EMC® Atmos™
Version 1.4.0

Atmos Evaluation Edition Installation Guide

REV A01

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Preface

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

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

Note: This document was accurate as of the time of publication. However, as information is added, new versions of this document may be released to the EMC Powerlink website. Check the Powerlink website to ensure that you are using the latest version of this document.

Introduction

Audience

This document is part of the Atmos documentation set, and is intended for use by system administrators who are responsible for installing, configuring, and maintaining Atmos.

Related documentation

The following EMC publications provide additional information:

◆ *EMC Atmos Release Notes*

◆ *EMC Atmos Conceptual Overview*

◆ *EMC Atmos Installation Guide*

◆ *EMC Atmos Administrator's Guide*

◆ *EMC Atmos Programmer's Guide*

◆ *EMC Atmos System Management API Guide*

◆ *EMC Atmos Security Configuration Guide*

◆ *EMC Atmos Non-EMC Software License Agreements*

◆ *EMC Atmos Hardware Guide*

◆ EMC Atmos online help

Conventions used in this document

EMC uses the following conventions for special notices:

Note: A note presents information that is important, but not hazard-related.

⚠ **CAUTION**

A caution contains information essential to avoid data loss or damage to the system or equipment.

⚠ **IMPORTANT**

An important notice contains information essential to software or hardware operation.

Typographical conventions

EMC uses the following type style conventions in this document.

Normal	Used in running (nonprocedural) text for: • Names of interface elements (such as names of windows, dialog boxes, buttons, fields, and menus) • Names of resources, attributes, pools, Boolean expressions, buttons, DQL statements, keywords, clauses, environment variables, functions, utilities • URLs, pathnames, filenames, directory names, computer names, filenames, links, groups, service keys, file systems, notifications
Bold	Used in running (nonprocedural) text for: • Names of commands, daemons, options, programs, processes, services, applications, utilities, kernels, notifications, system calls, man pages Used in procedures for: • Names of interface elements (such as names of windows, dialog boxes, buttons, fields, and menus) • What user specifically selects, clicks, presses, or types
Italic	Used in all text (including procedures) for: • Full titles of publications referenced in text • Emphasis (for example a new term) • Variables
Courier	Used for: • System output, such as an error message or script • URLs, complete paths, filenames, prompts, and syntax when shown outside of running text
Courier bold	Used for: • Specific user input (such as commands)
Courier italic	Used in procedures for: • Variables on command line • User input variables
< >	Angle brackets enclose parameter or variable values supplied by the user
[ ]	Square brackets enclose optional values
|	Vertical bar indicates alternate selections - the bar means "or"
{ }	Braces indicate content that you must specify (that is, x or y or z)
...	Ellipses indicate nonessential information omitted from the example

Where to get help   EMC support, product, and licensing information can be obtained as follows.

Product information — For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to the EMC Powerlink website (registration required) at:

http://Powerlink.EMC.com

Technical support — For technical support, go to Powerlink and choose **Support**. On the Support page, you will see several options, including one for making a service request. Note that to open a service request, you must have a valid support agreement. Please contact your EMC sales representative for details about obtaining a valid support agreement or with questions about your account.

Your comments   Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications. Please send your opinions of this document to:

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Installation

This document describes how to install and access the Atmos Evaluation Edition (AEE) virtual environment.

Overview

AEE should be used for Proof Of Concept (POC) and integration only. It is not intended for production use or for environments where any level of performance is required.

Before starting the installation of AEE:

◆ Verify that your ESX host server meets the minimal set of requirements (described in Table 1, "AEE ESX Minimum Requirements")to adequately support AEE.

◆ Allocate 4 static IP addresses for use with AEE. These addresses must be locally routable.

For a detailed description of the Atmos configuration in the AEE environment, see Appendix A, "System Configuration."

