

Coraid® EtherDrive® HBA
for VMware® vSphere™ (ESXi 5.0)

Administration Guide



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Coraid, Incorporated
255 Shoreline Drive, Suite 650
Redwood City, California, 94065
United States of America

Phone: +1-650-517-9300
+1-877-548-7200

Fax: 1-650-226-3788

Web: <http://www.coraid.com>

Email: support@coraid.com

Introduction

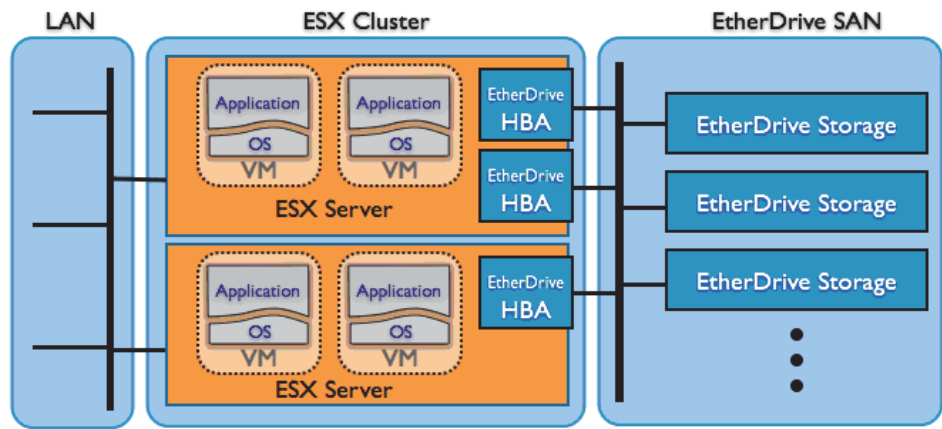
Thank you for purchasing a Coraid® EtherDrive® Host Bus Adapter (HBA).

This guide explains how to install and configure your EtherDrive HBA to work with the VMware vSphere™ infrastructure on an ESXi™ Server 5.0 host.

For information about the EtherDrive HBA for ESX(i) 4.x, see the *Coraid EtherDrive HBA for VMWare vSphere (ESX/ESXi) Administration Guide* (September 2011).

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

The EtherDrive SAN is comprised of one or more LUNs providing shared storage. The EtherDrive HBA is installed in the host and presents the LUNs as SCSI disks. 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 EtherDrive SAN storage with your host, one or more Coraid EtherDrive HBA cards must be installed. The EtherDrive HBA's two network ports are dedicated specifically for communication with Coraid EtherDrive SAN storage appliances. At least one port from the EtherDrive HBA must be connected to the SAN where the EtherDrive SAN storage is located.

Overview of Installation

To install your EtherDrive HBA:

- Configure the Coraid EtherDrive SAN storage with at least one LUN. See the *Coraid EtherDrive SR/SRX Administration Guide* or the *Coraid EtherDrive VSX Administration Guide* for instructions.
- Install the Coraid EtherDrive HBA Driver as described in [Installing the EtherDrive HBA Driver](#).
- Connect the EtherDrive HBA and EtherDrive SAN with high-quality cables.
- Reboot your ESXi host.
- Complete your storage configuration.

Requirements

- One or more LUNs must be present and online on the EtherDrive SAN.
- The EtherDrive HBA should only be used in conjunction with Coraid EtherDrive SAN storage appliances.
- The EtherDrive HBA requires an HBA Driver. Install it as described in [Installing the EtherDrive HBA Driver](#).
- Because the AoE protocol is not routable, the EtherDrive HBA and the EtherDrive SAN storage must be connected to the same network broadcast domain.
- The EtherDrive HBA requires a PCI Express (PCIe®) slot in the host and does not support PCI-X slots.
- To upgrade an ESX 3.5 host to ESXi 5.0, you must first upgrade it to ESX 4.1
- 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-CX4-2 x 10GbE CX4
 - EtherDrive EHBA-20-E-SFP-2 x 10GbE SFP+
 - EtherDrive EHBA-20-E-RJ45-2 x 10GbE 10GBASE-T
- The EtherDrive HBA must be connected to a network switch that supports flow control (IEEE 802.3) and jumbo frames with an MTU (Maximum Transmission Unit) size of 9000 or greater.

Note: To dedicate your SAN exclusively for storage, isolate the SAN from other network traffic.

