Cisco Videoscape Distribution Suite Transparent Caching Software Blade Server Cluster Installation Guide

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Preface

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The Cisco Videoscape Distribution Suite Transparent Caching (VDS TC) solution is focused on reducing costs and improving the quality of user experience in delivering unmanaged Internet-based content, including Internet video, file sharing, software distribution, mobile application downloads, and web browsing. VDS TC integrates highly scalable caching software with high-performance Cisco Unified Computing System™ (UCS) C-Series Rack Servers and B-Series Blade Servers, Cisco switches, and SAN storage. The VDS TC solution, combined with other Videoscape products, such as Cisco Videoscape Distribution Suite for Internet Streaming (VDS IS), provides a complete platform for optimizing managed and unmanaged content delivery.

Cluster Installation Overview

The Cisco VDS TC Cluster platform is a multi-server scalable system that is intended for the efficient serving of P2P and HTTP user requests. A Cisco VDS-TC Cluster installation can optimize P2P and HTTP object downloading traffic across ISP networks through high-performance caching.

Because of its flexible size, a Cisco VDS TC Cluster installation can meet both low-end and high-end requirements, and can also grow in parallel with the customer network.

In a VDS TC Cluster configuration, the VDS TC software can run on the Cisco UCS C220 C- Series Rack Servers or on the Cisco UCS B200 M3 B-Series Blade Servers. The cached objects for both solutions are stored on an IBM or NetApp SAN storage device, and Cisco switches are used for data, storage, and management connectivity. A VDS TC Cluster configuration that uses the Cisco UCS B200 Blade Servers can contain up to 16 Cisco UCS B200 cache engine blade servers and up to six NetApp E2724 or five IBM DS3524 SAN storage enclosures. A separate Cisco UCS C220 is used as the VDS TC Management Server.

This installation guide provides instructions for installing VDS TC on a Cisco Blade Server Cluster platform, including installing and configuring the VDS TC Management Server, the VDS TC Cache Engines, and the storage enclosures. This installation guide also discusses configuring the data and management switches used by the VDS TC Blade Server Cluster installation.

Blade Server Cluster Models

There are three VDS TC Server cluster models that use the Cisco UCS B200 Blade Servers:

- **Cisco VDS-TC-4B:** The Cisco VDS-TC-4B model contains four Cisco UCS B200 Blade Servers, one UCS 5108 Blade Chassis, one Cisco UCS C220 Management Server, and two IBM DS3524 or NetApp E2724 SAN storage enclosures.
- Cisco **VDS-TC-8B:** The Cisco VDS-TC-8B model contains eight Cisco UCS B200 Blade Servers, one UCS 5108 Blade Chassis, one Cisco UCS C220 Management Server, and three IBM DS3524 or NetApp E2724 SAN storage enclosures.
- **Cisco VDS-TC-16B:** The Cisco VDS-TC-16B model contains 16 Cisco UCS B200 Blade Servers, two UCS 5108 Blade Chassis, one Cisco UCS C220 Management Server, and six NetApp E2724 or five IBM DS3524 SAN storage enclosures.

Each model can be installed in a redundant and a non-redundant configuration. Each Blade Server Cluster model also uses one Cisco UCS 6248UP Fabric Interconnect, or two Cisco UCS 6248UP Fabric Interconnects for redundant installations.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as an RSS feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service. Cisco currently supports RSS Version 2.0.

Prerequisites and Blade Server Cluster Physical Installation

This chapter outlines the preliminary requirements for installing a VDS TC Blade Server Cluster platform and describes how to connect both the power cables to the storage enclosure PDUs and the rack PDU, and the network cabling scheme for the VDS TC Cache Engines, the VDS TC Management Server, and the storage enclosures. This chapter contains the following sections:

- Prerequisites
- Rack Mounting
- Power Cabling
- Network Cabling
- Additional Steps

Prerequisites

Required Software

Before installing the VDS TC Blade Server Cluster system, you must obtain the VDS TC ISO disk image from Cisco.

Firmware Versions

The following table describes the supported hardware and firmware for a VDS TC Blade Server Cluster installation:

Note Always refer to the Release Notes for your product to confirm the required firmware and image files.

Hardware Component	Model	Required Firmware Version and Image File
Management Server	Cisco UCS-C220-M3S	Cisco UCS-C220-M3S: • Firmware version: 1.5.4.3 • Image file: ucs-c220-huu-1.5.4-3.iso
Cache Engine	Cisco UCS 5108 Blade Chassis Cisco UCS-B200-M3 Cisco UCS 6248 UP Fabric Interconnect	Cisco UCS-B200-M3: • Firmware version: 2.2.3c • Image file: ucs-k9-bundle-b-series.2.2.3c.B.bin Cisco UCS 6248 UP Fabric Interconnect: • Firmware version: 2.2.3.c • Image file: ucs-k9-bundle-infra.2.2.3c.A.bin
Storage enclosure	Any IBM DS3500 storage models or NetApp E2724	IBM DS3524: • BIOS version: 07.86.46.00 • Controller image files: ibm_fw_ds3k_07864600_anyos_anycpu.zip • HDD BIOS version: 4.18 • HDD image file: ibm_fw_ds3khdd_4.18_anyos_anycpu.zip • IBM Storage Manager version: 10.86 (SM10.86_Linux_64bit_x86-64_SMIA-10.86.x5.43.tgz) NetApp E2724: • Controller BIOS version: 08.20.05.00 • Storage Manager 11.20.0A (SMIA-LINUXX64-11.20.0A00.0002.bin)

To check firmware version on the Cisco UCS C-Series Management Server, use the CIMC. To check the version of firmware on the Cisco Blade Server and the Cisco Fabric Interconnect, use the Cisco UCS Manager.

Tip For instructions on how to perform a firmware upgrade for the Cisco UCS C-Series Servers see the *Cisco UCS C-Series Rack-Mount Server BIOS Upgrade Guide* document available at http://www.cisco.com/en/US/docs/unified_computing/ucs/c/sw/bios/b_Upgrading_BIOS_Firmware.html.

For instruction on how to perform a firmware upgrade for the UCS Blade Server and the Cisco UCS 6248 UP Fabric Interconnect, see the *Cisco UCS Manager Install and Upgrade Guides* page available at www.cisco.com/en/US/products/ps10281/prod_installation_guides_list.html.

Rack Mounting

To mount the VDS TC Blade Servers in a chassis, see the *Cisco UCS 5108 Server Chassis Installation Guide* available at http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/chassis/install/ucs5108_install.html.

Power Cabling

Using standard power cables, connect the power cables to both of the storage enclosure PSUs and the rack PDU. For connecting power to the Blade Series servers, see the *Cisco UCS 5108 Server Chassis Installation Guide* available at http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/chassis/install/ucs5108_install.html.

Network Cabling

There are six different configurations available for a VDS TC Blade Server Cluster installation:

- VDS-TC-4B non-redundant
- VDS-TC-4B redundant
- VDS-TC-8B non-redundant
- VDS-TC-8B redundant
- VDS-TC-16B non-redundant
- VDS-TC-16B redundant

This section provides an overview of cabling the connections for the cache engines, the management server, and the storage enclosures. For a complete cabling guide for one of these VDS TC configurations, see Appendix A, “Cisco VDS TC Blade Server Cabling Guides when Using the NetApp E2724 Storage Enclosures”.

Cache Engines

For a complete cabling diagram for one of these VDS TC configurations, see Appendix A, “Cisco VDS TC Blade Server Cabling Guides when Using the NetApp E2724 Storage Enclosures”.

Fabric Interconnects

The Cisco UCS 6248 Fabric Interconnect connects to the Cisco UCS I/O Modules in the Cisco 5108 Server Chassis and to the data switch. For specific cabling schemes, see Appendix A, “Cisco VDS TC Blade Server Cabling Guides when Using the NetApp E2724 Storage Enclosures”.

Management Server

Make the following connections on the management server to the management switch.

Figure 1-1 Management Server Connections

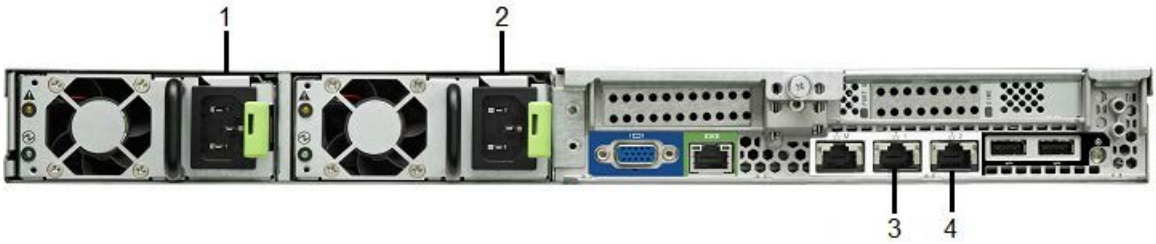


Table 1-1 Management Server Connections

Port #	Description	Wire Connection	Notes
1	Power supply 1	PDU A	
2	Power supply 2	PDU B	
3	Interface 1 (eth0)	Eth0 management	Connects to first Fabric Extender, FEX 2248TP or 2232TME
4	Interface 2 (eth1)	Eth1 redundant management	Connects to second Fabric Extender FEX 2248TP or 2232TME

Note See Appendix A, "Cisco VDS TC Blade Server Cabling Guides when Using the NetApp E2724 Storage Enclosures"for a full cabling scheme.

Storage Enclosures

NetApp E2724 Storage Enclosure

Make the following connections on each storage enclosure.

Figure 1-2 NetApp E2724 Storage Connections

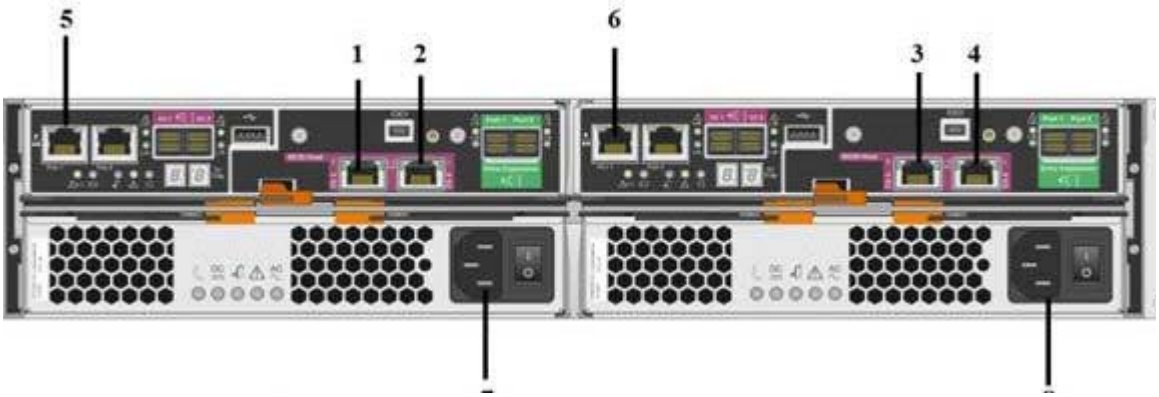


Table 1-2 NetApp E2724 Storage Connections

Port #	Description	Wire Connection	Notes
1	iSCSI connection	Connects to first Fabric Extender 2232TME	Use 10GBASE-T CAT6 or CAT7 cables
3	iSCSI connection	Connects to second Fabric Extender 2232TME if present, or to the first Fabric Extender 2232TME if not	Use 10GBASE-T CAT6 or CAT7 cables
5	Management 1 controller A	Man1 StoX	Connects to the first management switch.
6	Management 2 controller B	Man2 StoX	Connects to the second management switch if present, or to the first management switch if not.
7	Power Supply 1	PDU A	
8	Power Supply 2	PDU B	

Note The storage enclosure has two controllers.