Table 1   AEE ESX Minimum Requirements

Requirement	Description
ESX Version 4.0.0 (or newer)	AEE is not supported by ESXi or by older versions of ESX. The ESX host must have SSH enabled in order to run an install script within the Service Console.
ESX supported server (see the VMware site for supported devices)	The server must: • Support 64 bit guest operating systems. This requires a 64bit processor along with Virtualization Technology. You might need to enable virtualization within the BIOS to support 64 bit guest operating systems. Use the VMware tool (found at the following URLs) to determine if your server will support a 64bit guest operating system: http://www.vmware.com/download/ws/drivers_tools.html (VMware Workstation) http://www.vmware.com/download/shared_utilities.html (VMware ESX) • 1 Xeon based processor (Dual Core) • 8 GB system memory • 60 GB storage within the datastore available for running VMs; additional may be necessary depending upon the data to be stored.

Installing AEE

To install AEE, you run a script from the ESX host's Service Console. This script:

♦ Configures the ESX host's virtual networking.

♦ Copies 4 virtual machine images into the ESX host's datastore.

Note: You cannot install AEE over a previous installation. You must remove all previous AEE VM images from the ESX host's inventory, and you must also remove all virtual switches configured for AEE. For more information, see Appendix B, "Removing Virtual Switch Configurations."

Get ready to install

1. Obtain the following file either from a DVD(s) or a download:

   AEE_1.4.0.*xxxxx*.tar

   where *xxxxx* is the Atmos build version

2. Untar AEE_1.4.0.*xxxxx*.tar using the command:

   `tar -xvf` AEE_1.4.0.*xxxxx*.tar

3. Copy the following files to the ESX host's datastore (typically located at /vmfs/volumes/<datastore_name>) in a folder such as atmos_<version#>:

   • install_script.tar
   • AEE-r1s1-001.tar.gz
   • AEE-r1s1-002.tar.gz
   • AEE-r2s1-001.tar.gz
   • AEE-r2s1-002.tar.gz

Run the installation script

1. To start the install, open an SSH session to the ESX host's Service Console and locate the contents of the folder created above.

2. Untar the install script and version files using the following command:

   `# tar -xvf install_script.tar`

3. Run the install script using the command:

   `# sh ./install.sh`

4. Respond to the prompts about the datastore to use.

Note: For many standalone ESX hosts there will only be one choice:

```
1) diskb
2) Storage1
3) tvgnfs
Please select a datastore: 2
Install virtual machine "AEE-r1s1-001"...
Install virtual machine "AEE-r1s1-002"...
Install virtual machine "AEE-r2s1-001"...
Install virtual machine "AEE-r2s1-002"...
```

After the script completes, the following banner is displayed.

```
=======================================================
Please power on all virtual machines on your ESX client.
Please keep the original UUIDs of all virtual machines.
Then logon AEE-r1s1-001 as root and run "ipchange.py".
=======================================================
```

Configure Network Adapter 2

Network Adapter 2 on each Atmos node must be connected to the local LAN segment. You can do this by either:

◆ Connecting the AtmosPublic virtual switch to a physical network adapter which is connected to the local LAN.

◆ Connecting each node's Network Adapter 2 to an existing virtual switch which is connected to the local LAN.

To add a physical Network Adapter to the AtmosPublic virtual switch:

1. Open the vSphere client and connect to the ESX host where you ran the install script.

2. Open the **Configuration** tab for the ESX host.

3. Select **Networking**.

4. Select **Properties** for the AtmosPublic virtual switch

5. Open the **Network Adapters** tab, then click **Add** to add a physical network adapter that is physically connected to the local LAN segment

To reconnect each node's Network Adapter to an existing virtual switch:

1. Open the VSphere client, and connect to the ESX host where you ran the install script.

2. Select the Atmos node VM, and open the **Summary** tab.

3. Click **Edit Settings**.

4. Select **Network Adapter 2**, then in the **Network Connection** drop down, select the name of the virtual switch that is connected to the local LAN.

Configure the IP addresses

1. Startup each of the four VMs, and respond to the prompts to keep the VM image's UUIDs.

Note: Be sure the ESX host is not in maintenance mode, or you will not be able to startup the VMs.

For a VI Client, select **Keep** to keep the UUID intact.

For a vSphere client, select **I_moved it** to keep the UUID intact.

2. Verify that each VM is running by checking that there is a login prompt in each console.

3. Once all the VMs are running, login to the AEE-r1s1-001 node from the console using the login credentials: root/ChangeMe.

