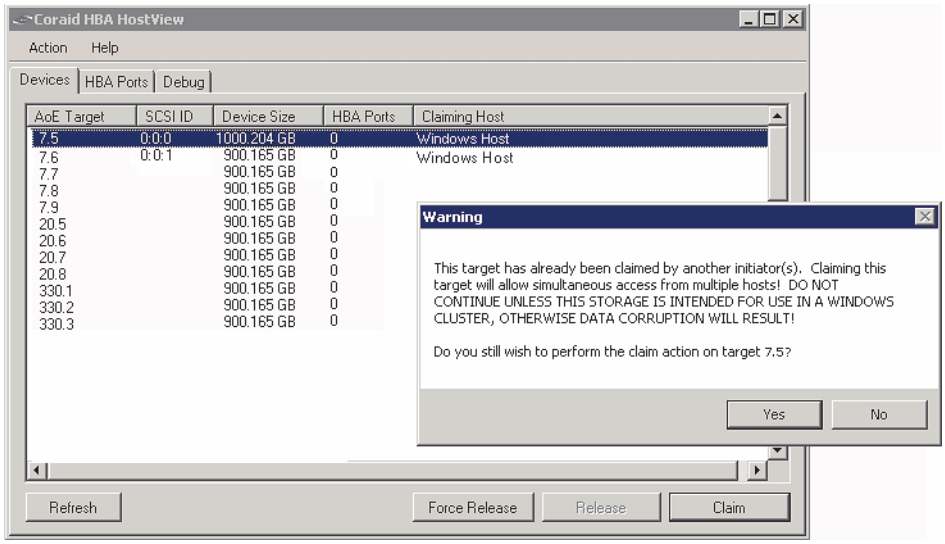


4. **Click the Claim button.**
5. **If an initialization wizard launches, follow the on-screen prompts. For detailed instructions, see Windows Help documentation.**

To claim an already-claimed LUN in a Windows clustering environment

The Ethernet SAN and EtherDrive HBA support Windows Clustering technology (persistent reserve/release) which allows multiple hosts to share a single storage resource.

1. **Click the Devices tab.**
2. **Select the claimed LUN you want to share with the other claiming host.**
3. **Click the Claim button.**



Note: You cannot Shift-click or Control-click to select and claim multiple claimed LUNs simultaneously.

To release a claim on a LUN held by the current host

1. **In HBA HostView, click the Devices tab.**
2. **Click to select the LUN (AoE Target) you want to release.**

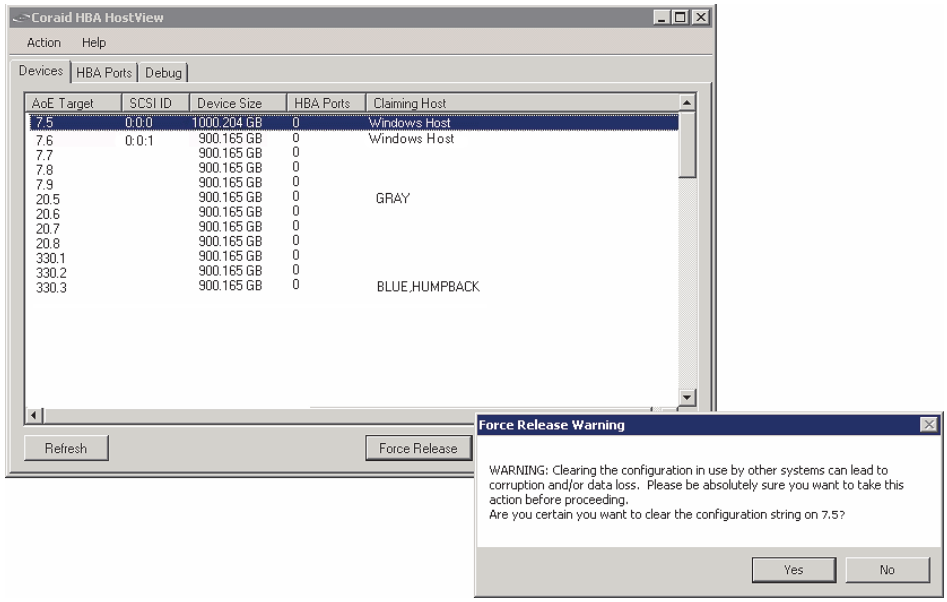
   Shift-click or control-click to select multiple LUNs.
3. **Click the Release button.**

To release a claim on a LUN held by another host

1. **Click the Devices tab.**
2. **Click to select the LUN (AoE Target) you want to release.**

   Shift-click or Control-click to select multiple LUNs.
3. **Click the Force Release button.**

   Use Force Release with caution as it may cause data loss or corruption.