Note Please see Appendix A, "Cisco VDS TC Blade Server Cabling Guides when Using the NetApp E2724 Storage Enclosures" for a full cabling diagram.

Follow these steps to wire the storage server:

Step 1 Connect the two management cables between the two management ports on the storage server and the ports on the management switches.

Step 2 Connect the iSCSI storage data cables between the storage server iSCSI in controller A and the management switch. Connect the iSCSI storage data cables between the storage server iSCSI in controller B and the management switch.

IBM Storage Enclosure

Make the following connections on each storage enclosure.

Figure 1-3 Storage Connections

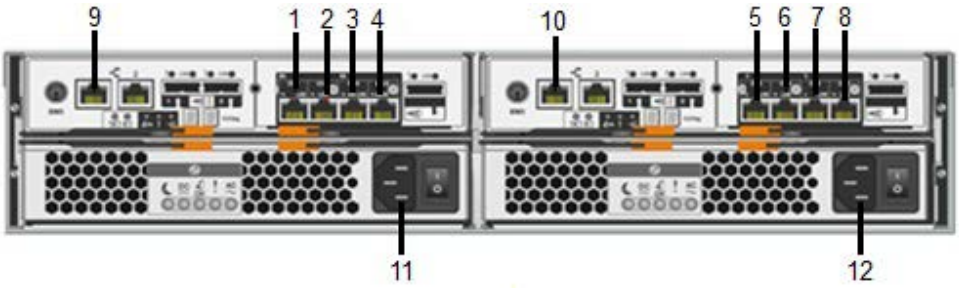


Table 1-3 Storage Connections

Port #	Description	Wire Connection	Notes
1	iSCSI connection	Connects to first Fabric Extender FEX 2248TP	
2	iSCSI connection	Connects to first Fabric Extender FEX 2248TP	
3	iSCSI connection	Connects to second Fabric Extender FEX 2248TP, if present, or to the first Fabric Extender if not	
4	iSCSI connection	Connects to second Fabric Extender FEX 2248TP, if present, or to the first Fabric Extender if not	
5	iSCSI connection	Connects to first Fabric Extender FEX 2248TP	
6	iSCSI connection	Connects to first Fabric Extender FEX 2248TP	
7	iSCSI connection	Connects to second Fabric Extender FEX 2248TP, if present, or to the first Fabric Extender if not	
8	iSCSI connection	Connects to second Fabric Extender FEX 2248TP, if present, or to the first Fabric Extender if not	
9	Management 1 controller A	Man1 StoX	Connects to the first management switch
10	Management 2 controller B	Man2 StoX	Connects to the second management switch if present, or to the first management switch if not

Table 1-3 Storage Connections

Port #	Description	Wire Connection	Notes
11	Power supply 1	PDU A	
12	Power supply 2	PDU B	

Note The storage enclosure has two controllers.

Note See Appendix B, "Cisco VDS TC Blade Server Cabling Guides when Using IBM DS3524 Storage Enclosures" for a full cabling diagram.

Follow these steps to wire the storage server:

Step 1 Connect the two management cables between the two management ports on the storage server and the ports on the management switches.

Step 2 Connect the iSCSI storage data cables between the storage server iSCSI in controller A and the management switch. Connect the iSCSI storage data cables between the storage server iSCSI in controller B and the management switch.

Additional Steps

You must also complete a proper installation and initial configuration of the Cisco UCS C220, the Cisco UCS Blade Servers, and the Cisco UCS 6248 UP Fabric Interconnects. For more information see the following documents and web pages on www.cisco.com:

- *Cisco UCS C-Series Rack Servers Install and Upgrade Guides* web page, available at http://www.cisco.com/en/US/products/ps10493/prod_installation_guides_list.html
- *Cisco UCS C-Series Rack Servers Configuration Guides* web page, available at http://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-c-series-rack-servers/products-installation-and-configuration-guides-list.html
- *Cisco UCS 6200 Series Fabric Interconnects At-A-Glance* available at http://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-6200-series-fabric-interconnects/at_a_glance_c45-675242.pdf
- *Cisco UCS 6200 Series Fabric Interconnect Hardware Installation Guide* available at http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/6200-install-guide/6200_HIG.html
- *Cisco UCS Manager CLI Configuration Guide, Release 2.0: Configuring the Fabric Interconnects* available at http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/sw/cli/config/guide/2-0/b_UCSM_CLI_Configuration_Guide_2_0/b_UCSM_CLI_Configuration_Guide_2_0_chapter_0100.html
- *Cisco UCS 5108 Server Chassis Installation Guide* available at http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/chassis-install-guide/ucs5108_install.html

- *Cisco UCS B200 M3 Blade Server Installation and Service Note* available at http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B200M3.html

Next you will configure the switches in a Blade Server cluster installation. This configuration is covered in the next chapter, Chapter 2, “Configuring the Switches in a Blade Server Cluster Installation”.

Configuring the Switches in a Blade Server Cluster Installation

The VDS TC Blade Server Cluster installation has switches that provide two different functions:

- **Data switch:** The Cisco UCS 6248 Fabric Interconnects connect to the data switch. The Cisco Blade Server cache engines communicate with the data switch through the Fabric Interconnects. A Cisco Nexus 7000 Series Switch is used for the VDS TC data switch, to which the Fabric Interconnect is connected. In a redundant configuration there is one Cisco Nexus 7000 Series Switch, but it will have two supervisor modules, two line cards, and redundant power supplies. There will also be two Cisco UCS 6248 Fabric Interconnects that will connect to the Cisco Nexus 7000 Series Switch.
- **Management switch:** The VDS TC Management Server, the storage chassis, and the management ports of the Cisco Fabric Interconnect connect to the management switch. The Nexus 7000 Series Switch is used as the management switch, as well as the data switch, using the Cisco Nexus 2232TME Fabric Extender if using NetApp SAN storage devices, or Cisco Nexus 2248TP Fabric Extender if using IBM SAN storage devices. In a VDS-TC-4B and VDS-TC-8B non-redundant installation, there will be only one Cisco Nexus 2232TME or Cisco Nexus 2248TP Fabric Extender. For a non-redundant VDS-TC-16B installation and all redundant installations, there will be two Cisco Nexus 2232TME or Cisco Nexus 2248TP Fabric Extenders.

Figure 2-1 Redundant 16 Blade Server (VDST-TC-16B) Cluster Configuration with 10Gb Connections to the NetApp Storage Enclosure

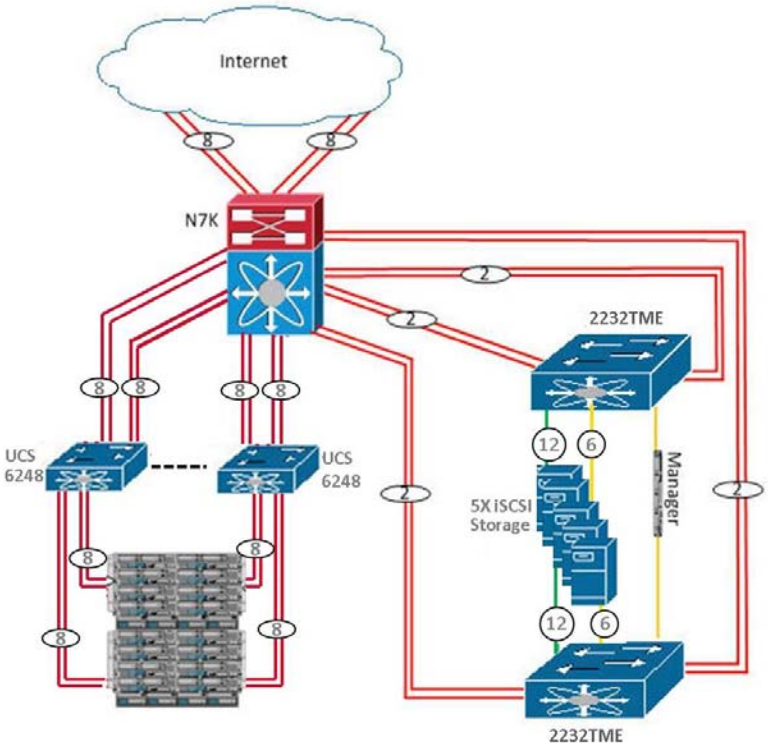


Figure 2-2 Redundant 16 Blade Server (VDST-TC-16B) Cluster Configuration with 1Gb Connections to the IBM Storage Enclosure

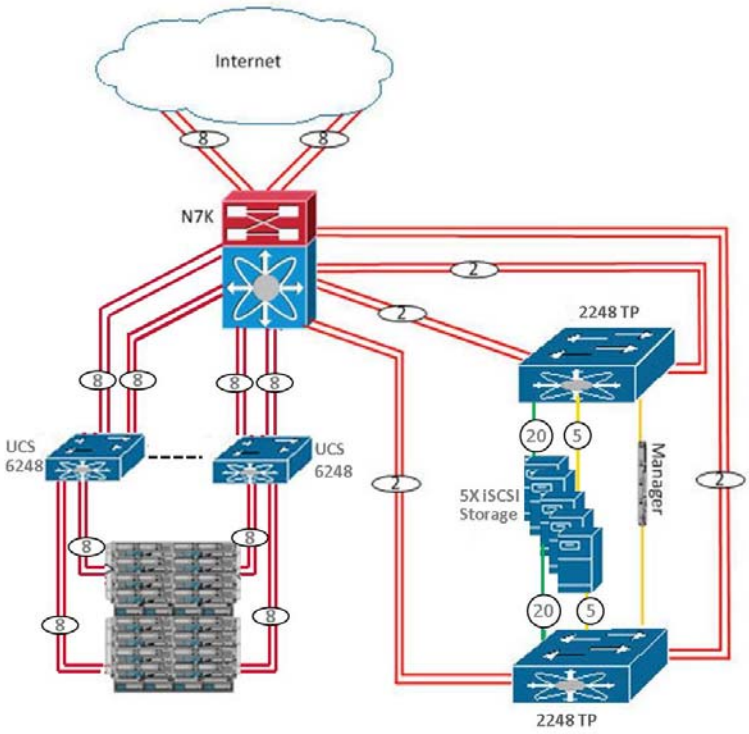


Figure 2-3 Redundant 8 Blade Server (VDST-TC-8B) Cluster Configuration with 10Gb Connections to the NetApp Storage Enclosure