4. Run the following command to force the Atmos management databases to synchronize.

Note: AEE-r1s1-001 and AEE-r2s1-001 will report failures, but that can be safely ignored.

```
# mauirexec 'service postgresql restart'

Output from host : AEE-r2s1-002
Stopping PostgreSQL: [ OK ]
Starting PostgreSQL: [FAILED]

Output from host : AEE-r1s1-002
Stopping PostgreSQL: [ OK ]
Starting PostgreSQL: [FAILED]

Output from host : AEE-r2s1-001
Stopping PostgreSQL: [ OK ]
Starting PostgreSQL: [ OK ]

Output from host : AEE-r1s1-001
```

```
Stopping PostgreSQL: [ OK ]
Starting PostgreSQL: [ OK ]
```

5. Make sure all of the MDS are up and initialized, by running

   ```
   # mauiverify
   ```

   The mauiverify command runs a set of scripts to check the health of the Atmos system. Make sure the output does not list any errors for MDS.

   Note: You must run commands 6-10 on the master nodes of each installation segment (AEE-r1s1-001 and AEE-r2s1-001).

6. For the segment whose IP will be changed, create MDS checkpoints for all of the nodes in the segment. You can run this on each node individually by running this command:

   ```
   # mauisvcmgr -s mauimds -c triggercheckpoint
   ```

   Or for all nodes in the segment using mauirexec. For example:

   ```
   # mauirexec --hosts=AEE-r1s2-001,AEE-r1s2-002
   "mauisvcmgr -s mauimds -c triggercheckpoint"
   ```

7. Wait 10 minutes, for the system to be stable, then stop all MDS (master/slave/remote) in the segment. To stop the master and slave MDS, use this command:

   ```
   #mauirexec --hosts=AEE-r1s2-001,AEE-r1s2-002
   "service mauimds stop"
   ```

8. Check the status:

   ```
   # mauirexec --hosts=AEE-r1s2-001,AEE-r1s2-002
   "service mauimds status"
   ```

   You should see a message like:

   ```
   mds_10401 is stopped
   mds_10402 is stopped
   ```

9. Stop the remote MDS:

   ```
   # mauirexec --hosts=AEE-r1s2-001,AEE-r1s2-002
   "service mauiremoterep stop"
   ```

10. Check the status.

    ```
    # mauirexec --hosts=AEE-r1s2-001,AEE-r1s2-002
    ```

```
"service mauiremoterep status"
```

11. Type the following command to invoke the script that reconfigures the IP address, the netmask, the gateway, and a DNS server for the public network interfaces for each RMG. You need four consecutive IP addresses (two for each RMG):

```
# ipchange.py
```

The script displays the following messages:

```
Verify system is stable or not, please wait...
Check whether all DB are available, please wait...
Check whether all nodes are available, please wait...
RMG name: AEE-r1 location:Cambridge

   Segment id : 1
   name : AEE-r1-IS-1
   ip : 10.32.90.81 - 10.32.90.82
   subnetmask: 255.255.252.0
   gateway : 10.32.88.1
   dns : 10.32.72.28;

RMG name: AEE-r2 location:Boston
   Segment id : 2
   name : AEE-r2-IS-1
   ip : 10.32.90.83 - 10.32.90.84
   subnetmask: 255.255.252.0
   gateway : 10.32.88.1
   dns : 10.32.72.28;
```