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 EtherDrive SAN.
CorOS	Operating system software that is embedded into—and distributed as an integral part of—the Coraid hardware storage solution.
HBA (Host Bus Adapter)	An HBA is used to connect a host system to network storage. Coraid offers a range of HBAs with support for a variety of operating systems. For more information see www.coraid.com .
Host	The computer accessing the storage over the EtherDrive SAN.
LUN (Logical Unit Number)	<p>A LUN is 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. LUNs can be disk drives, disk partitions, or a RAID.</p> <p>The terms “AoE target,” “LUN,” “device,” and “disk” are used interchangeably in this document.</p>
VM (Virtual Machine)	A collection of virtual hardware that collectively presents a physical machine for a guest operating system.

EtherDrive SAN Configuration

Before you can communicate with the EtherDrive SAN through your EtherDrive HBA, you must create and place online one or more EtherDrive LUNs. For details, see the *Coraid EtherDrive SR/SRX Administration Guide* and the *Coraid EtherDrive SAN Manager Administration Guide*.

Note: RAID performance is suboptimal while the RAID on the LUN is initializing. For optimal performance, wait until the RAID has finished initializing before using it.

Multipath communication

Every EtherDrive HBA has two ports. It is recommended that each port be connected to the SAN network. Having two connections to the SAN offers two advantages: network redundancy and higher bandwidth capacity. A higher level of redundancy is achieved when the two ports of the EtherDrive HBA are connected to separate switches. Furthermore, more than one EtherDrive HBA may be installed in your host; multiple HBAs offer further redundancy and throughput.

Multipath communication is built into the EtherDrive HBA driver and requires no configuration. The EtherDrive HBA automatically detects all network paths to EtherDrive SAN storage and uses each path to load balance all data packets bound for EtherDrive SAN storage.

Installing an EtherDrive HBA Card

To use Coraid's EtherDrive SAN, install one or more EtherDrive HBA cards in the host. After the EtherDrive HBA is installed, install the EtherDrive HBA Driver as described in [Installing the EtherDrive HBA Driver](#).

To install the HBA card

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.**

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

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 EtherDrive HBA, make sure you remove and replace the locking pin on each port carefully. Push the pin on 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 on the host 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 EtherDrive SAN is located. You can also connect directly to the ports on the storage appliance.

9. **Power on the host.**

Installing the EtherDrive HBA Driver

After you install the EtherDrive HBA card in the host, install the HBA Driver. The host will not recognize the EtherDrive HBA until the HBA Driver software has been installed.

In these instructions, the version and release numbers in the file names are replaced by **XXX**. Substitute the name of the package you download when installing your driver. If you are not familiar with the scp utility used in the example, you can use a different download utility, browser, or copy tool.

Note: You must have access permissions as a superuser (root) to perform this installation.

To install the EtherDrive HBA Driver

1. Make sure that Secure Shell (ssh) is enabled on the ESXi host.

For instructions, see [Appendix B: Enabling Secure Shell \(ssh\)](#).

2. Download the appropriate EtherDrive HBA Driver from:

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

Note: Make sure to download the correct driver for your version of ESXi server. Coraid EtherDrive HBA supports ESXi 5.0 in addition to earlier versions of ESX and ESXi.

3. Securely copy the EtherDrive HBA driver to your ESXi host.

For example:

```
scp etherdrive-esxi5-XXX.zip root@esx_ip_address:
```



Note: Make sure not to omit the colon (:) at the end of the above string.

4. Launch the vSphere CLI on your Linux or Windows server.

5. From SSH on your ESXi host, install your EtherDrive HBA driver.

- If you are logged in to the ESXi host directly, enter:

```
esxcli software vib install -d file:///etherdrive-esxi5-XXX.zip
```

- If you are using the vSphere CLI, enter:

```
esxcli -u root -s hostname software vib install -d file:///etherdrive-esxi5-XXX.zip
```

6. Reboot your ESXi host.

IMPORTANT: EtherDrive LUNs (AoE targets) must be claimed before they can be used by an ESXi host. For details, see [Claiming EtherDrive LUNs](#).

Claiming EtherDrive LUNs

Before you can use AoE targets (LUNs) with your host, you must claim them by issuing the appropriate command through the VMware vSphere 5 **esxcli** command line utility. The ESXi HBA driver only presents LUNs that have been claimed by an ESXi host.