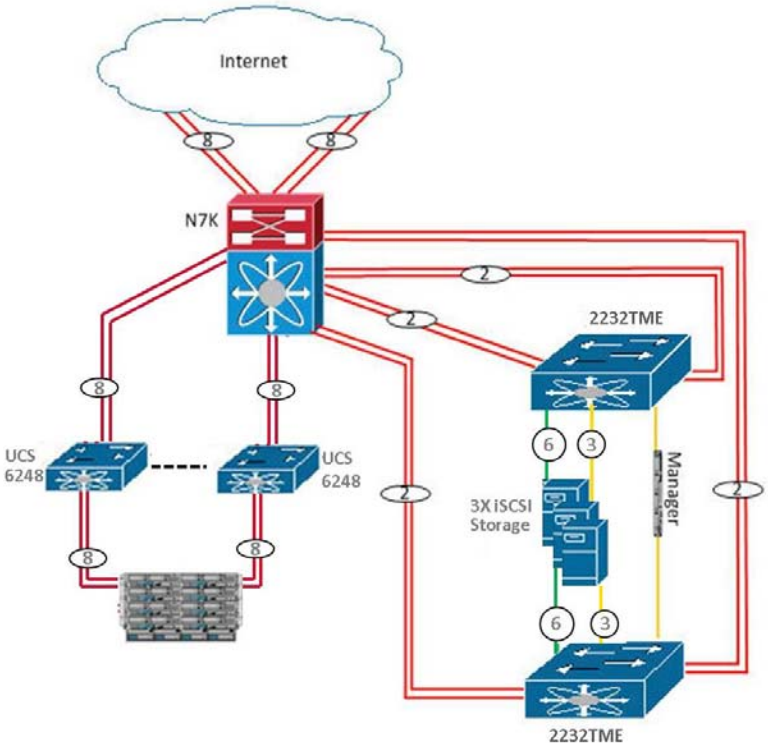


Figure 2-4 Redundant 8 Blade Server (VDST-TC-8B) Cluster Configuration with 1Gb Connections to the IBM Storage Enclosure

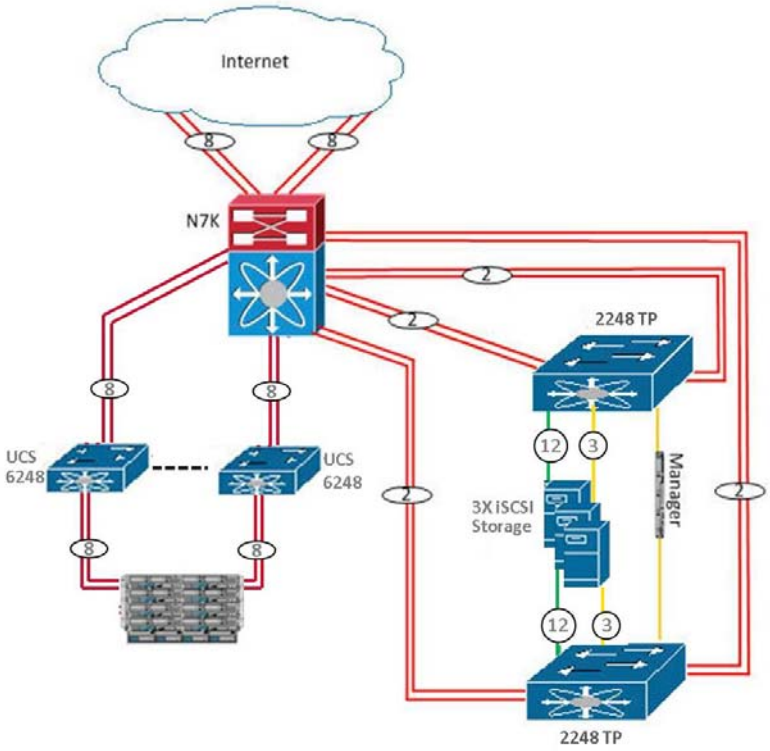


Figure 2-5 Redundant 4 Blade Server (VDST-TC-4B) Cluster Configuration with 10Gb Connections to the NetApp Storage Enclosure

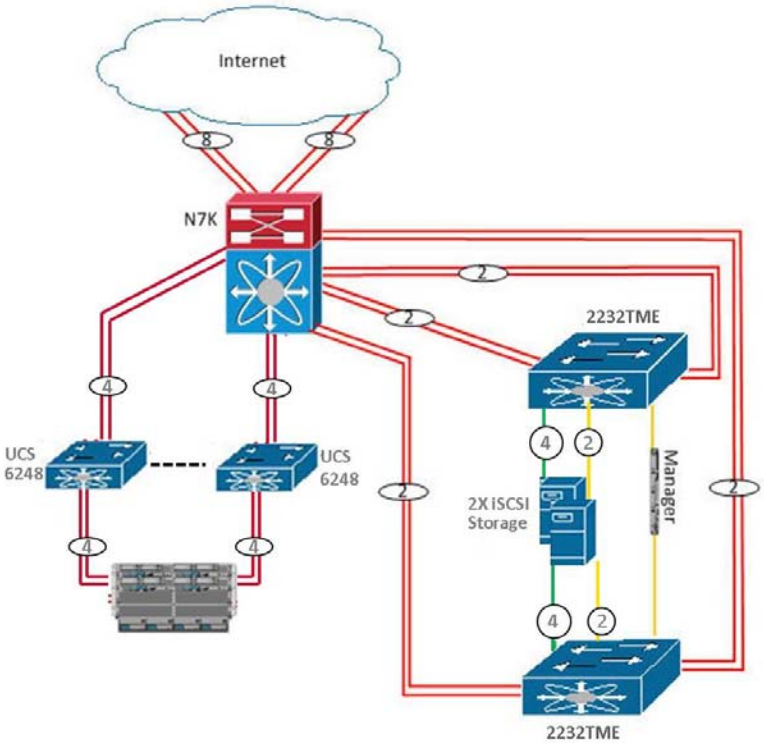
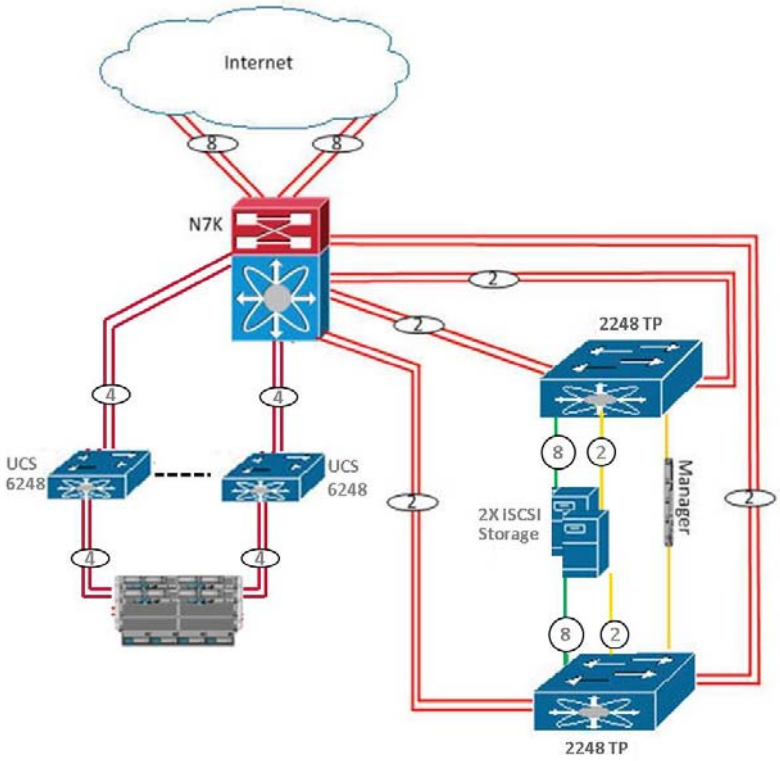


Figure 2-6 Redundant 4 Blade Server (VDST-TC-4B) Cluster Configuration with 1Gb Connections to the IBM Storage Enclosure



After initially installing the Cisco switches and configuring them with a management IP address and password, you must perform an initial setup on the switch for the VDS TC connections. You must install and configure the switches *before* you install the Cisco VDS TC Management Server.

Setup and Configuration of the Cluster Switches

Racking and Cabling

Before you begin configuring the Cisco Nexus 7000 Series Switch for the VDS TC installation, it should be physically installed according to the directions and specifications described in the *Cisco Nexus 7000 Series Hardware Installation and Reference Guide* available on Cisco.com: http://www.cisco.com/c/en/us/td/docs/switches/datacenter/hw/nexus7000/installation/guide/n7k_hig_book.html.

After physically installing the Cisco Nexus 7000 Series Switch, cable the switch according to the wiring scheme that is described in the Appendices of this document. Please refer to Appendix A, “Cisco VDS TC Blade Server Cabling Guides when Using the NetApp E2724 Storage Enclosures”if your VDS TC solution uses NetApp storage enclosures. Please refer to Appendix B, “Cisco VDS TC Blade Server Cabling Guides when Using IBM DS3524 Storage Enclosures” if your VDS TC solution uses IBM storage enclosures.

Preparing for the VDS TC Switch Configuration

Connect to the Console

Before you can begin configuring the Cisco Nexus 7000 Series Switch, you must establish a local management connection through a console terminal. Follow these steps to establish this connection:

Step 1 Configure the terminal to match the following default port characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- no parity

Step 2 Connect an RJ-45 rollover cable to one of the following serial ports on one of the supervisor modules on the Cisco Nexus 7000 Series switch:

- **Console Serial Port:** Use this port if you are not using a modem.
- **COM1/AUX Serial Port:** Use this port if you are using a modem (available with only Supervisor 1).

  You can find the RJ-45 rollover cable in the console cable connector kit, which is part of the accessory kit for the Cisco Nexus 7000 Series switch.

Step 3 Route the RJ-45 rollover cable through the center slot in the cable management system and then to the console or modem.

Step 4 Connect the other end of the RJ-45 rollover cable to the console or to a modem that can connect to the console. If the console or modem cannot use an RJ-45 connection, use one of the following adapters from the console cable connector kit:

- RJ-45/DSUB F/F adapter
- RJ-45/DSUB R/P adapter
- DB-9F/RJ-45F PC terminal

Perform Initial Switch Configuration

Use the setup utility of the Cisco NX-OS Switch to configure the switch fundamentals and create the Admin VDC. To perform this configuration, please refer to the *Using the Cisco NX-OS Setup Utility* document available at http://www.cisco.com/c/en/us/td/docs/switches/datacenter/sw/6_x/nx-os/fundamentals/configuration/guide/b_Cisco_Nexus_7000_Series_NX-OS_Fundamentals_Configuration_Guide_Release_6-x/b_Cisco_Nexus_7000_Series_NX-OS_Fundamentals_Configuration_Guide_Release_6-x_chapter_011.html.

Confirm the Switch NX-OS Version

The Cisco Nexus 7000 Series Switch for the VDS TC installation should run Cisco NX-OS Release 6.2(10) or later with a K9 feature set. Enter the command **show version** to check the version and features information of the switch.

Note If you need to upgrade the Cisco NX-OS release that is installed on the Cisco Nexus 7000 Series switch, please refer to "Cisco Nexus 7000 Series NX-OS Software Upgrade and Downgrade Guide, Release 6.x" available at http://www.cisco.com/c/en/us/td/docs/switches/datacenter/sw/6_x/nx-os/upgrade/guide/b_Cisco_Nexus_7000_Series_NX-OS_Software_Upgrade_and_Downgrade_Guide_Release_6-x.html.

Obtain VDS TC Switch Configuration Files

Before you can configure the switches to support the VDS TC installation, you must obtain a copy of the switch configuration files. You will use these configuration files to help you configure the VDS TC switch. The configuration files are available in a .tgz file that is available from the same location as the VDS TC ISO image file on www.cisco.com.

After you download the switch configuration files from cisco.com, unzip the file and locate the appropriate configuration files for your VDS TC installation. The switch configuration files for the Nexus 7000 Series Switches for a blade installation will typically be located in the following directory:

examples\B-Series\VDS-TC-*X*B\Switch_Configuration\Nexus7K

where *X* is the number of blade servers in your VDS TC installation. For example, for a VDS-TC-8B installation, the directory path would be examples\B-Series\VDS-TC-8B\Switch_Configuration\Nexus7K.

Note If you have a multicuster VDS-TC-16B solution, the switch configuration files for this solution should be located in the **examples\B-Series\VDS-TC-MULTIGRID-2x16B\Switches_Configuration** folder.