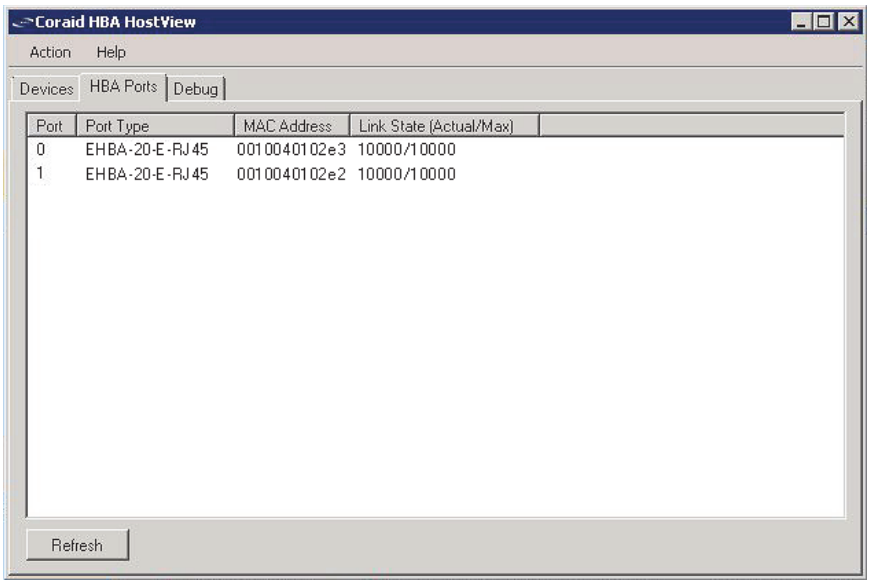
4. **Click Yes in the warning message to verify that you want to release the device.**

Viewing the status of HBA ports with HBA HostView

The HBA Ports tab provides information about your ports.

To view the status of HBA ports

1. **Click the HBA Ports tab.**



For each port, the HBA Ports tab lists the port number, port type, MAC addresses, and current routing performance.

Your Coraid HBA features one of the following types of ports:

Port Type	Bus	Interface
EHBA-2-E-RJ45	1GbE PCIe	RJ45
EHBA-20-E-RJ45	10GbE PCIe	RJ45
EHBA-20-E-CX4	10GbE PCIe	CX4
EHBA-20-E-SFP	10GbE PCIe	SFP+

The Link State (Actual/Max) displays the current and maximum link speed for each port. If the speed is 0, the Ethernet cable may be missing, disconnected, or faulty, or the port may be down.

2. **Click Refresh to update the port information.**

Using CEC from HBA HostView

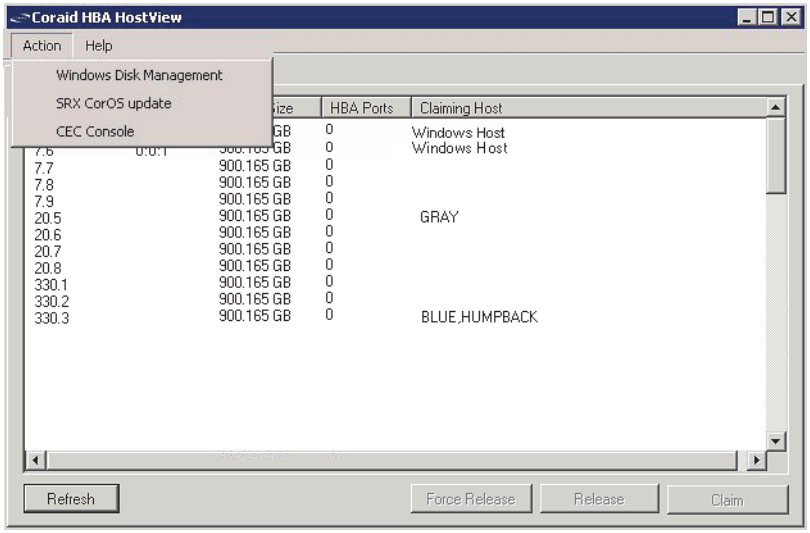
You can launch the CEC (Coraid Ethernet Console) utility from HBA HostView and establish a console connection to SR/SRX appliances. You can then issue commands from the host to SR/SRX appliances as though you are connected directly to the SR/SRX console. SR/SRX commands are detailed in the *Coraid EtherDrive SR/SRX Administration Guide*.

By factory default, current SR/SRXs provide the CEC connection through onboard RJ-45 ports ether0 and ether1. You can display and manage the SR/SRX CEC port configuration by issuing the commands **`cecon`** and **`cecoff`**. CEC configuration persists across reboot.

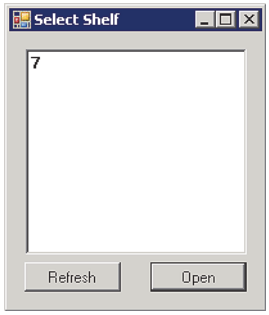
CEC does not include any security or encryption mechanisms. Also, depending on your network configuration, be aware that enabling CEC and failing to logout may leave your system insecure. As with AoE, the appliance is only as secure as your network.