Note: Once a LUN is claimed by an ESXi host, it is visible to all other ESX(i) hosts on the SAN through the **esxcli** command line utility and the vSphere Client Configuration tab: **Storage** and **Storage Adapters**.

- To claim an ESXi 5.0 LUN, see [esxcli ethdrv claim](#).
- To claim an ESX(i) 4.x (or earlier) LUN (legacy), see [Claiming an ESX 4.x legacy LUN in ESXi 5.0](#).

Using vSphere Client to manage your EtherDrive HBA

After you install the EtherDrive HBA and HBA Driver, you can use vSphere Client to manage your locally attached storage as you would any other standard storage.

You can use VSphere Client:

- [To recognize the EtherDrive HBA as a storage adapter using vSphere Client](#)
- [To rename an EtherDrive LUN](#)
- [To set up a volume](#)
- [To rename a datastore](#)

For information about using vSphere and VMware features, see the VMware documentation.

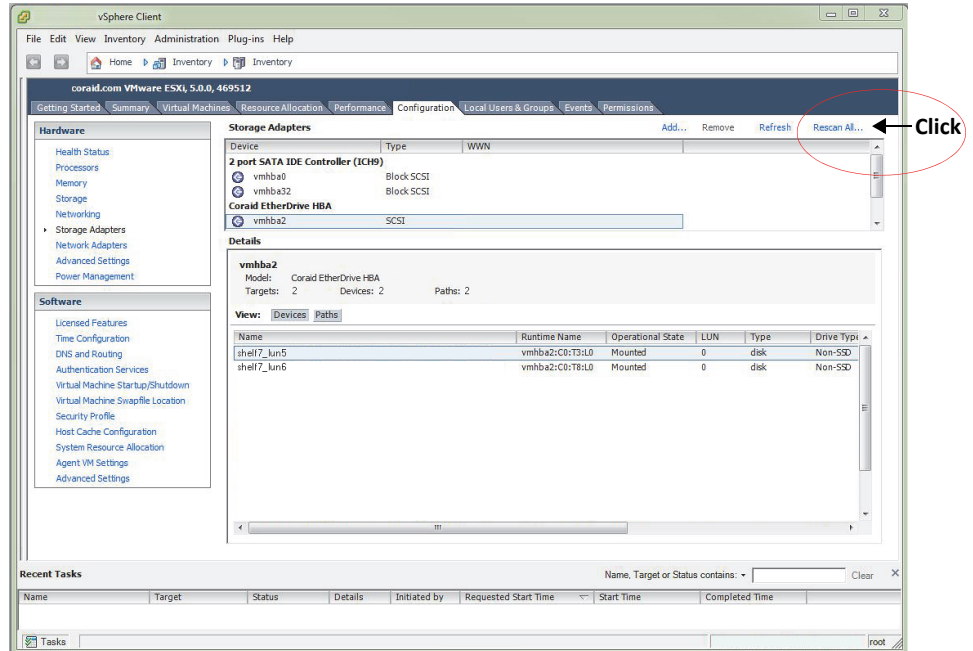
Recognizing the EtherDrive HBA as a storage adapter

Use the vSphere Client Rescan feature to recognize an EtherDrive HBA.

To recognize the EtherDrive HBA as a storage adapter using vSphere Client

1. **Launch vSphere Client.**
2. **Click the Configuration tab.**
3. **Under Hardware, click Storage Adapters.**
4. **Click Rescan All.**

5. In the Rescan dialog box, select a type of scan and then click OK.



The EtherDrive HBA appears in the list of available storage adapters. The available EtherDrive LUNs are listed in the Details section.

Note: Only claimed EtherDrive LUNs are listed. For more information, see [Claiming EtherDrive LUNs](#).

Renaming an EtherDrive LUN

vSphere assigns a name to each LUN available to the ESXi server. You can change the vSphere-assigned LUN names to reflect EtherDrive `shelf.slot` names. Renaming the LUNs helps you determine the best placement of virtual machines and virtual disks, and also helps you troubleshoot any problems.