Which configuration files you should reference depends on how many blades are in your cluster installation. For example, if you have a Cisco VDS-TC-8B, you would locate the configuration files named VDS-TC-8B-MAIN-VDC-ITD.txt and VDS-TC-8B-DATA-VDC-ITD-IPV4.txt.

Caution The configuration files for the Main (Admin) VDC (these files will contain the word MAIN in their name) should *only* be used as a reference. These files should *not* be copied to the Admin VDC.

VDS TC Management and Data Switch Configuration

Cisco Nexus 7000 Series Switch Configuration

Follow this procedure to configure the Cisco Nexus 7000 Series Switch that is being used in a Blade Server cluster configuration:

Procedure

Step 1 Log into the CLI of the switch. You will need the username and password to access the CLI.

Step 2 You should make a backup copy of the current switch configuration before you configure the VDS TC switch just in case you need to roll back the configuration. To save a copy of the current switch configuration, use the **copy** command.

Step 3 After you have backed up your current running configuration, enter the **config t** command to enter global configuration mode. The global configuration mode prompt, switch(config)#, appears.

Step 4 Next you will create the data VDC. Enter the command **vdc** *vdc_name*, where *vdc_name* is the name of the VDC to create. To determine the name to use for *vdc_name*, open the switch configuration file named VDS-TC-*X*B-DATA-VDC-ITD-IPV4.txt, where *X* is the number of blades in your installation. Look for the **hostname** command at the beginning of the file and use the hostname referenced with this command as the VDC name.

For example, to create the data VDC for a VDS-TC-16B installation, enter the command:

vdc TC-16B-DATA

Step 5 To confirm that the VDC has been created, enter the command **show vdc** while still in vdc config mode.

Step 6 In VDC config mode, enter the following commands to assign interfaces to the VDC and allocate resources:

a. **limit-resource module-type f2 f2e**

b. **allow feature-set fex**

c. **allocate interface Ethernet3/1-48**

d. If you have a redundant switch configuration also enter the command **allocate interface Ethernet4/1-48**.

Step 7 Enter the command **end** to exit configuration mode.

Step 8 Enter the command **show run** and confirm the configuration of the newly created VDC.

Step 9 After you have confirmed the configuration, enter the command **write** or **copy run start** to save the configuration.

Step 10 Next you will apply a configuration to the data VDC. The data VDC configuration files are contained in the configuration .tgz file that you downloaded from cisco.com.

Step 11 Using a text editor, such as Notepad, open the appropriate data VDC configuration file and review the switch configuration file.

Note Which data VDC configuration file you should use depends on how many Blade Servers you have in your installation and if you have a VDS-TC-16B solution, whether that solution is a multicluster configuration. For example, if you have 16 Blade Servers in an installation that is *not* multicluster, you would use the file named VDS-TC-16B-DATA-VDC-ITD-IPV4.txt. If you have 16 Blade Servers in a multicluster installation, you would use the files named TC_16B_DATA_01_VDC_ITD_IPv4.txt and TC_16B_DATA_02_VDC_ITD_IPv4.txt. The multicluster switch configuration files will be in the examples\B-Series\VDS-TC-MULTIGRID-2x16B folder If you are unsure of which files to use, contact your Cisco representative.

Step 12 Make sure that the configuration file will not overwrite any necessary settings in your current switch configuration. Make any necessary changes to the switch configuration file that are appropriate for your installation and save the changes.

Step 13 To switch to the data VDC, enter the command **switchto vdc TC-*X*B-DATA**, where *X* is the number of Blade Servers you have installed. The VDC name that you are switching to should match the name of the VDC that you created in Step 4, for example TC-16B-DATA.

Step 14 Enter the **config t** command to enter global configuration mode. The global configuration mode prompt, switch(config)#, appears.

Step 15 Copy the content from the data VDC switch configuration file that you saved in Step 12 and paste them into the global configuration mode prompt of the CLI connection to the Nexus 7000 Series Switch.

Note It is recommended that you copy and paste just a few lines at a time to avoid any errors that the Nexus CLI parser may generate.

Step 16 Enter **exit** to return to Privileged mode.

Step 17 Enter **show running-config** and validate that the complete configuration was successful.

Step 18 After you have confirmed the configuration, enter the command **write** or **copy run start** to save the configuration to nvram.

Step 19 Enter the command **show int status** and confirm that all of the physical, port channel, and VLAN interfaces that are used by the VDS TC installation have a status of "connected." For any of these interfaces that have a status of "disabled", perform the following steps:

a. Enter the **config t** command to enter global configuration mode.

b. Enter the command **interface** *int-type slot#/por#* for an interface that needs to be enabled.

c. Enter the command **no shutdown** to enable the interface.

d. Repeat Steps b and c for any additional interfaces that need to be enabled.

e. Enter **exit** to return to Privileged mode.

f. Enter the command **show int status** and confirm that the status of the newly enabled interfaces is "connected".

Note If any of the interfaces that are used by the VDS TC installation have a status of "notconnected", check the cabling and configuration of these ports.

Step 20 Enter the command **show itd brief** and confirm that the status of ***all*** of the ITD services is "Active." Your output should be similar to the following:

```
TC-16B-Data# sho itd brief

Name           Probe LB Scheme  Interface  Status   Buckets
-------------- ----- ---------- ---------- -------- --------
internet-pbr1  ICMP  dst-ip     Vlan102    ACTIVE    32

Device Group                                          VRF-Name
----------------------------------------------------- -------------
cache-engines-pbr1                                   RTR-1

Node  IP                 Config-State Weight Status     Track_id  Sla_id
  ------------------------ ------------ ------ ---------- --------- ---------
  1     10.138.201.1        Active       1      OK           1         10001
  2     10.138.201.2        Active       1      OK           3         10003
  3     10.138.201.3        Active       1      OK           5         10005
  4     10.138.201.4        Active       1      OK           7         10007
  5     10.138.201.5        Active       1      OK           9         10009
  6     10.138.201.6        Active       1      OK           11        10011
  7     10.138.201.7        Active       1      OK           13        10013
  8     10.138.201.8        Active       1      OK           15        10015
  9     10.138.201.9        Active       1      OK           17        10017
  10     10.138.201.10      Active       1      OK           19        10019
  11     10.138.201.11      Active       1      OK           21        10021
  12     10.138.201.12      Active       1      OK           23        10023
  13     10.138.201.13      Active       1      OK           25        10025
  14     10.138.201.14      Active       1      OK           27        10027
  15     10.138.201.15      Active       1      OK           29        10029
  16     10.138.201.16      Active       1      OK           31        10031
```

```
<output omitted>
```

Step 21 For any ITD services that do not have a status of “Active”, perform the following steps:

a. Enter the **config t** command to enter global configuration mode.

b. Enter the command **itd** *itd_servic_name*, for example **itd internet-pbr1**.

c. Enter the command **no shutdown**.

d. Repeat Steps b and c for any other ITD services that need to be enabled.

e. Enter **exit** to return to Privileged mode.

f. Enter the command **show itd brief** and confirm that the ITD services all have a status of “Active.”

Step 22 After all of the ITD services are enabled, you will enable the generation of statistics for the ITD services.

Note Do not enter the commands in this step until the ITD services are “Active”.

To enable the generation of statistics for a specific ITD service, in global configuration mode enter the command **itd statistics** *itd_service_name*. Repeat this command for each ITD service. For a standard VDS TC ITD configuration, there will be eight ITD services and the configuration will look similar to the following:

```
(config)# itd statistics internet-pbr1
(config)# itd statistics internet-pbr2
(config)# itd statistics internet-pbr3
(config)# itd statistics internet-pbr4
(config)# itd statistics subscribers-pbr1
(config)# itd statistics subscribers-pbr2
(config)# itd statistics subscribers-pbr3
(config)# itd statistics subscribers-pbr4
```

Step 23 From Privileged mode, enter the command **write** or **copy run start** to save the configuration.

Step 24 Enter the **switchback** command to switchback to the main (admin) VDC.

Step 25 Enter the **reload** command to reload the Cisco Nexus 7000 Series Switch.

Caution The **reload** command disrupts traffic on the device.

Next you will install the VDS TC Management Server. This configuration is covered in the next chapter, Chapter 3, “Management Server Installation”.

Management Server Installation

This chapter describes how to configure the VDS TC Management server, including configuring the BIOS and operating system, internal system disk, and boot image. This chapter contains these sections:

- Configuring the BIOS and Operating System with CIMC for a Management Server that is not PID TCE-1300MGR-K9
- Configuring the Management IP Address and Password for a PID TCE-1300MGR-K9 Management Server
- Configuring the Boot Image
- Copying the ISO to the VDS TC Management Server
- Starting the VNC Server on the Management Server

Configuring the BIOS and Operating System with CIMC for a Management Server that is not PID TCE-1300MGR-K9

Note Perform the steps in this section only if you are *not* using a VDS TC Management server that was purchased using PID TCE-1300MGR-K9. If you are using a VDS TC Management server that was purchased using PID TCE-1300MGR-K9, go to the Configuring the Management IP Address and Password for a PID TCE-1300MGR-K9 Management Server section.

You will use the Cisco Integrated Management Controller (CIMC) to configure the VDS TC management server.

Note Do not perform these steps until you have completed the proper initial installation of the Cisco UCS server that is being used as the VDS TC management server. For more information, please refer to the Server Installation and Service Guide for the Cisco UCS C-Series Rack Server model that you are using for the VDS TC management server, available at http://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-c-series-rack-servers/products-installation-guides-list.html.

Use this procedure to configure the BIOS and Operating System using the CIMC.

Procedure

Caution Before you begin these configuration steps, confirm that the VDS TC management server is using the correct version of BIOS firmware. The BIOS firmware of the Cisco UCS C220 M3S should be Release 1.5.4.3. For instructions on how to perform a firmware upgrade see the *Cisco UCS C-Series Rack-Mount Server BIOS Upgrade Guide* available http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/sw/bios/b_Upgrading_BIOS_Firmware.html.

Step 1 Connect to the VDS TC management server. You can use either a KVM cable and the KVM connector, or the CIMC to connect to the VDS TC management server.

Note For more information on how to connect to the VDS TC management server, refer to the Server Installation and Service Guide for the Cisco UCS C-Series Rack Server model that you are using for the VDS TC management server, available at http://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-c-series-rack-servers/products-installation-guides-list.html.

Step 2 Boot up the VDS TC management server. From the Cisco BIOS screen press **F8** when prompted. The CIMC Configuration Utility window appears.