12. Respond to the script's prompts with your own IP addresses set aside for this AEE installation. Example values are shown in bold below:

```
The following list contains all Installation Segment
IDs which are configurable.
1
2
Enter the Segment ID for the IP configuration you want
to change:1
   change Segment id : 1
   name : AEE-r1-IS-1
   ip : 10.32.90.81 - 10.32.90.82
   gateway : 10.32.88.1
   subnetmask: 255.255.252.0

Input new start ip:10.6.144.68
Input new end ip:10.6.144.69
Input new gateway:10.6.144.2
Input new netmask:255.255.255.0
```

```
Verify whether the new IP/netmask/gateway is valid,
This task will take several minutes...

Do you want to change the DNS 10.32.72.28 [Y/N]:y

The DNS should look like this
"10.32.97.148;10.32.97.150" or "10.32.97.148"

Please input new DNS:10.254.66.23

You can only make one IPChange at a time.
You can change as many Installation Segments as you
want in one operation.
Do you want to change other Installation Segment's ip
[y/n]: y

The following list contains all Installation Segment
IDs which are configurable.
2

Enter the Segment ID for the IP configuration you want
to change:2

change Segment id : 2
name : AEE-r2-IS-1
ip : 10.32.90.83 - 10.32.90.84
gateway : 10.32.88.1
subnetmask: 255.255.252.0

Input new start ip:10.6.144.70
Input new end ip:10.6.144.71
Input new gateway:10.6.144.2
Input new netmask:255.255.255.0

Verify whether the new IP/netmask/gateway is valid,
This task will take several minutes...

Do you want to change the DNS 10.32.72.28 [Y/N]:y

The DNS should look like this
"10.32.97.148;10.32.97.150" or "10.32.97.148"

Please input new DNS:10.254.66.23

During an IPChange, some Atmos services will be
affected
During an IPChange, do not attempt any maintenance
operations such as:
Add a new node/Segment/RMG
Disk replacement
DAE replacement
Add a tenant/subtenant/user
```

```
Create a policy
Node replacement
IPChange operation on another node
Restart network manually
Upgrade operation
Shutdown/restart any node

Segment name : AEE-r1-IS-1
old ip : 10.32.90.81 - 10.32.90.82
subnetmask: 255.255.252.0
gateway : 10.32.88.1
dns : 10.32.72.28;
The Installation Segment's IP configuration will be
changed to
new ip : 10.6.144.68 - 10.6.144.69
subnetmask: 255.255.255.0
gateway : 10.6.144.2
dns : 10.254.66.23;
Segment name : AEE-r2-IS-1
old ip : 10.32.90.83 - 10.32.90.84
subnetmask: 255.255.252.0
gateway : 10.32.88.1
dns : 10.32.72.28;

The Installation Segment's IP configuration will be
changed to
new ip : 10.6.144.70 - 10.6.144.71
subnetmask: 255.255.255.0
gateway : 10.6.144.2
dns : 10.254.66.23;

If the new IP Configuration is invalid
It will be difficult to restore the system.

Are you sure that the new IP Configuration is valid?
[y/n]:y
IPChange: Begin to prepare for IPChange.
IPChange: Finished preparation for IPChange.
IPChange: Starting to change network configuration,
please wait…

Begin to configure AEE-r1s1-001 AEE-r1s1-002 network,
this will cost several minutes, please wait…
Successfully configured AEE-r1s1-001 AEE-r1s1-002
network
Begin to configure AEE-r2s1-001 AEE-r2s1-002 network,
this will cost several minutes, please wait…
Successfully configured AEE-r2s1-001 AEE-r2s1-002
network
Ipchange: Successfully changed network configuration.
Begin to update system DB
Successfully updated system db
```

```
IPChange: Begin to broadcast changes to every node,
please wait…
IPChange: Broadcast changes to AEE-r2s1-001
AEE-r2s1-002, please wait…
IPChange: Broadcast changes to AEE-r1s1-002, please
wait…
IPChange: Successfully broadcast changes to every node.
Successfully broadcast change to AEE-r1s1-001

All configurations have been changed
The IPChange operation has two parts, the first part is
complete.

The following is part two:
1. If the hardware gateway has been changed, change the
hardware connection.
2. Boot up the nodes for the new ip configuration to
take effect.
3. Execute the post_ipchange.py script on the system
master node.
If you want to change any other Segments' IP,
Wait until the post_ipchange.py script has been
executed.
Successfully run ipchange.py
Current node is ready to be shut down
Press any key to continue
```

13. As the script indicates, press any key.

14. After all of the nodes have been shutdown, manually power up the master node, AEE-r1s1-001, and wait for it to fully boot before starting any other nodes.

15. Once the master node, AEE-r1s1-001, has fully booted, power on the three remaining nodes.

16. Once all the VMs are running again (check to see that each console has a login prompt), log into the AEE-r1s1-001 node (credentials: root/ChangeMe).