To rename an EtherDrive LUN

- 1. Claim the LUN:**
 - To claim an ESXi 5.0 LUN, see [esxcli ethdrv claim](#).
 - To claim an ESX(i) 4.x LUN, see [Claiming an ESX 4.x legacy LUN in ESXi 5.0](#).
- 2. Determine the name vSphere assigned to the EtherDrive LUN as described in [esxcli ethdrv list](#).**
- 3. Launch vSphere Client.**
- 4. Click the Configuration tab.**
- 5. Note the vSphere-assigned LUN name in the Runtime Name column and compare it to the EtherDrive `shelf.lun` number you discovered in [step 1](#).**
- 6. Note the extent value in the LUN column.**
- 7. Right-click the LUN name and select Rename.**
- 8. Name the LUN with the shelf:LUN:Extent number used by the EtherDrive SAN.**

For example, `7:5:0`.

The LUN name can also include additional information as appropriate for your implementation.

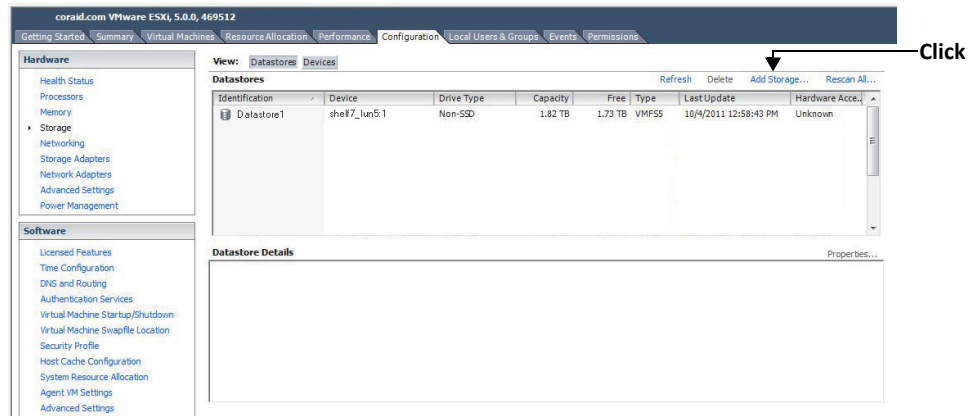
For example: `Accounting Dept DB: Shelf:7 LUN:5 Extent: 0`.

Setting up a volume on the EtherDrive SAN

Set up a volume on the EtherDrive SAN as you would on any SCSI storage.

To set up a volume

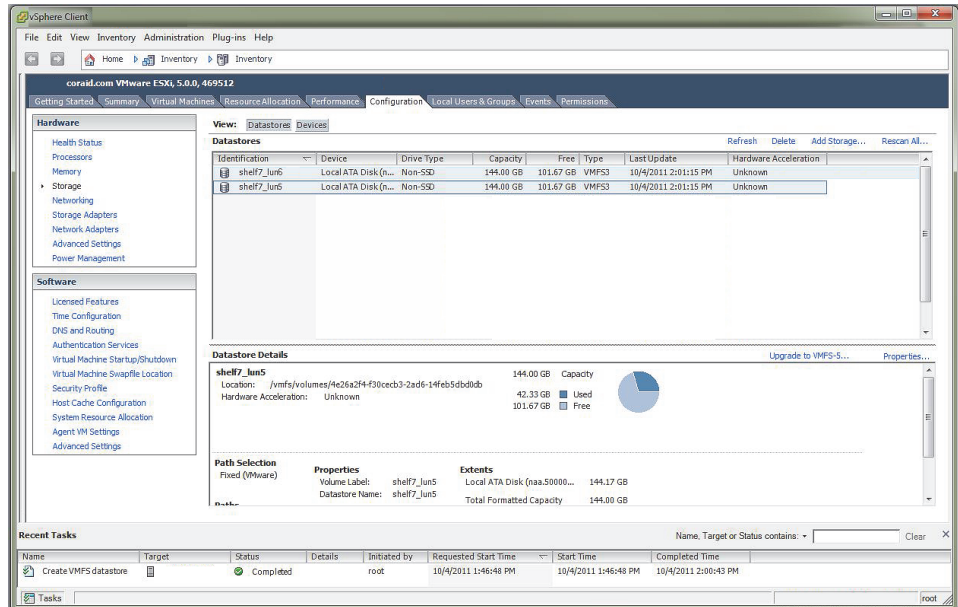
1. Launch vSphere Client.
2. Click the Configuration tab.
3. Under Hardware, click Storage.
4. Click Add Storage.



5. In the Add Storage Wizard, select Disk/LUN for Storage Type, then click Next.
6. Select the EtherDrive LUN on which to create a volume, then click Next.