Step 3 From the CIMC Configuration Utility window, configure the following:

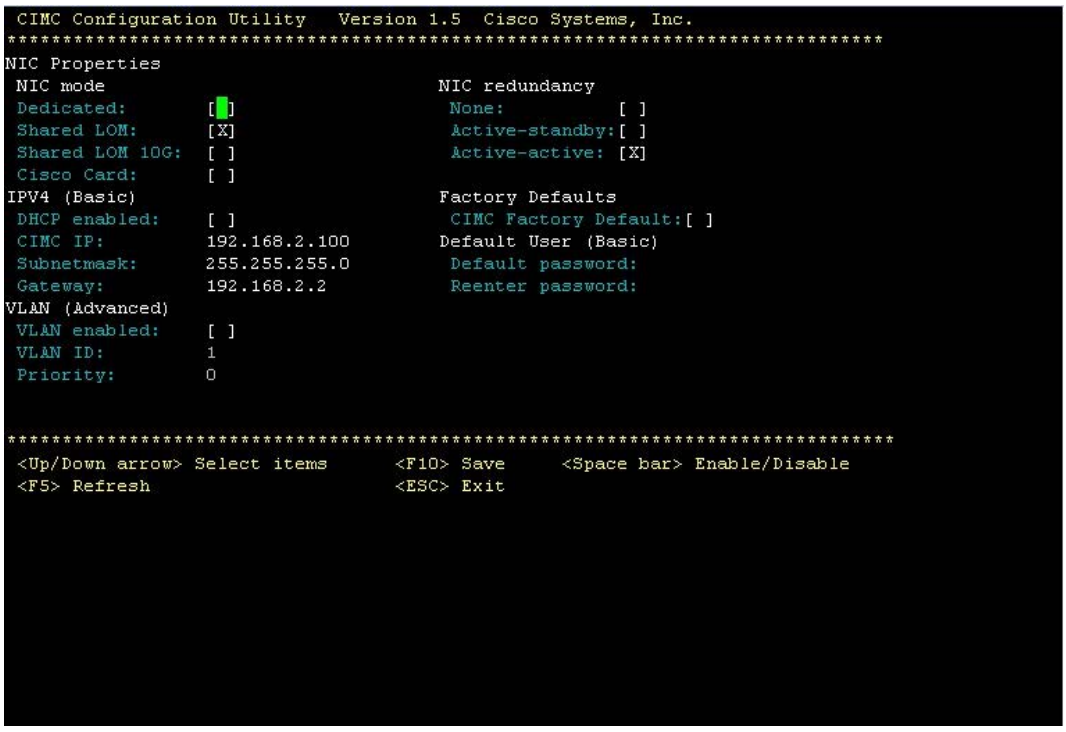
- **NIC Mode:** Choose **Shared LOM**.
- **IPV4 (Basic):**
  - Clear the **DHCP Enabled** option. This is enabled by default.
  - Enter the IP address and subnet mask to use for CIMC.
  - Enter the default gateway for the CIMC to use.

Note For a multicluster installation, each cluster should have its own VDS TC management server, and the CIMC IP address for each management server should be in a different subnet.

- **NIC Redundancy:** Choose **Active-active**.
- **Default User (Basic):** Enter and re-enter the password for the CIMC user. The default password is **password**.

Step 4 Press **F10** to save the configuration and **F5** to refresh.

Figure 3-1 CIMC Configuration Utility Screen

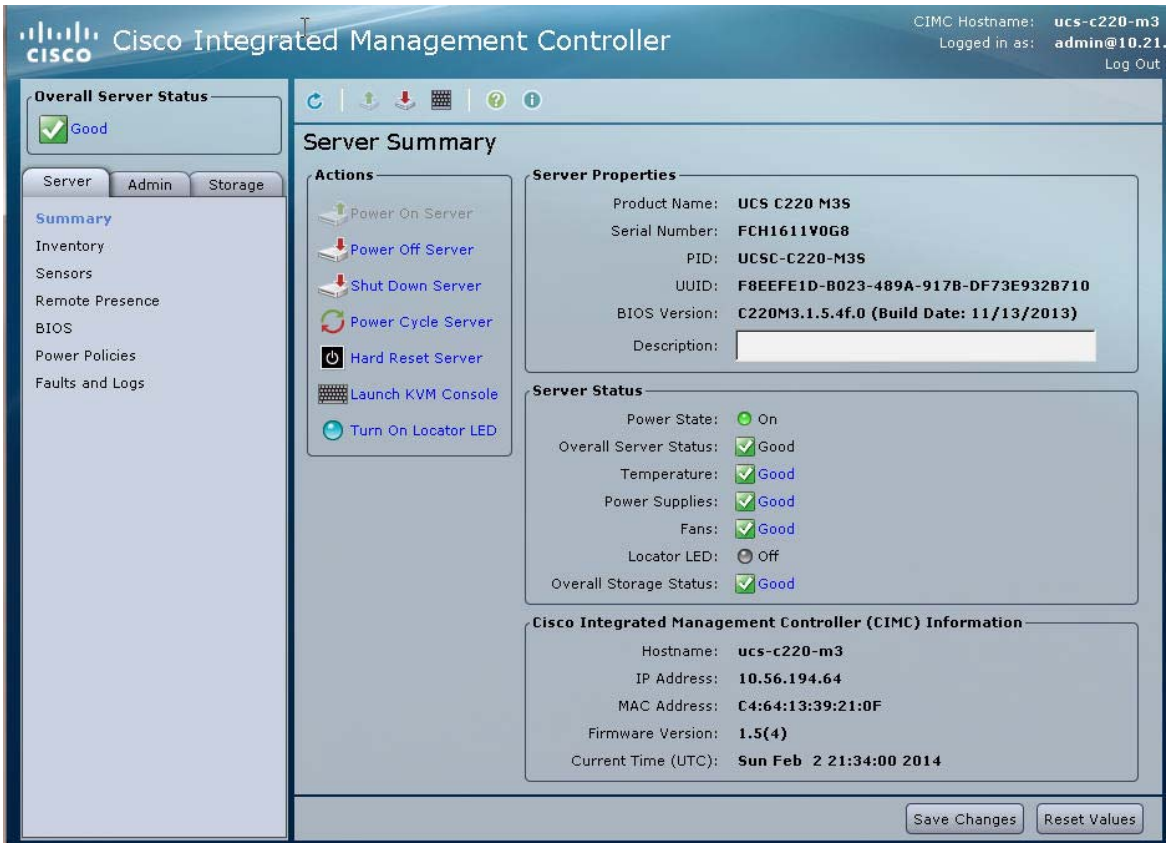


Step 5 Open a web browser and enter the IP address that you configured to access CIMC in Step 2. The CIMC login window appears.

Step 6 Enter the username **admin** and the password that you configured in Step 2 and click **Login**. The default password is **password**.

Step 7 The Cisco Integrated Management Controller: Server Summary window appears.

Figure 3-2 CIMC: Server Summary Window



Step 8 From the Server tab, choose **Remote Presence**. The Remote Presence window appears.

Step 9 Click the S**erial Over LAN** tab and check the **Enabled** check box.

Step 10 From the Baud Rate drop-down list choose **115.2 kbps** and from the Com Port drop-down list choose **com0**.

Step 11 Click the **Save Changes** button.

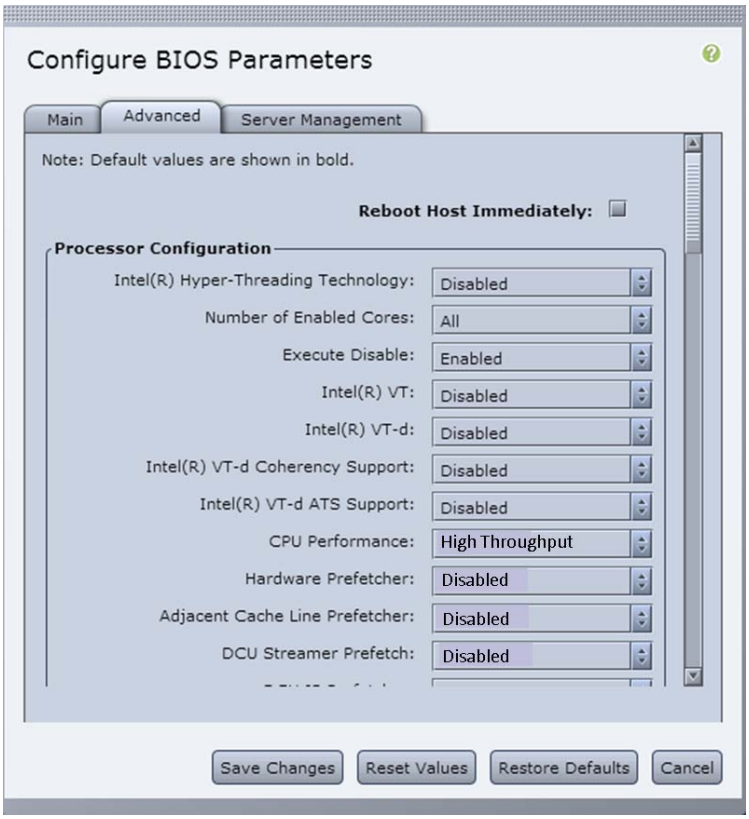
Figure 3-3 Serial Over LAN Window

Step 12 From the Server tab, choose **BIOS**.

Step 13 In the BIOS window, click **Configure BIOS**. The Configure BIOS Parameters window appears.

Step 14 Click the **Advanced** tab.

Figure 3-4 Configure BIOS Parameters Window: Advanced Tab



Step 15 Use the Advanced BIOS Parameters table to configure the settings on the Advanced tab.

Note Parameters that are not listed in the following table should be left set to their default value.

Table 3-1 Advanced BIOS Parameters

Processor Configuration	State
Hyper - Threading Technology	Disabled
Number Of Enabled Cores	All
Execute Disable	Enabled
Intel VT	Disabled
Intel VT-d	Disabled
Intel VT-d Coherency Support	Disabled
Intel VT-d ATS Support	Disabled
CPU Performance	High Throughput
Hardware Prefetcher	Disabled

Adjacent Cache Line Prefetch	Disabled
DCU Streamer Prefetch	Disabled
DCU IP Prefetcher	Enabled
Direct Cache Access Support	Enabled
Power Technology	Disabled
Enhanced Intel Speedstep Technology	Enabled
Intel Turbo Boost Technology	Disabled
Processor Power State C6	Disabled
Processor Power State C1 Enhanced	Disabled
Frequency Floor Override	Disabled
P-STATE Coordination	HW ALL
Energy Performance	Performance
Memory Configuration	**Status**
Select Memory RAS	Maximum Performance
DRAM Clock Throttling	Performance
NUMA	Enabled
Low Voltage DDR Mode	Performance Mode
Channel Interleaving	Auto
Rank Interleaving	Auto
Patrol Scrub	Enabled
Demand Scrub	Enabled
Altitude	300 M
QPI Configuration	**Status**
QPI Link Frequency Select	Auto
Onboard Storage	**Status**
Onboard SCU Storage Support	Disabled
Onboard SCU Storage SW Stack	LSI SW RAID
USB Configuration	**Status**
Legacy USB Support	Enabled
Port 60/64 Emulation	Enabled
All USB Devices	Enabled

USB Port: Rear	Enabled
USB Port: Front	Enabled
USB Port: Internal	Enabled
USB Port: KVM	Enabled
USB Port: VMedia	Enabled
USB Port:SD Card	Disabled
PCI Configuration	**Status**
MIMO above 4GB	Disabled
ASPM Support	Disabled
VGA Priority	Onboard
Serial Configuration	**Status**
Out-of-Band Mgmt Port	Disabled
Console Redirection	Disabled
Terminal Type	VT100+
Bits per Second	115200
Flow Control	None
Putty Keyboard	ESCN
Redirection After BIOS POST	Always Enable
LOM and PCIe Slots Configuration	**Status**
All Onboard LOM Ports	Enabled
LOM Port 0 OptionROM	Enabled
LOM Port 1 OptionROM	Enabled
LOM Port 2 OptionROM	Enabled
LOM Port 3 OptionROM	Enabled
All PCIe Slots OptionROM	Enabled
PCIe Slot:1 OptionROM	Enabled
PCIe Slot:2 OptionROM	Enabled
PCIe Slot:3 OptionROM	Enabled
PCIe Slot:4 OptionROM	Enabled
PCIe Slot:5 OptionROM	Enabled
PCIe Mezzanine OptionROM	Enabled

PCIe Slot:1 Link Speed	GEN3
PCIe Slot:2 Link Speed	GEN3
PCIe Slot:3 Link Speed	GEN3
PCIe Slot:4 Link Speed	GEN3
PCIe Slot:5 Link Speed	GEN3

Step 16 Click **Save Changes**.