To access CEC from HBA HostView

1. **Click the Action menu and choose CEC Console.**

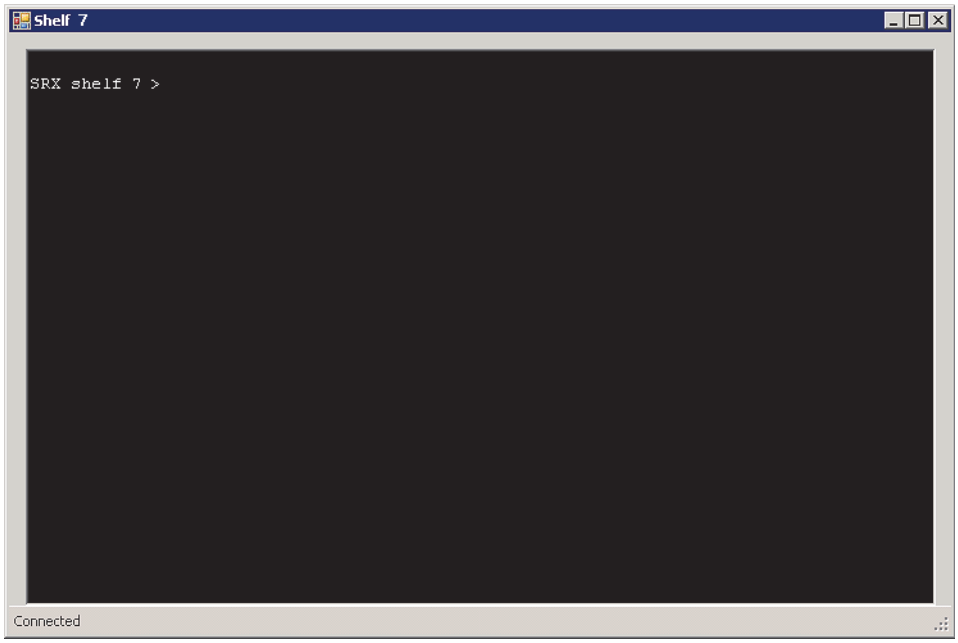


2. **In the Select Shelf box, click Refresh to update the list of SR/SRXs.**



3. **Select a shelf and then click Open.**

   Press Enter a few times until the prompt displays.



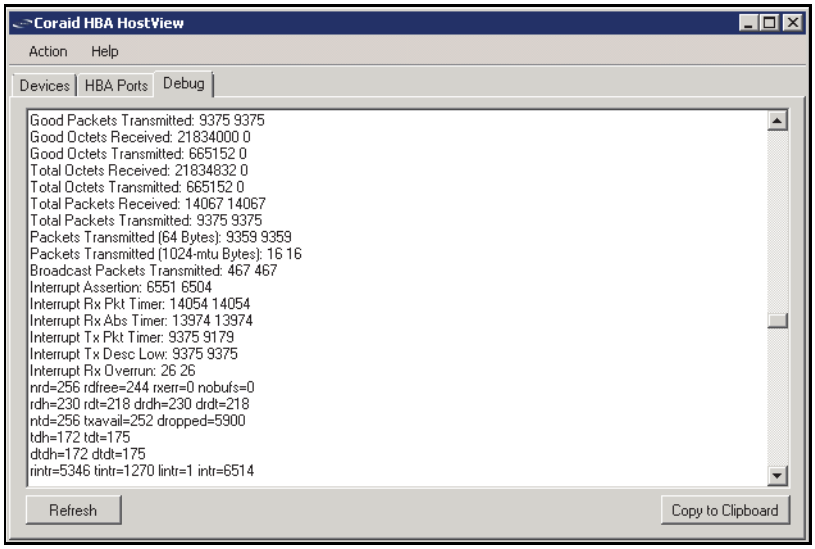
4. **To exit the CEC terminal, click the X in the upper left-hand corner of the window.**

Viewing and capturing debug information with HBA HostView

The Debug tab displays debug information you can use or share with Coraid Support.

To view and capture debug information

1. **Click the Debug tab.**



2. **Click the Refresh button to display the most current information.**
3. **Click the Copy to Clipboard button to copy the complete contents of the Debug tab to your clipboard.**
4. **Paste the debug information into an email message to Coraid Support.**

Copying the CorOS update file to an SR/SRX appliance

CorOS (Coraid Operating System) is an integral part of the Coraid hardware storage solution. All Coraid Ethernet SAN appliances must use the latest CorOS version.

HBA HostView allows you to copy a CorOS update file to a pre-existing update LUN on an SR/SRX appliance. After the update file is staged to the update LUN, it must be processed from the SR/SRX console in order to update the CorOS on the appliance. For instructions, see the *Coraid EtherDrive SR/SRX Administration Guide*.

Note: Before updating the CorOS, you should restrict access to the storage appliance or quiesce the application(s) interacting with the appliance. To ensure that the update is completed without data loss, no writes should be performed to the appliance during the update.

To copy the CorOS software update file to the SR/SRX update LUN

1. **Make sure there is an update LUN on the SR/SRX appliance.**

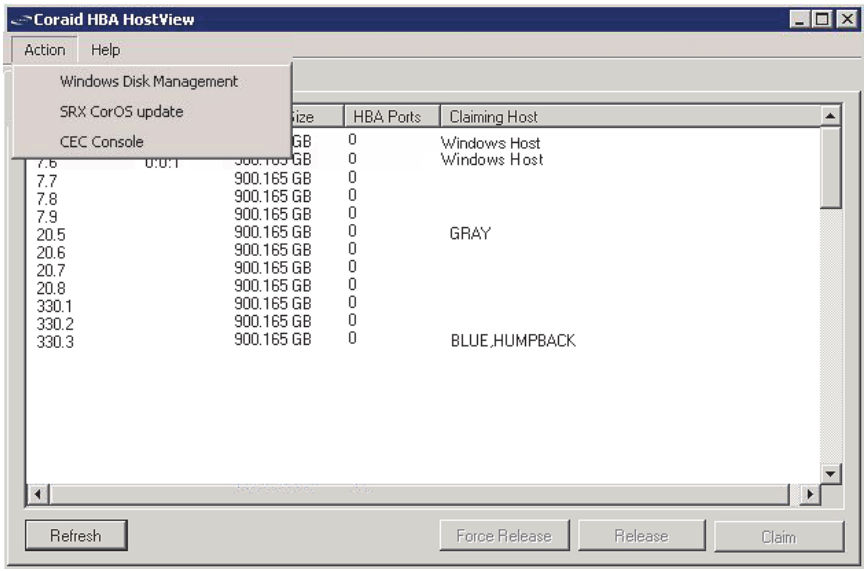
   The update LUN must already exist on the SR/SRX appliance before you can copy the update file to it. (For a description of the update LUN, see step 6 of this procedure. For instructions on creating the update LUN on an SR/SRX, see the *Coraid EtherDrive SR/SRX Administration Guide*.)