Only claimed EtherDrive LUNs appear. For more information, see [Claiming EtherDrive LUNs](#).
7. Specify a file system version (VMFS-5 or VMFS-3), then click Next.
8. Review or change the disk layout, then click Next.
9. Verify the LUN, then click Next.
10. Enter a name for the volume (datastore), then click Next.
11. Specify the maximum file size and capacity of the volume, then click Next.
12. (VMFS-3 only) Select the block size of the volume (datastore), then click Next.
13. Verify that the configuration information is correct, then click Finish.

14. Review the information about the volume (datastore) on the Configuration tab.



Renaming a volume (datastore)

You can rename a datastore to indicate that LUN locations have been extended onto it.

To rename a datastore

1. Launch vSphere Client.
2. Click the Configuration tab.
3. Under Hardware, click Storage.
4. Select the volume (datastore) you want to rename, then click Properties.
5. Click Rename.
6. Enter a new name, then click OK.

For example: **Shelf:7 LUN: 5 + Shelf:7 LUN:6**

7. Click Close.

Using ESXCLI ethdrv Commands

VMware vSphere 5 includes a command line utility called `esxcli`. For detailed information about all vSphere 5 commands, see the VMware documentation.

The Coraid EtherDrive HBA driver control extends the ESXCLI with the following commands:

```
esxcli ethdrv list
```

```
esxcli ethdrv devices list
```

```
esxcli ethdrv ports list
```

```
esxcli ethdrv claim
```

```
esxcli ethdrv release
```

```
esxcli ethdrv flush
```

You can display vSphere 5 commands from:

- An ESXi 5.0 host with vSphere CLI access using an SSH client.
- A Windows host with the vSphere CLI installed.
- A Linux host with the vSphere CLI installed.
- A vSphere Management Assistant.

Note: Before you can use the ESXi 5.0 host vSphere CLI with an SSH client, you must enable SSH on the ESXi host. See [Appendix B: Enabling Secure Shell \(ssh\)](#).

Usage

~ # `esxcli ethdrv {cmd} [cmd options]`

Command	Description
<code>devices</code>	EtherDrive HBA device information
<code>ports</code>	EtherDrive HBA port information

Command Options	Description
<code>claim</code>	Claim an AoE target for use.
<code>list</code>	List all EtherDrive HBA targets and devices.
<code>release</code>	Release a target from use by the host.
<code>flush</code>	Refreshes the CLI output to remove targets that are no longer present on the ESXi host's storage network.

Command usage includes the following conventions:

- The `-a` flag displays all possible information for a command.
- The `-?` flag displays usage information

Commands

■ `esxcli ethdrv list`

The `ethdrv list` command lists information for attached LUNs (includes driver name and instance (`shelf.lun`), AoE target, size, attached ports, and whether the device is a legacy ESX host created prior to ESXi 5.0).

This list shows one line per AoE target.

The Device field does not show the LUN number.

Usage:

~ # `esxcli ethdrv list`

For example:

Device	Target	Size	Port	Legacy	Claiming Hosts
<code>vmhba2:C0:T3</code>	7.5	144.000GB	0,1		ESXi
<code>vmhba2:C0:T8</code>	7.6	144.000GB	0,1		ESXi

■ esxcli ethdrv devices list

The `ethdrv devices list` command lists information for attached LUNs (includes driver name and instance (`shelf.lun`), AoE target, size, and attached ports).

Use this command to see how legacy LUNs are segmented.

Usage:

```
~ # esxcli ethdrv devices list
```

For example:

Device	Target	Size	Port
vmhba2:C0:T3:L0	7.5	144.000GB	0,1
vmhba2:C0:T8:L0	7.6	144.000GB	0,1

■ esxcli ethdrv ports list

The `ethdrv ports list` command lists information for attached ports (includes HBA model, Ethernet address, and link speed).

Usage:

```
~ # esxcli ethdrv ports list
```

For example:

Port	Model	Address	Speed
0	EHBA-2-E-RJ45	001004ff0002	1000/1000
1	EHBA-2-E-RJ45	001004ff0003	1000/1000
2	EHBA-20-E-CX4	001004010a68	10000/10000
3	EHBA-20-E-CX4	001004010a69	0/10000

■ esxcli ethdrv claim

Before you can use an AoE target (LUN) with your host, you must claim it. The ESXi HBA driver only presents LUNs that have been claimed by an ESXi host.