17. Run the following command to force the Atmos management databases to synchronize.

Note: AREE-r1s1-001 and AEE-r2s1-001 will report failures, but that can be safely ignored.

```
# mauirexec 'service postgresql restart'

Output from host : AEE-r2s1-002
Stopping PostgreSQL: [ OK ]
```

```
Starting PostgreSQL: [FAILED]

Output from host : AEE-r1s1-002
Stopping PostgreSQL: [ OK ]
Starting PostgreSQL: [FAILED]

Output from host : AEE-r2s1-001
Stopping PostgreSQL: [ OK ]
Starting PostgreSQL: [ OK ]

Output from host : AEE-r1s1-001
Stopping PostgreSQL: [ OK ]
Starting PostgreSQL: [ OK ]
```

18. To finish the configuration of the node addresses, run the
    post_ipchange.py script by typing the following command:

    ```
    # post_ipchange.py

    Verify system is stable or not, please wait...
    Check whether all DB are available, please wait...
    Check whether all nodes are available, please wait...
    Begin to verify configuration, please wait…
    Successfully verified configuration
    Begin to verify service, please wait…
    All Atmos services are running
    The new IP configuration takes effect
    ```

The public interfaces have been reconfigured, and the system is now
accessible via the new IP addresses.

Accessing the Atmos System Management GUI

To access the Atmos System Management GUI, open a web browser, and navigate to the following URL using the IP address configured during installation:

```
https://<node IP address>/mgmt_login
```

Sign in using the System Admin user (MauiAdmin_pit/password).

From this interface, you can configure the Atmos system with additional tenants and policies as described in the *EMC Atmos Administrator's Guide*.

For details about the system configuration and for login information, see Appendix A, "System Configuration."

Note: The Atmos nodes must be in time synch with any clients making web service calls for the web services access authorization to work correctly. For this reason, be sure to generate/regenerate shared secrets AFTER time has been synchronized between the Atmos nodes and the client
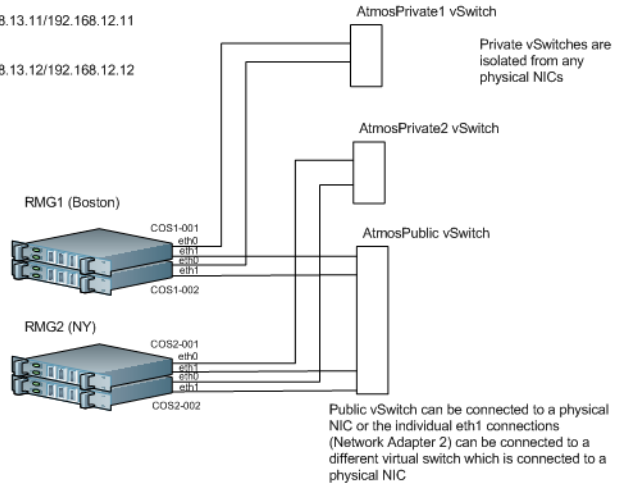
A

System Configuration

This chapter includes the following topics:

Network Configuration

AEE-r1s1-001
 eth0:   192.168.11.11/192.168.13.11/192.168.12.11
 eth1:   User Defined
AEE-r1s1-002
 eth0:   192.168.11.12/192.168.13.12/192.168.12.12
 eth1:   User Defined
AEE-r2s1-001
 eth0:   192.168.11.11/192.168.13.11/192.168.12.11
 eth1:   User Defined
AEE-r2s1-002
 eth0:   192.168.11.12/192.168.13.12/192.168.12.12
 eth1:   User Defined

AtmosPrivate1 vSwitch

Private vSwitches are isolated from any physical NICs

AtmosPrivate2 vSwitch

RMG1 (Boston)

COS1-001
 eth0
 eth1
 eth0
 eth1
COS1-002

AtmosPublic vSwitch

RMG2 (NY)

COS2-001
 eth0
 eth1
 eth0
 eth1
COS2-002

Public vSwitch can be connected to a physical NIC or the individual eth1 connections (Network Adapter 2) can be connected to a different virtual switch which is connected to a physical NIC

Atmos in a Box – Network Diagram

System Description

The Atmos System includes:

◆ 2 RMGs – 2 Nodes per RMG

- 1 RMG labeled as RMG1 (Cambridge)
  - Node 1: AEE-r1s1-001
  - Node 2: AEE-r1s1-002
- 1 RMG labeled as RMG2 (Boston)
  - Node 1: AEE-r2s1-001
  - Node 2: AEE-r2s1-002

◆ Linux console shell root password for the 4 nodes

- ChangeMe

◆ System Administrator username/password

- URL: https://<node IP address>/mgmt_login
- User Name: MauiAdmin_pit
- Password: password

• IP Addresses

Three isolated virtual switches will be configured on the ESX host by the install script to support the two install segments.