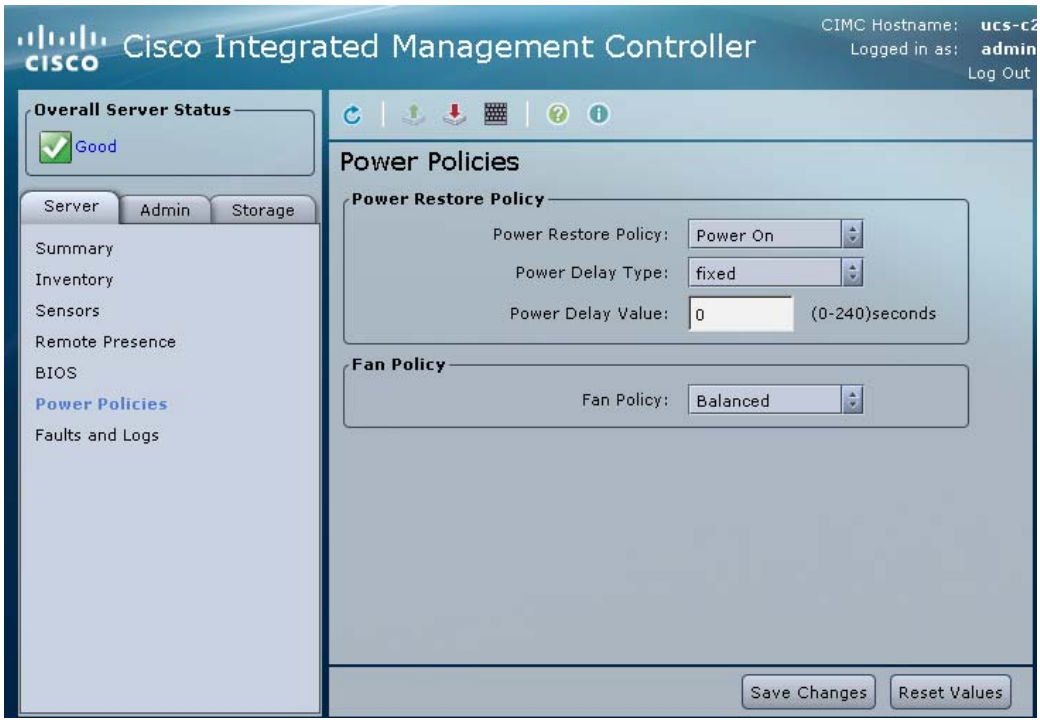
Step 17 From the Server tab, choose **Power Policies**. The Power Policies window appears.

Step 18 In the Power Policies window configure the following settings:

- From the Power Restore Policy drop-down list, choose **Power On**.
- From the Power Delay Type drop-down list, choose **Fixed**.
- In the Power Delay Value text box, enter **0**.
- From the Fan Policy drop-down list, choose **Maximum Power**.

Step 19 Click **Save Changes**.

Figure 3-5 Power Policies Screen



Step 20 From the Server tab choose **BIOS**.

Step 21 From the BIOS window, click **Configure Boot Order**.

Step 22 Click **OK** to close the Manage Boot Order dialog box. The Configure Boot Order dialog box appears.

Step 23 Add the following Device Types to the Boot Order list:

- HDD
- CDROM

Step 24 Click **Apply**.

Figure 3-6 Configure Boot Order Window

Step 25 The BIOS is now configured.

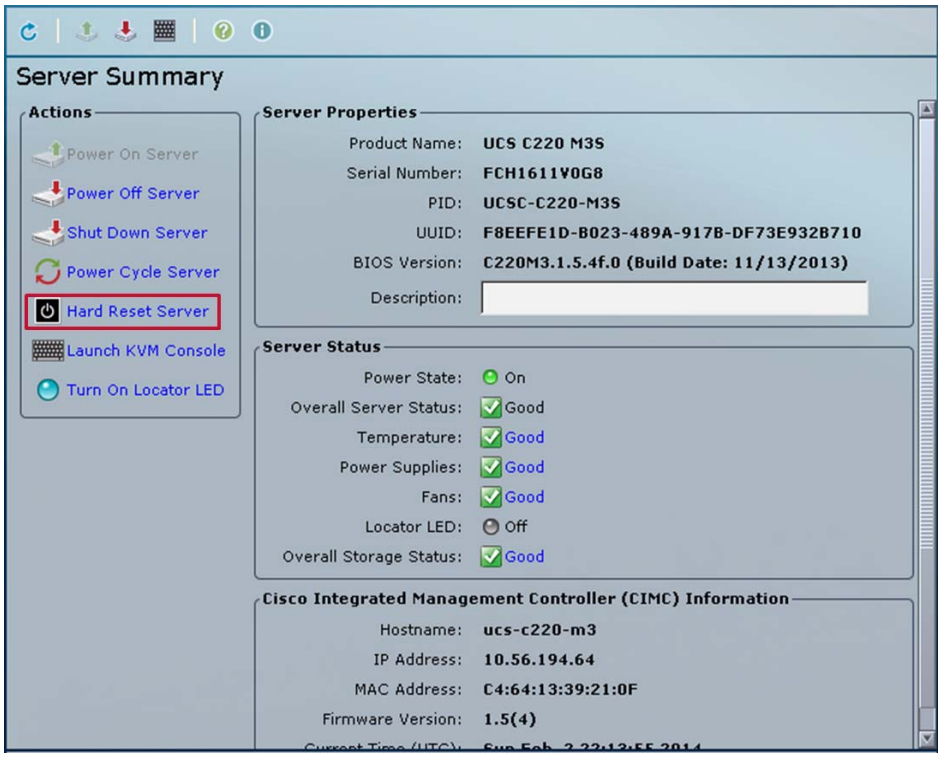
Step 26 From the Server tab, choose **Summary**.

Step 27 In the Actions pane, click **Launch KVM Console**. This will launch the KVM Console window for this server. You will use the KVM Console to configure the boot image in the next section.

Note If you do not have Java™ installed on your computer, or your version is older than that required by the KVM Console, a dialog box will appear. Install or update Java ™ and continue with the installation procedure.

Step 28 In the Actions pane, click **Hard Reset Server**.

Figure 3-7 Server Summary Window



Step 29 From the Hard Reset Server popup window, click **OK** to reset the server.

Note This will drop your connection to the CIMC UI momentarily and you will have to log back into the system.

Step 30 Continue to the Configuring the Boot Image section.

Configuring the Management IP Address and Password for a PID TCE-1300MGR-K9 Management Server

Note Perform the steps in this section only if you purchased a VDS TC management server using PID TCE-1300MGR-K9.

The PID TCE-1300MGR-K9 ships with a default management IP address (10.11.12.253) and password that you should change before installing VDS TC. Follow these steps to changes these settings:

Procedure

Step 1 Connect to the VDS TC management server. You can use either a KVM cable and the KVM connector, or you can use a web browser and the default IP address of 10.11.12.253 that is preconfigured on the TCE-1300MGR-K9 VDS TC management server to connect to the CIMC. The default password is preset by Cisco specifically for VDS-TC. Please contact your Cisco account system engineer if you need this password.

Note For more information on how to connect to the VDS TC management server, refer to the *Cisco UCS C-Series Rack Servers Install and Upgrade Guides* web page available at http://www.cisco.com/en/US/products/ps10493/prod_installation_guides_list.html.

Step 2 Boot up the VDS TC management server. From the Cisco BIOS screen press **F8** when prompted. The CIMC Configuration Utility window appears.

Step 3 From the CIMC Configuration Utility window, configure the following:

- **IPV4 (Basic):**
  - Enter the IP address and subnet mask to use for CIMC. This should be an IP address on your network.
  - Enter the default gateway for the CIMC to use.

Note For a multicluster installation, each cluster should have its own VDS TC management server, and the CIMC IP address for each management server should be in a different subnet.

- **Default User (Basic):** Enter and re-enter a new password for the CIMC user. The default password has been preconfigured by Cisco specifically for VDS TC. Please contact your Cisco account system engineer for details.

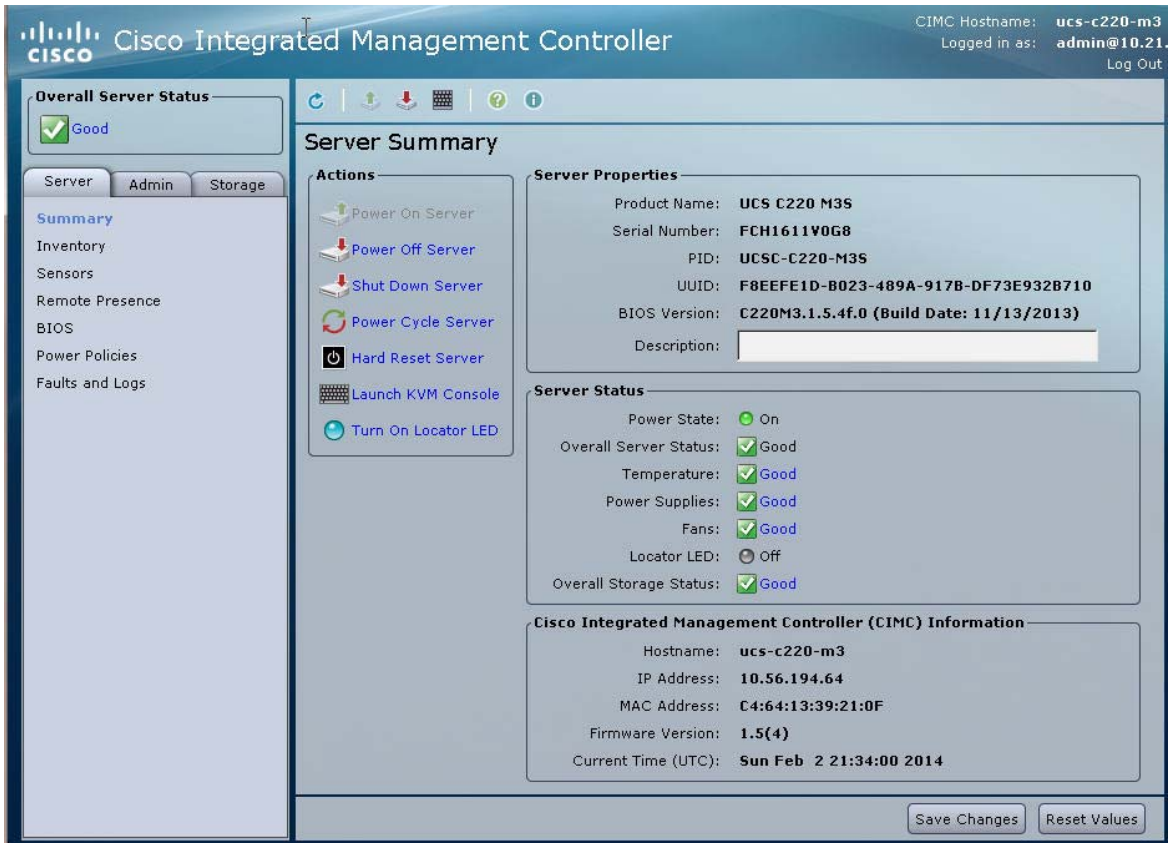
Step 4 Press **F10** to save the configuration and **F5** to refresh.

Step 5 Open a web browser and enter the IP address that you configured in Step 3. The CIMC login window appears.