Issue the `esxcli ethdrv claim` command to claim a LUN.

Usage:

```
~ # esxcli ethdrv claim [cmd options] -t|--target=<string>
```

Command	Description
<code>-t</code> <code>--target</code>	The <code>shelf.lun</code> of the target of the claim (required).
<code>-l</code> <code>--legacy</code>	<p>Note: In ESXi 5.0 you should always issue the <code>-l</code> command argument to claim a LUN that is hosting a DataStore that was created on an ESX(i) 4.x (or earlier) host. In this document such LUNs are referred to as legacy. If you fail to issue the <code>-l</code> argument and the legacy LUN exceeds 2TB, only the first 2TB of the LUN will be visible to your EtherDrive HBA driver. This happens because legacy LUNs are created with the SCSI-2 standard which defines an addressing scheme that supports a maximum 2TB of storage. The 2TB maximum requires ESX(i) 4.x (and earlier versions) to automatically segment LUNs larger than 2TB into multiple SCSI devices at 2TB boundaries.</p> <p>Only use the <code>-l</code> argument when claiming an ESX(i) 4.x (or earlier) LUN.</p> <p>For more information, see Claiming an ESX 4.x legacy LUN in ESXi 5.0.</p>

For example:

- To claim an ESXi 5.0 LUN:

```
~ # esxcli ethdrv claim -t <targetid>
```
- To claim an ESX 4.x or earlier LUN (legacy):

```
~ # esxcli ethdrv claim -l -t <targetid>
```

For more information, see the **Note** above about the `-l` argument.

■ esxcli ethdrv release

Issue the `esxcli ethdrv release` command to clear the configuration string of a LUN.

Usage:

```
~ # esxcli ethdrv release -t <targetid>
```

Command	Description
<code>-f</code> <code>--force</code>	(optional) Force release of a LUN not claimed by the host.
<code>-t</code> <code>--target</code>	Identifies the <code>shelf.lun</code> to be released (required).

For example:

```
~ # esxcli ethdrv release -t 7712.1
```

For example, a force release:

```
~ # esxcli ethdrv release -f -t 7712.1
```

■ esxcli ethdrv flush

If a LUN does not respond for more than one minute, you can execute the flush command to remove targets that are no longer present on the ESXi host's storage network. Commands created from a flushed AoE LUN and sent to the SCSI LUN are immediately rejected. When the AoE LUN reappears on the network, it will automatically reappear in HBA output and respond to SCSI commands.

Usage:

```
~ # esxcli ethdrv flush
```

Note: You can use this command any time a target is missing on the ESXi host's storage network. After one minute of absence, the target will be considered "dead" and the `flush` command will remove it from the network.

Using Raw Device Mappings

With vSphere, the Raw Device Mapping (RDM) option is only available for storage that is not local. Only iSCSI, Fibre Channel, and SAS storage types are considered non-local; EtherDrive storage LUNs are considered local storage by ESXi. For this reason, the RDM storage type option is not available when configuring a Virtual Machine or Virtual Disk.

While it is possible to enable RDM for local storage types, VMware warns that:

- RDM is a mechanism that VMware provides in order to support Microsoft Cluster Services (MSCS), as described in VMware's public manuals. Other uses of RDM are not tested by VMware.
- Using RDM to map any other volume that contains sensitive customer data (for example: outside ESXi Server's root file-system, and not MSCS, but still important to the customer) is undertaken strictly at the customer's own risk.
- If you lose data in a non-MSCS configuration (something that VMware has not tested and does not support), VMware will reject any service or support request.

It may be possible to configure RDM on a volume that holds the ESXi Server's root file-system. This is absolutely NOT supported or recommended by VMware. If you attempt this and are unsuccessful, and then file a Field Service request or Support Request with VMware, VMware will reject the request.

Given these constraints, if you still want to enable RDM for EtherDrive storage, contact Coraid Support for more information. For more information about RDM, see VMware documentation.

Upgrading from ESX 4.x to ESXi 5.0

For detailed instructions, see the *VMware ESX Migration Guide* documentation available on the VMware website.

Note: When you upgrade an ESX host to ESXi 5.0, all previous versions of the EtherDrive HBA driver are removed.