2. **Contact Coraid Technical Support for CorOS version information. Be prepared to provide the output of the `sos` command from your SR/SRX appliance.**

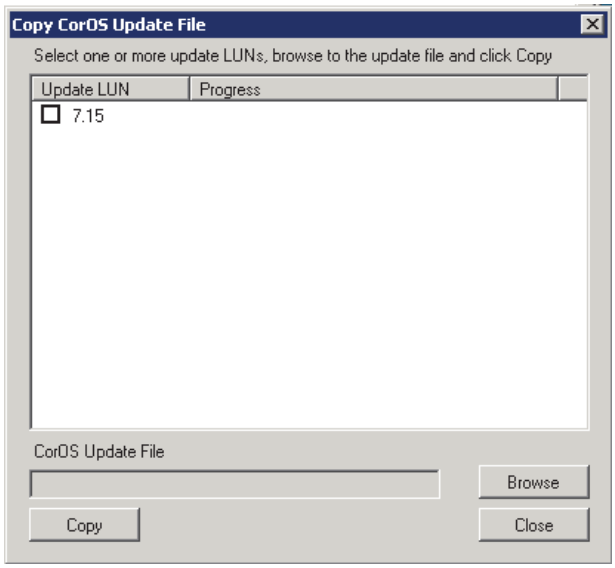
3. **Transfer the appropriate CorOS software update file to your Windows Server host.**

4. **Launch HBA HostView.**

5. **Click the Action menu and choose SRX CorOS Update.**



6. **In the Update LUN column, click the box next to the update LUN(s) on which you want to install the CorOS update.**



The update LUN(s) is a small (approximately 40MB) RAM-based LUN that is created from an ESM appliance (if present), or the SR/SRX console using the `make` command. When you choose SRX CorOS Update from the Action menu, the Coraid HBA HostView Tool looks for and then displays all LUNs on the SAN smaller than a certain size. Because there may be other small LUNs on your SAN in addition to the update LUN(s), make sure you know the shelf and LUN ID(s) of the update LUN(s) before you copy the update file to it. If you copy the update file to a wrong LUN, you may destroy data on that LUN.

7. **Click Browse.**
8. **Navigate to the CorOS update file that you transferred in step 3, select the file, then click Open.**
9. **Click Copy.**
10. **After you are notified that the file was successfully copied to the SR/SRX LUN appliance(s), process the CorOS update file from the SR/SRX console.**

    For instructions, see the *Coraid EtherDrive SR/SRX Administration Guide.*

Using Windows Disk Management with HBA HostView

Windows Disk Management allows you to view information (drive letter, label, size, type, and file system) about the volumes attached to your host. You can evaluate the information about the disk size and location to determine which disk shown in Windows Disk Management corresponds to an AoE LUN in HBA HostView.

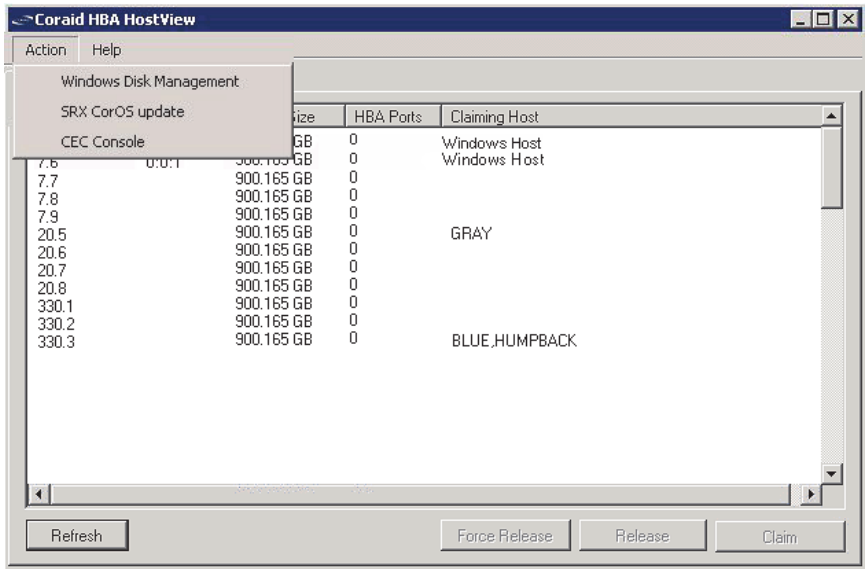
After you have determined which disk corresponds to an AoE LUN, you can use Windows Disk Management to add descriptive text to the EtherDrive HBA volumes attached to your host. For instructions, see To add descriptive text to an EtherDrive HBA volume.

For information about managing storage with Windows Disk Management, see the Windows Disk Management online help.