Step 6 Enter the username **admin** and the password that you configured in Step 3 and click **Login**. The default password has been preconfigured by Cisco specifically for VDS TC. Please contact your Cisco account system engineer for details.

Step 7 The Cisco Integrated Management Controller: Server Summary window appears.

Figure 3-8 CIMC: Server Summary Window



Step 8 From the Server tab, choose **Summary**.

Step 9 In the Actions pane, click **Launch KVM Console**. This will launch the KVM Console window for this server. You will use the KVM Console to configure the boot image in the next section.

Note If you do not have Java™ installed on your computer, or your version is older than that required by the KVM Console, a dialog box will appear. Install or update Java ™ and continue with the installation procedure.

Configuring the Boot Image

The next step in the VDS TC Blade Server cluster installation process is to configure the boot image of the VDS TC management server. Follow this procedure to configure the boot image:

Procedure

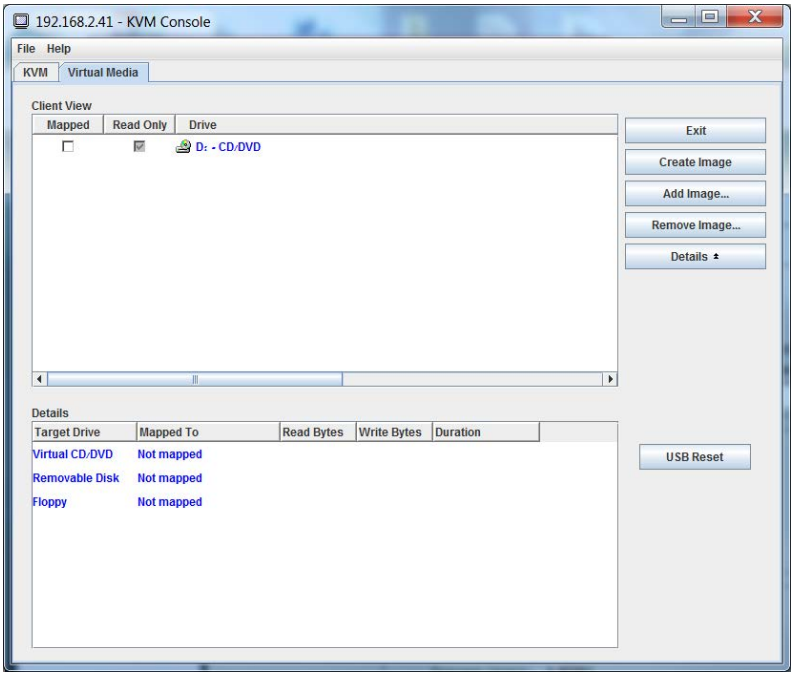
Step 1 From the KVM console, click the **Virtual Media** tab.

Step 2 If the Unencrypted Virtual Media Session window appears, choose **Accept this session** and click **Apply**.

Figure 3-9 Unencrypted Virtual Media Session

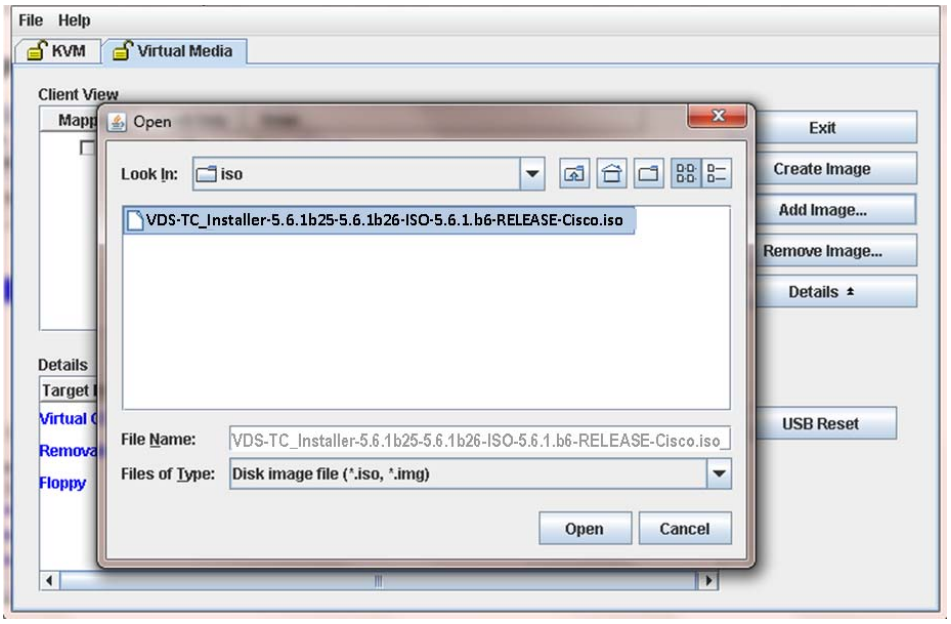
Step 3 Click **Add Image**.

Figure 3-10 Virtual Media Tab



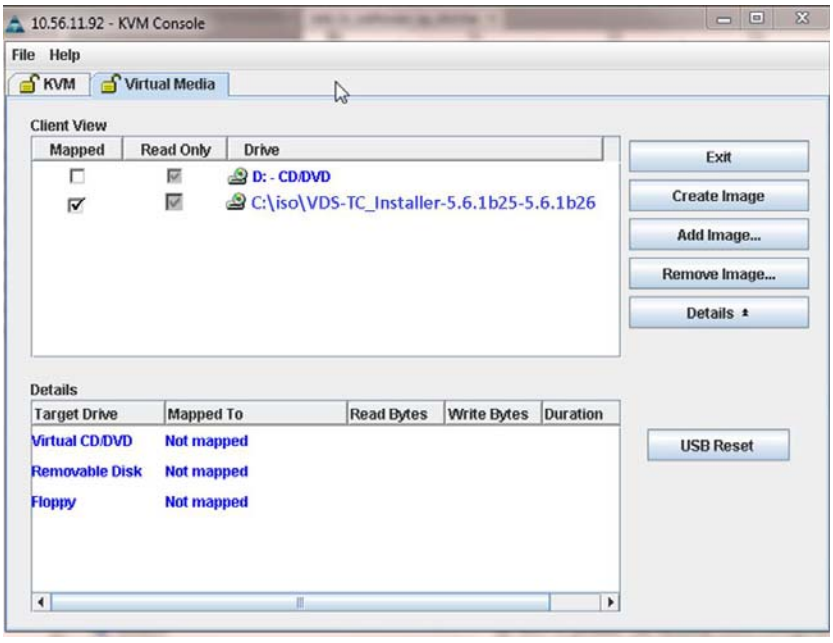
Step 4 Browse for and select the ISO installer image and click **Open**.

Figure 3-11 Browse for Image



Step 5 Check the Mapped check box for the newly added ISO image file.

Figure 3-12 Mapped ISO File

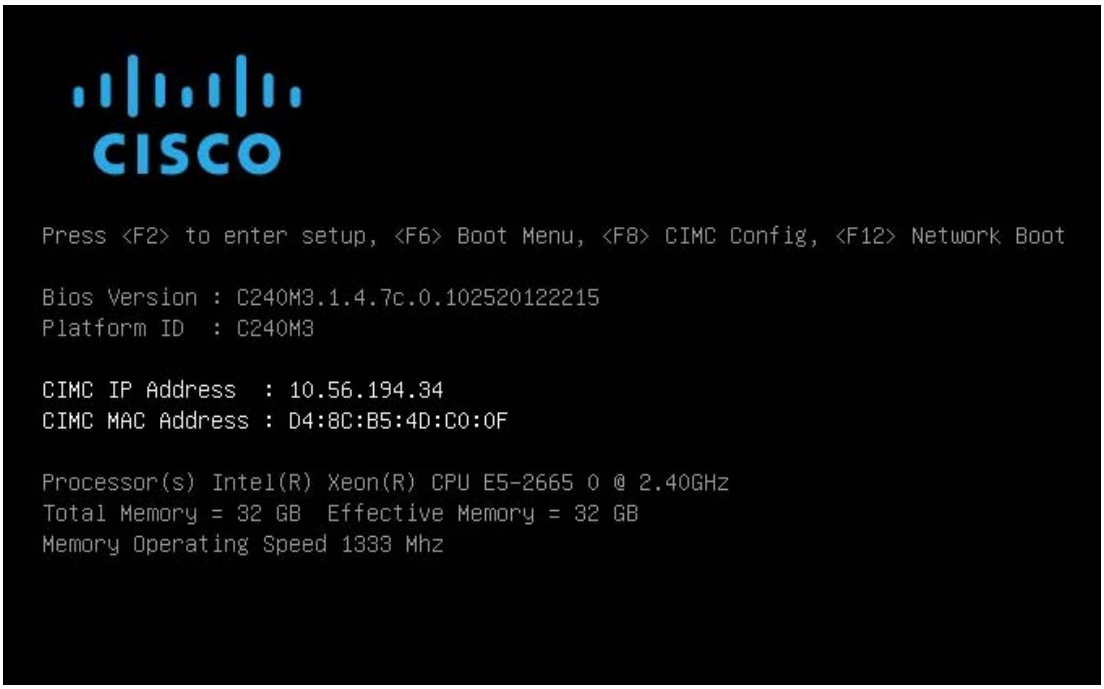


Step 6 Reboot the system by choosing **Macros > Static Macros > Ctrl-Alt-Del** from the KVM console, or from the CIMC user interface choose **Server > Summary** and click **Hard Reset Server**.

Step 7 As the system reboots, switch back to the KVM console and click the **KVM** tab.

Step 8 When you see the prompt that says to press F6 to enter the boot menu, press **F6**. The Please Select Boot Device dialog box appears.

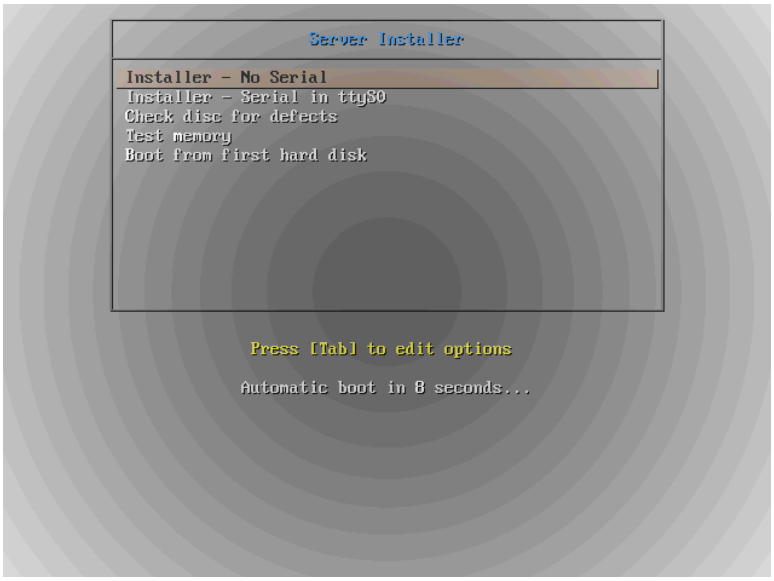
Figure 3-13 System Reboot Window



Step 9 Using the up and down arrows, choose **vKVM-Mapped vDVD1.22**. The system will reboot from the virtual ISO image.

Step 10 When the VDS-TC Installer environment displays in the KVM console window, choose **Installer - No Serial**.