Claiming an ESX 4.x legacy LUN in ESXi 5.0

A LUN is considered **legacy** if it is hosting a DataStore that was created on an ESX(i) 4.x (or earlier) host. In ESXi 5.0, you should always claim a legacy LUN as legacy by issuing the `-l` command argument (see `esxcli ethdrv claim`). Otherwise, if the LUN exceeds 2TB, only the first 2TB of the LUN will be visible to your EtherDrive HBA driver. This happens because a legacy LUN was created with the SCSI-2 standard which defines an addressing scheme that supports a maximum 2TB of storage. The 2TB maximum requires ESX(i) 4.x (and earlier versions) to automatically segment a LUN larger than 2TB into multiple SCSI devices at 2TB boundaries. A standard (non-legacy) LUN is presented as a single SCSI device that is the same size as the AoE target and identified by a 16-byte NAA. Legacy LUNs are identified by an 8-byte NAA.

For example: When claimed using the `-l` command argument, a 5TB legacy LUN will be presented to the ESXi 5.0 server as two 2TB LUNs and one 1TB LUN. The segmented LUNs can be reassembled using vSphere Client's Extend Datastore feature. For instructions, see [Renaming a volume \(datastore\)](#).

Notes:

- The limitations described above do not apply to LUNs created for ESXi 5.0 or later.
- Datastores created on one LUN type (legacy or non-legacy) cannot be converted to the other LUN type.
- When operating an ESXi 5.0 host, if you want to access a LUN that was used by an ESX 4.x host, the LUN must be claimed as legacy.

To use the `esxcli` utility to claim a legacy host target

1. Launch the vSphere CLI or VMware Management Assistant (VMA).
2. Log in with root permissions.
3. At the prompt, enter the following:

```
esxcli ethdrv claim -l -t <targetid>
```

For example:

```
~ # esxcli ethdrv claim -l -t 7712.1
```

Note: `-l` indicates that this is a legacy target.

4. Repeat for each pre-existing datastore you want to use with the migrated ESXi 5.0 host.
5. Launch vSphere Client.
6. Click the Configuration tab.
7. Under Hardware, click Storage Adapters.
8. Click Rescan All.
9. Review the information about the datastores in the host's storage inventory and the virtual machines in the host's virtual machine inventory.

Appendix A: Removing the EtherDrive HBA driver

If you are using EtherDrive HBA driver 5.0 or later, you can install a new version of the HBA driver without deleting the old driver. In most cases, the installation process removes the existing driver and replaces it with the correct one. If necessary, you can remove the EtherDrive HBA ESXi 5.0 driver.

Note: Failure to perform these steps correctly when deleting the driver may result in a loss of data or cause your ESXi host to quit unexpectedly.

To remove the EtherDrive HBA driver

1. Determine the version of the currently installed driver by issuing the command:

```
esxcli software vib list
```

2. Place the ESXi host into Maintenance Mode.

For details, see the documentation available from VMWare.

3. Launch the vSphere CLI on your Linux or Windows server.

4. SSH into your ESXi host.

5. Issue the VIB list command to determine the name of the VIB for the EtherDrive HBA driver and Userland Admin Tools.

For example:

```
esxcli software vib list
```

```
Name Version Vendor Acceptance Level Install Date
```

```
-----
```

```
ata-pata-amd XXX.XXX.XXX VMware VMwareCertified 2011-08-11
```

```
CRD-ethdrvadm XXX.XXX.XXX coraid PartnerSupported 2011-08-11
```

```
scsi-ethdrv XXX.XXX.XXX coraid PartnerSupported 2011-08-11
```

6. Remove both packages.

For example:

- If you are logged in to the ESXi host directly, enter:

```
esxcli software vib remove -n CRD-ethdrvadm
```

```
esxcli software vib remove -n scsi-ethdrv
```

- If you are using the vSphere CLI, enter:

```
esxcli -u root -s hostname software vib remove -n CRD-ethdrvadm
```

```
esxcli -u root -s hostname software vib remove -n scsi-ethdrv
```

7. Reboot the ESXi host.

Appendix B: Enabling Secure Shell (ssh)

The following procedures describe how to use vSphere Client to enable ssh on your ESXi host.

To enable ssh on the ESXi host

1. **Launch vSphere Client.**
2. **Click Inventory.**
3. **Click the Configuration tab.**
4. **Set the Security Profile for the ESXi host.**
 - Under **Software**, click **Security Profile**.
 - In **Services** click **Properties**.
 - In the **Services Property** window, select **SSH**, and then click **Options**.
 - Click **Start**, select a Startup Policy, and then click **OK**.
 - Click **OK** to close the Services Properties window.