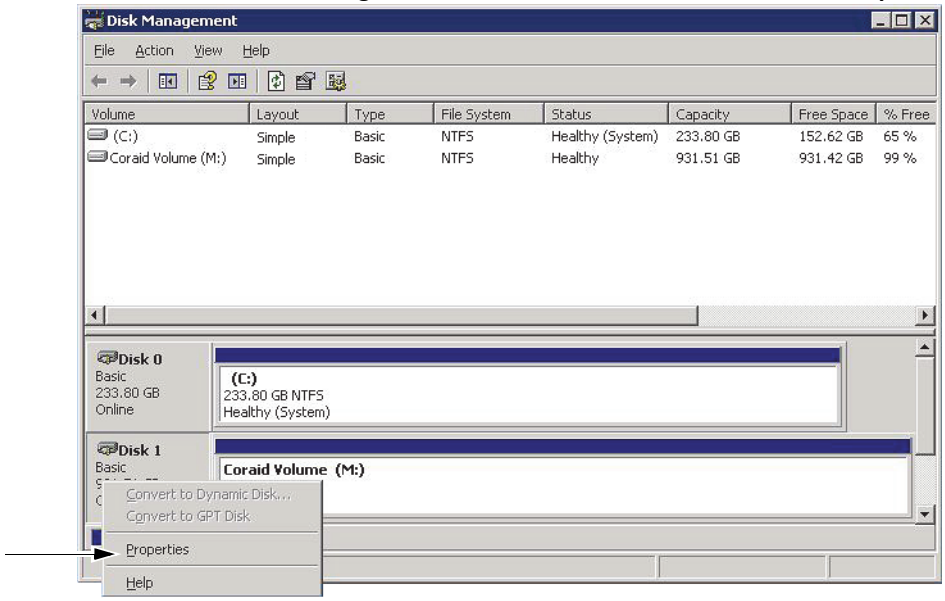
Note: In Windows Server 2008, shared storage is offline in the Disk Manager by default in order to prevent hosts from accessing storage that could be in use by another host. To change the status of a disk to Online or Offline, right-click the disk name and select the appropriate action.

To view disk information in Windows Disk Management

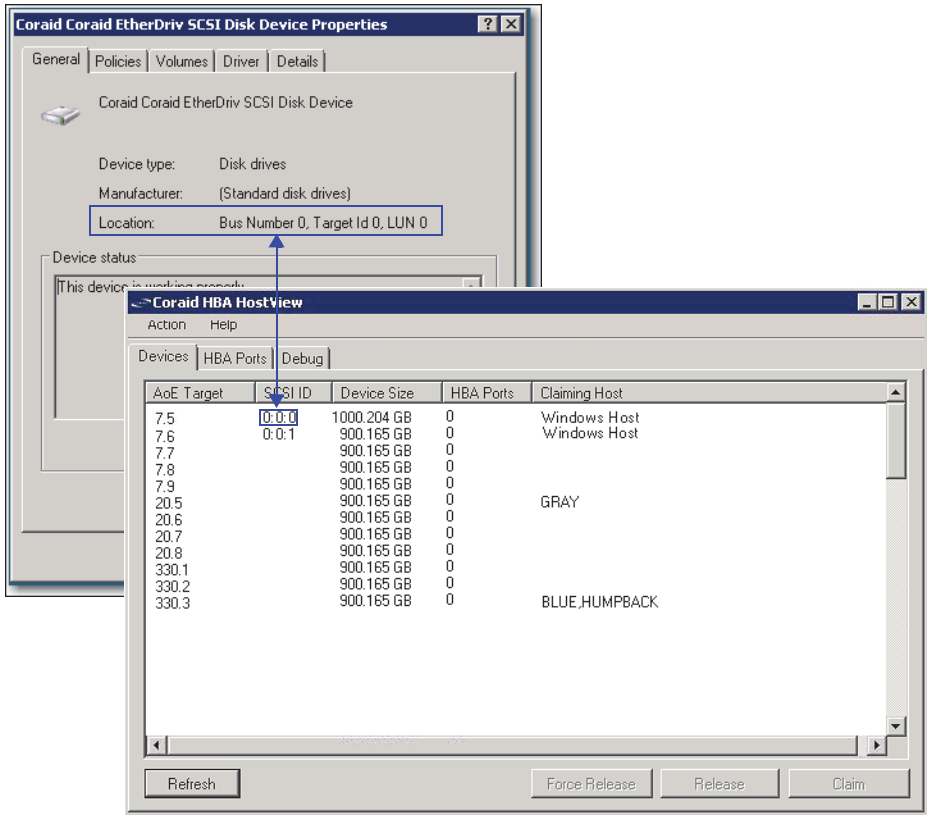
1. **From the Action menu of HBA HostView, choose Windows Disk Management.**



2. **In the lower portion of the Disk Management window, right-click the box representing a disk that has been configured as a Coraid Volume, and then choose Properties.**