- AtmosPrivate1 (not externally accessible): RMG1 private subnet.

Node Name	eth0	eth0:0	eth0:1
AEE-r1s1-001	192.168.11.11	192.168.13.11	192.168.12.11
AEE-r1s1-002	192.168.11.12	192.168.13.12	192.168.12.12

- AtmosPrivate2 (not externally accessible): RMG2 private subnet

Node Name	eth0	eth0:0	eth0:1
AEE-r2s1-001	192.168.11.11	192.168.13.11	192.168.12.11
AEE-r2s1-002	192.168.11.12	192.168.13.12	192.168.12.12

- AtmosPublic (may be configured for external access): RMG1 and RMG2 public network

| Node Name	eth1
AEE-r1s1-001	User Defined
AEE-r1s1-001	User Defined
AEE-r2s1-001	User Defined
AEE-r2s1-002	User Defined

Removing Virtual Switch Configurations

You must remove any virtual switches that were configured for earlier versions of AEE before you install another version of it (this might be a fresh install of a newer version or a reinstall of an older version). This chapter describes the two ways you can remove them.

vSphere Client (ESX UI)

1. Navigate to the ESX host's **Configuration** tab.

2. Select **Networking** (from the left-side menu options).

   Be sure to refresh the network topology using the **Refresh** option in the top right.

3. Use the **Remove** option for the switches which are labeled as:

   ◆ AtmosPrivate1

   ◆ AtmosPrivate2

   ◆ AtmosPublic
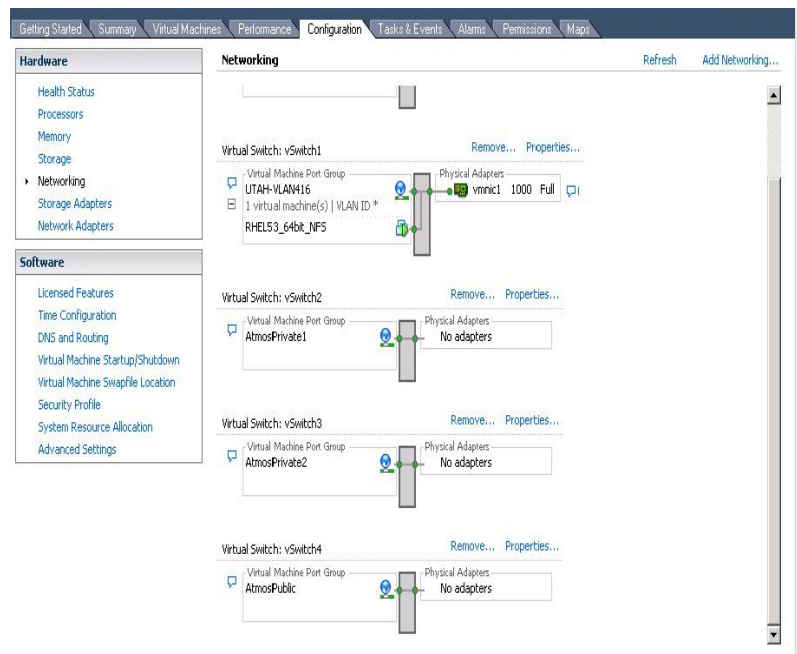
ESX Command Line

1. Access the ESX host's command line.

2. Run a listing of virtual switch configurations from the ESX host command line by using this command:

   ```
   # esxcfg-vswitch -l
   ```

   The listing should include the following three switch labels:

   - AtmosPrivate1
   - AtmosPrivate2
   - AtmosPublic

   along with Virtual Switch designators formatted as:

   ```
   vSwitch<num>
   ```

3. Use the following command to remove each of the three switch/port configurations using the vSwitch<num> listed for the three port labels of AtmosPrivate1, AtmosPrivate2 and AtmosPublic:

   ```
   # esxcfg-vswitch -d vSwitch<num>
   ```