Note: To disable ssh on the ESXi host after you install the EtherDrive HBA driver, repeat the above procedure and click **Stop** under Startup Policy.

Appendix C: Updating CorOS on an SR/SRX from an ESXi host

This appendix describes how to create an update LUN on an SR/SRX appliance and copy a CorOS update file to it from an ESXi host.

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



Do not ignore any error messages that may display during the update process.

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

1. Obtain the tar update file and copy it to the ESXi host.

The update file is available from the Coraid Technical Assistance Center.

2. At the SR/SRX command prompt, create a RAM-based update LUN on the SR/SRX and place it online.

For example:

```
SR/SRX shelf 7> make 15 update
SR/SRX shelf 7> online 15
SR/SRX shelf 7> update -l
15
SR/SRX shelf 7> list -l
15    0.041GB online
      15.0      0.041GB raw normal
      15.0.0   normal      0.041GB update
SR/SRX shelf 7>
```

3. From the ESXi host, use the VMware vSphere 5 `esxcli` command line utility to claim the update LUN.

For example:

```
~ # esxcli ethdrv claim -t 7.15
Claim operation succeeded
```

4. From the ESXi host, use the VMware vSphere 5 `esxcli` command line utility to find the SCSI device that corresponds to the update LUN.

For example:

```
~ # esxcli ethdrv devices list
```

For example:

Device	Target	Size	Port
vmhba2:C0:T3:L0	7.5	144.000GB	0,1
vmhba2:C0:T8:L0	7.6	144.000GB	0,1
vmhba2:C0:T9:L0	7.15	0.04GB	0

Note: Note that LUN 7.15 maps to SCSI device `vmhba2:C0:T9:L0`

5. Find the NAA disk that corresponds to the SCSI device you identified in [step 4](#).

For example:

```
esxcfg-mpath -l
gsan.10-gsan.010f-naa.200000100400e273
Runtime Name: vmhba2:C0:T9:L0
Device: naa.200000100400e273
Device Display Name: Local CORAIID Disk (naa.200000100400e273)
Adapter: vmhba2 Channel: 0 Target: 9 LUN: 0
Adapter Identifier: gsan.10
Target Identifier: gsan.010f
Plugin: NMP
State: active
Transport: parallel
```

Note that in the above example the NAA disk for use in the DD command is:

```
naa.200000100400e273
```

6. Using the DD command, copy the update file from the ESXi host to the update LUN.



Note: Make sure to copy the `tar` update file to the update LUN only. The update LUN is a small (approximately 40MB) RAM-based LUN. As there may be other small LUNs on your SAN in addition to the update LUN, make sure you know the shelf and LUN ID of the update LUN before you attempt to copy the update file to it. Copying the `tar` update file to any LUNs backed by disk storage will cause data loss.

For example:

```
dd if=/tmp/SR-6.0-R6.tar of=/vmfs/devices/disks/naa.200000100400e273 conv=notrunc
12040+0 records in
12040+0 records out
```

7. At the SR/SRX command prompt, install the `tarc` update file.

For example:

```
SR/SRX shelf 7> update
Updating CorOS will reboot unit.
Continue? (y/n) y
Updating kernel ... done.
Updating root fs ... done.
Update successful.
Hard rebooting system. Please stand by ...
```

8. Verify the update by issuing the `release` command.

Frequently Asked Questions

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

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

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

Answer: Nothing! The EtherDrive HBA Driver automatically handles Multipath communications 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. For information, see [Multipath communication](#).

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

Answer: No. Only one EtherDrive HBA is required for each host. One EtherDrive HBA can communicate with any EtherDrive SAN storage 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: I added a new LUN to my EtherDrive SAN storage appliance. How do I view it in vSphere Client?

Answer: Perform a storage rescan from vSphere Client. For instructions, see [Recognizing the EtherDrive HBA as a storage adapter](#).

Question: Why can vSphere see my EtherDrive storage but is not able to add a VMFS file system to it?

Answer: The Ethernet switch used to connect the EtherDrive HBA to the EtherDrive storage does not support jumbo frames or jumbo frames are not enabled on the switch. The HBA requires the use of jumbo frames with an MTU of 9000. See [Requirements](#).

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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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: Il 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 usages 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 Règlement 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)