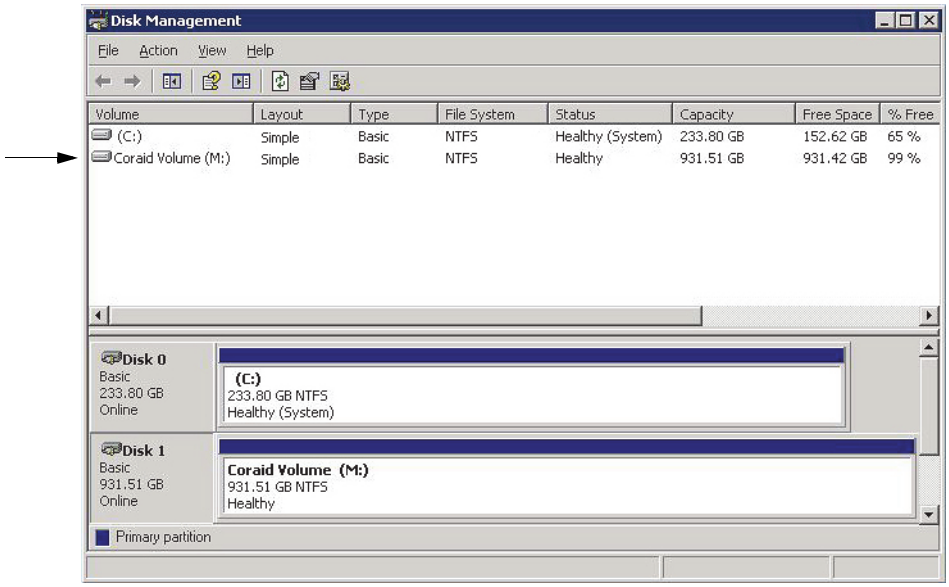
3. **In the General tab, match the Location information to the SCSI ID shown in the Devices tab of HBA HostView.**



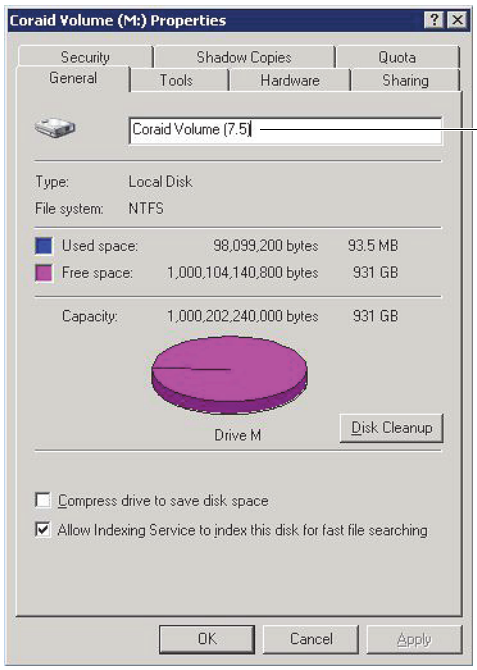
To add descriptive text to an EtherDrive HBA volume

Consider adding the shelf.lun address of the Coraid-configured volume to the volume label (see step 3 below). The volume label is visible in Windows Explorer and other places where disks are listed. Adding the shelf.lun address to a volume label makes it easy to see that a particular LUN displayed in Windows Disk Management is the same as a particular LUN displayed in HBA HostView

1. **From the Action menu of HBA HostView, choose Windows Disk Management.**
2. **In the upper portion of the Disk Management window, right-click the box representing a disk that has been configured as a Coraid Volume, and then choose Properties.**



3. **Add descriptive text to the volume label and click Apply.**



7.5 (shelf.lun) added to the volume label

4. **When you have finished, click OK.**

Managing Storage from a Command Line Interface

This section describes the commands provided by the **ethdrvadm** command line interface utility bundled with the EtherDrive HBA driver. The **ethdrvadm** utility works with standard and Server Core Windows installation options (and is mandatory in Server Core installations).

Note: For details about the GUI-based HBA HostView tool that supports standard Microsoft Windows Server 2008 installations, see Managing Storage from HBA HostView.

Before you can use the **ethdrvadm** utility to manage storage on the SAN, the following tasks must be completed:

- The EtherDrive Storage appliance is configured with at least one LUN.
- An EtherDrive HBA card(s) is installed in the host.
- The EtherDrive HBA is connected to a supported Ethernet switch or directly to an SR/SRX appliance.
- The current EtherDrive HBA driver is installed on the Windows host and the host has been rebooted (if a reboot is necessary; see To install the EtherDrive HBA driver and HBA HostView on your Windows host).

Commands

The **ethdrvadm** utility provides the following commands:

ethdrvadm list

ethdrvadm list-devices

ethdrvadm list-ports

ethdrvadm claim

ethdrvadm release

ethdrvadm flush

ethdrvadm sos

Command usage includes the following conventions:

- **[/a]**—Displays more detailed information.
- **[/?]**— Displays usage information.
- **shelf.lun**— Use with **claim** and **release** to specify the particular LUN.
- **[/force]**— If necessary, append **/force** to **ethdrvadm release** to force the EtherDrive HBA to release a LUN.

Note: Data loss may result! The **/force** argument forces the host to release the LUN without first flushing cached data to disk.

ethdrvadm list

The **ethdrvadm list** command displays information about all the LUNs on the SAN that are visible to the EtherDrive HBA.

```
Usage: ethdrvadm list [/a] [?]
```

For example:

```
ethdrvadm list
DEVICE       TARGET       SIZE         PORTS       CLAIMING HOST
0:0:0        7.5          1000.204GB   0           Windows Host
0:0:1        7.6          900.165GB    0           Windows Host
-            20.5         900.165GB    0           GRAY
-            20.6         900.165GB    0
-            20.7         900.165GB    0
-            20.8         900.165GB    0
```

Appending **/a** displays more detailed information.

For example:

```
ethdrvadm list /a
DEVICE       TARGET       SIZE/        PORTS/      CLAIMING HOST
                          PORT         ADDRESS
0:0:0        7.5          1000.204GB   0           Windows Host
                          0      00304800000a
0:0:1        7.6          900.165GB0               Windows Host
                          0      00304800000a
-            20.5         900.165GB    0           GRAY
                          0      00259008a811
-            20.6         900.165GB    0
                          0      00259008a811
-            20.7         900.165GB    0
                          0      00259008a811
-            20.8         900.165GB    0
                          0      00259008a811
```

ethdrvadm list-devices

The `ethdrvadm list-devices` command displays information about the LUNs claimed by the EtherDrive HBA installed in your Windows host.

```
Usage: ethdrvadm list-devices [/a] [?]
```

For example:

```
ethdrvadm list-devices
DEVICE       TARGET       SIZE         PORT
0:0:0        7.5          1000.204GB   0
0:0:1        7.6          900.165GB    0
```

Appending `/a` displays more detailed information.

For example:

```
ethdrvadm list-devices /a
DEVICE       TARGET/      SIZE/               PORT
             PORT         ADDRESS
0:0:0        7.5          1000.204GB          0
             0            00304800000a
0:0:1        7.6          900.165GB           0
             0            00304800000a
```

ethdrvadm list-ports

The `ethdrvadm list-ports` command displays information about attached ports.

```
Usage: ethdrvadm list-ports [?]
```

For example:

```
ethdrvadm list-ports
PORT   MODEL              ADDRESS             SPEED
0      EHBA-20-E-RJ45     0010040102e3        10000/10000
1      EHBA-20-E-RJ45     0010040102e2        10000/10000
```

The `SPEED` column displays the current and maximum link speed (in that order) for each port. If the speed is 0, the Ethernet cable may be missing, disconnected, or faulty, or the port may be down.

ethdrvadm claim

Issue `ethdrvadm claim` to claim a LUN.

```
Usage: ethdrvadm claim shelf.lun
```

For example:

```
ethdrvadm claim 7.5
Claim operation succeeded
```

ethdrvadm release

The **ethdrvadm release** command releases the EtherDrive HBA's claim to the specified LUN. A successful release operation unmounts the disk, flushes uncached data to disk, and then releases the LUN.

```
Usage: ethdrvadm claim [/force] shelf.lun
```

For example:

```
ethdrvadm release 7.5
Release operation succeeded
```

For example:

```
ethdrvadm release /force 7.5
Force release request sent
```

Appending **/force** forces the EtherDrive HBA to release the LUN.

Note: Data loss may result! The **/force** argument forces the host to release the LUN without first flushing cached data to disk.

ethdrvadm flush

The **ethdrvadm flush** command refreshes the output of **ethdrvadm list** and **ethdrvadm list-devices** command to remove targets that are no longer present on the SAN.

ethdrvadm sos

The **ethdrvadm sos** command displays diagnostic information that you can send to the Coraid Technical Assistance Center. For the quickest solution to your problem, include the **ethdrvadm sos** output with your initial contact to the Coraid Technical Assistance Center.

Note: The **ethdrvadm sos** command only displays information regarding configuration and status of this Windows host. It does not include any information about the data stored on the SAN.

Frequently Asked Questions

Question: The Coraid EtherDrive HBA looks like a standard Network Interface Card (NIC). Can I use the Coraid EtherDrive HBA for IP traffic?

Answer: No. The Coraid EtherDrive HBA is a dedicated storage device. Dedication allows the EtherDrive HBA to process storage commands at an exceptionally fast rate.

Question: What do I have to configure to use Multipath?

Answer: Nothing! The Coraid EtherDrive HBA driver automatically handles Multipath for all of the available EtherDrive HBA ports. Even if a single host has two EtherDrive HBA cards, the EtherDrive HBA driver automatically uses the ports on both devices.

Question: I understand that I need a Coraid EtherDrive HBA for my host in order to utilize my Ethernet SAN appliances. Do I also need an EtherDrive HBA for each of my Ethernet SAN appliances?

Answer: No. Only one Coraid EtherDrive HBA is required for each host. One EtherDrive HBA can communicate with any EtherDrive SAN appliance running a compatible version of the CorOS. You can add additional EtherDrive HBAs to your host if you have unusual security or bandwidth requirements or if your storage exceeds the limitations of your operating system.

Question: Why don't I see the LUN(s) that I expect to see when I launch HBA HostView?

Answer: If the LUNs you expect to see do not appear in the Devices tab of HBA HostView, do the following:

- Make sure that one or more SR/SRX LUNs are present and online on the Ethernet SAN.
- Make sure you have clicked the Refresh button in HBA HostView, or issued the **`ethdrvadm flush`** command from a command line interface.
- Make sure that hibernation mode is disabled on the Windows host.
- Make sure the CorOS running on your EtherDrive SAN appliances is compatible with the version of the EtherDrive HBA driver installed in your host.
- Make sure that all cables are routed correctly throughout the SAN and only Cat 6 cables are used for AoE traffic.
- Make sure the switch (if any) to which your host is connected supports flow control (IEEE 802.3) and jumbo frames with an MTU (Maximum Transmission Unit) size of 9000 or greater and is configured to operate at the proper link speed.
- Make sure the Coraid EtherDrive HBA is correctly seated in a PCI Express (PCIe®) slot in the host.

Coraid Policy Statements, Warranty and EULA

Technical support

Do you have more questions? See the Coraid Support web site:

http://www.coraid.com/support/

Contact the Coraid Technical Assistance Center at:

support@coraid.com

To help the Technical Assistance Center diagnose your problem, send diagnostic output along with a description of your problem. To obtain diagnostic output, issue the **sos** command.

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Coraid’s sole obligation shall be to repair or replace the defective Hardware during the Warranty Period at no charge to the original owner or to refund at Coraid’s sole discretion. Such repair or replacement will be rendered by Coraid at Coraid’s Service Center. The replacement Hardware need not be new nor have an identical make, model or part. Coraid may in its sole discretion replace the defective Hardware (or any part thereof) with any reconditioned product that Coraid reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. Repaired or replacement Hardware will be warranted for the remainder of the original Warranty Period from the date of original Product purchase from Coraid or its authorized reseller.

Submitting a claim

The customer shall obtain a Return Material Authorization ("RMA") number from Coraid service center and return the Product to Coraid. The customer must submit with the Product as part of the claim a written description of the hardware defect or Software nonconformance in sufficient detail to allow Coraid to confirm the same.

After an RMA number has been issued by Coraid, the defective Product must be packaged securely in suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. The customer is responsible for all return shipping charges to Coraid, and Coraid will not be held responsible for any packages that are lost in transit to Coraid.

Return Product ship to address is: Coraid Inc. 2393 Pendley Rd, Suite 200, Cumming, Georgia 30041

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Additional Safety Information

WARNING: Read the installation instructions before connecting the system to the power source.

ATTENTION: Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

WARNUNG: Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

Lithium battery notice for service personnel

This product contains a lithium battery. Although the battery is not field-serviceable, observe the following warning:

CAUTION: Danger of explosion if battery is replaced with incorrect type. Replace only with the same type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

ATTENTION: II y a danger d'explosion s'il a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un type equivalent recommande par le constructeur. Mettre au rebut les batteries usagees conformement aux instructions du fabricant.

WARNUNG: Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Dual power supply notice

WARNING: This unit has more than one power supply connection; all connections must be removed to remove all power from the unit.

WARNUNG: Diese Einheit verfügt über mehr als einen Stromanschluß; um Strom gänzlich von der Einheit fernzuhalten, müssen alle Stromzufuhren abgetrennt sein.

ATTENTION: Cette unité est équipée de plusieurs raccordements d'alimentation. Pour supprimer tout courant électrique de l'unité, tous les cordons d'alimentation doivent être débranchés.

WARNING: This product relies on the building's installation for shortcircuit (over current) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15 A U.S. (240 VAC, 10 A international) is used on the phase conductors (all current carrying conductors).

ATTENTION: Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifier qu'un fusible ou qu'un disjoncteur de 120 V alt., 15 A U.S. maximum (240 V alt., 10 A international) est utilisé sur les conducteurs de phase (conducteurs de charge).

WARNUNG: Dieses Produkt ist darauf angewiesen, daß im Gebäude ein Kurzschluß- bzw. Überstromschutz installiert ist. Stellen Sie sicher, daß eine Sicherung oder ein Unterbrecher von nicht mehr als 240 V Wechselstrom, 10 A (bzw. in den USA 120 V Wechselstrom, 15 A) an den Phasenleitern (allen stromführenden Leitern) verwendet wird.

Laser warning

WARNING: Class 1 Laser product.

ATTENTION: Produit laser de classe 1

WARNUNG: Laserprodukt der Klasse 1

EtherDrive equipment is intended for installation in restricted access areas.

Mounting the unit

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. These guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

ATTENTION: Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel.

- Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas.
- Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas.
- Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.

WARNUNG: Zur Vermeidung von Körperverletzung beim Anbringen oder Warten dieser Einheit in einem

Gestell müssen Sie besondere Vorkehrungen treffen, um sicherzustellen, daß das System stabil bleibt. Die folgenden Richtlinien sollen zur Gewährleistung Ihrer Sicherheit dienen:

- Wenn diese Einheit die einzige im Gestell ist, sollte sie unten im Gestell angebracht werden.
- Bei Anbringung dieser Einheit in einem zum Teil gefüllten Gestell ist das Gestell von unten nach oben zu laden, wobei das schwerste Bauteil unten im Gestell anzubringen ist.
- Wird das Gestell mit Stabilisierungszubehör geliefert, sind zuerst die Stabilisatoren zu installieren, bevor Sie die Einheit im Gestell anbringen oder sie warten.

Regulatory certifications

United States FCC statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canada compliance statement (Industry Canada)

This Class [A] digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe [A] respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

Safety standards

- UL 60950-1: 2007
- CAN/CSA C22.2 No. 60950-1-07
- EN60950-1: 2006 +A11: 2009
- Emissions Standards: FCC Part 15B Class A
- EN 55022: 2006 plus A1:2007
- EN 61000-3-2: 2006
- EN 61000-3-3: 2008
- EN 55024: 1998 plus A1:2001 & A2:2003
- Australian/New Zealand Standard AS/NZS CISPR 22: 2009

European Union (CE) Statement

This product is in conformity with the essential requirements of the following EU directives:

- 2004/108/EC--- Electromagnetic Compatibility Directive (EMC)
- 2006/95/EC---- Low Voltage Directive (LVD)