Figure 3-14 VDS TC Installer Window

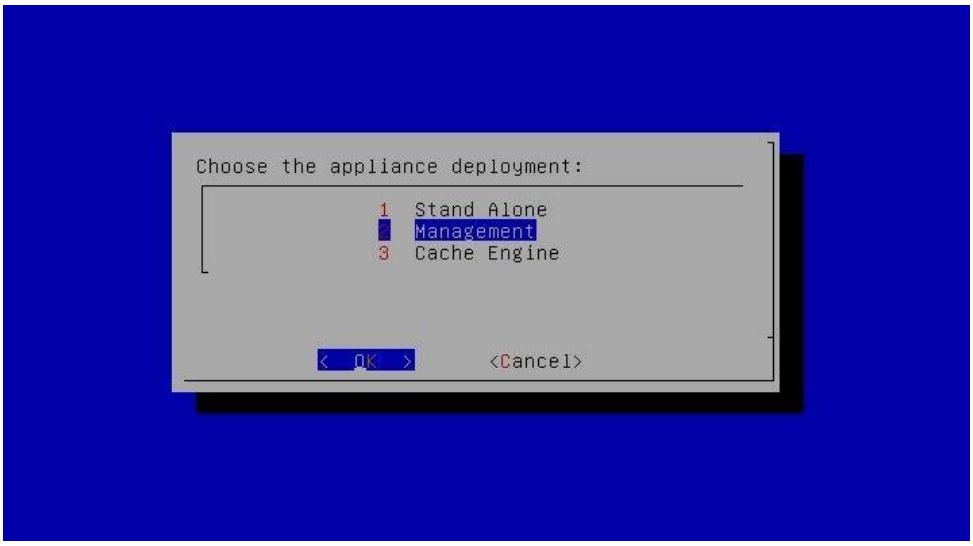


Step 11 When the Welcome screen appears, enter **Y** to continue the installation process.

Figure 3-15 Welcome Screen

Step 12 When you see the Choose the Appliance Deployment window, select **Management** and click **OK**.

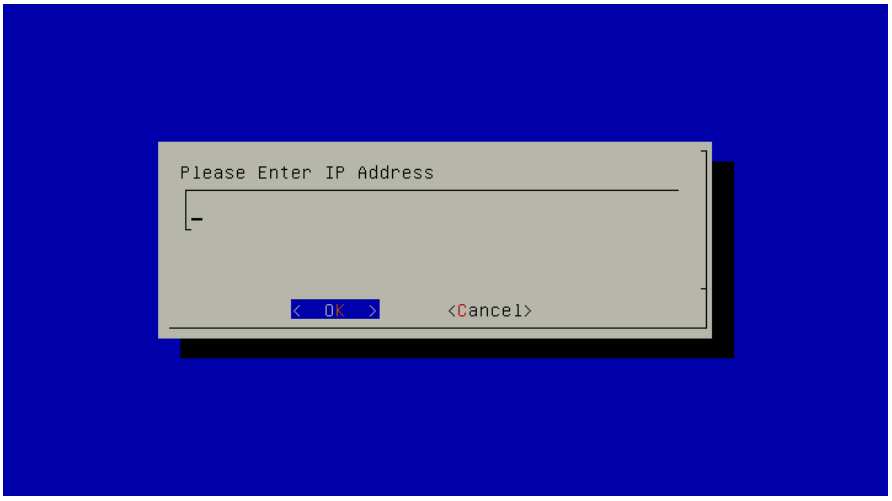
Figure 3-16 Choose the Appliance Deployment Window



Step 13 When prompted, enter a management IP address for the VDS TC management server and choose **OK**. You will use this IP address to connect to the CLI of the VDS TC management server using SSH and to connect to the VDS TC management server using VDS TC Manager.

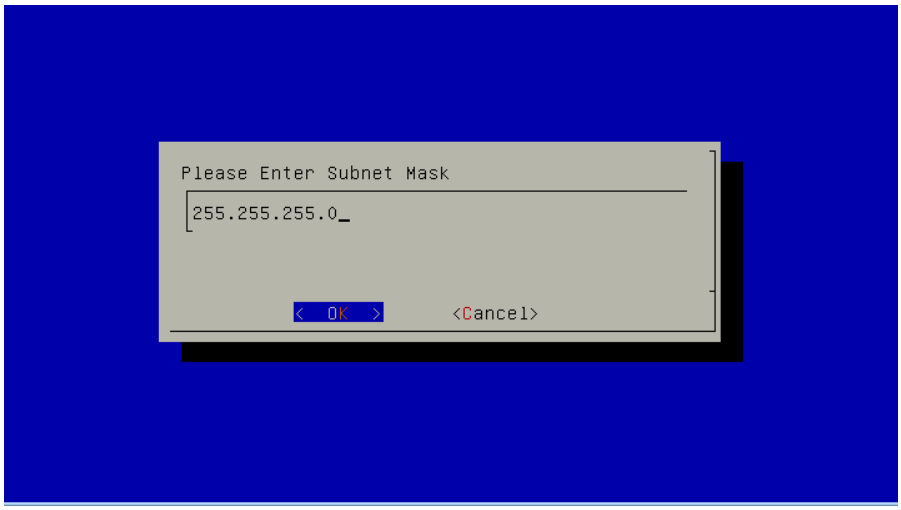
Note For a multicluster installation, each cluster should have its own VDS TC management server, and the management IP address for each management server should be in a different subnet.

Figure 3-17 Enter IP Address Window



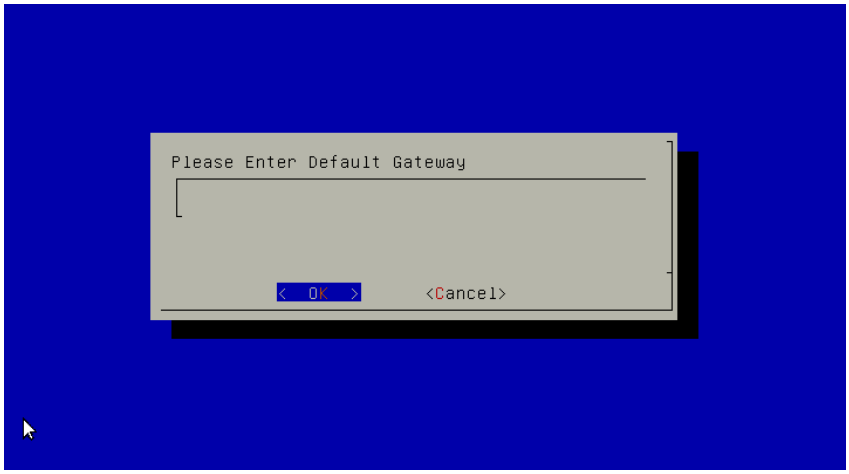
Step 14 When prompted, enter the subnet mask for the management IP address and choose **OK**.

Figure 3-18 Enter Subnet Mask Window



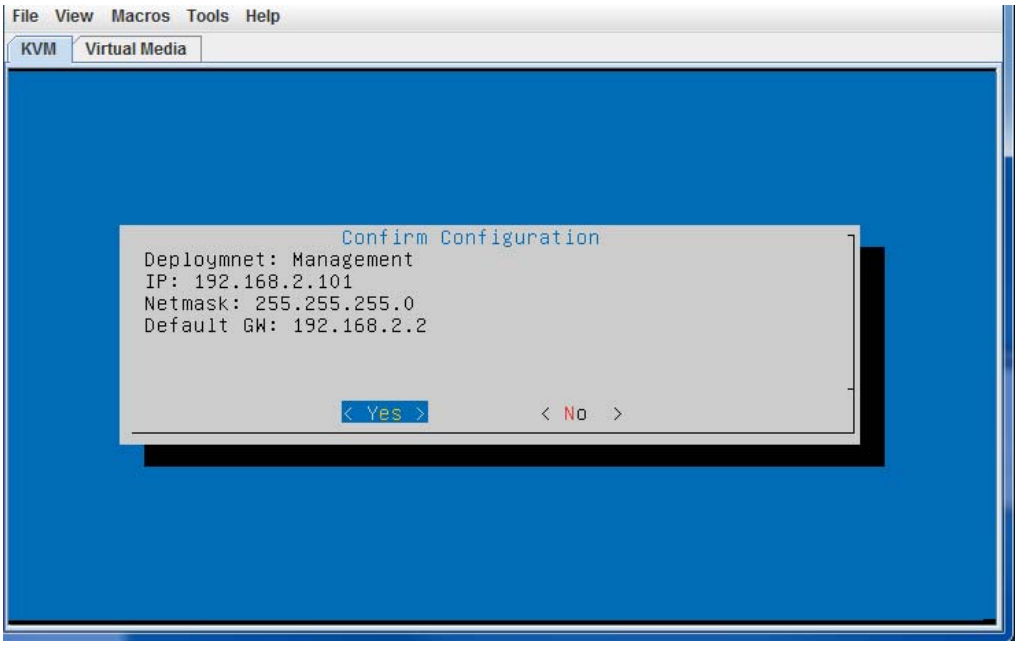
Step 15 When prompted, enter the default gateway for the VDS TC management server to use and choose **OK**.

Figure 3-19 Enter Default Gateway Window



Step 16 Confirm the system configuration. If everything is correct, choose **Yes**. If there is a mistake, choose **No** and repeat Step 11 through Step 15.

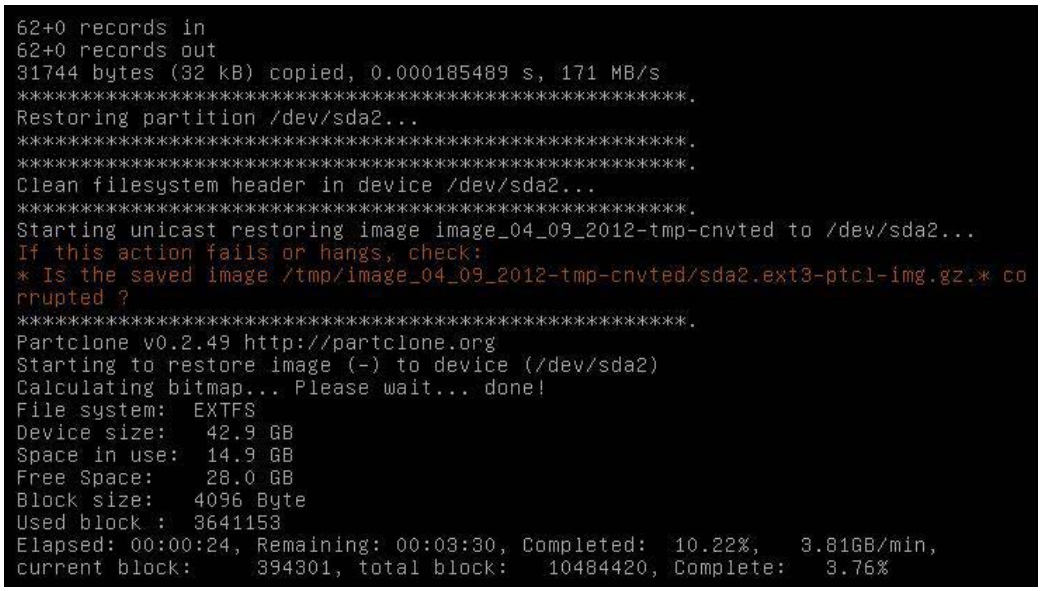
Figure 3-20 Confirm Configuration



Step 17 From the KVM window you will see the installation begin.

Note This installation step can take up to two hours.

Figure 3-21 VDS TC Installation Process: System Image Dumping Screen



Step 18 When the installation completes, you must unmap the ISO image file. When the "Installation completed. Press <Enter> to reboot." message appears, press **Enter**.

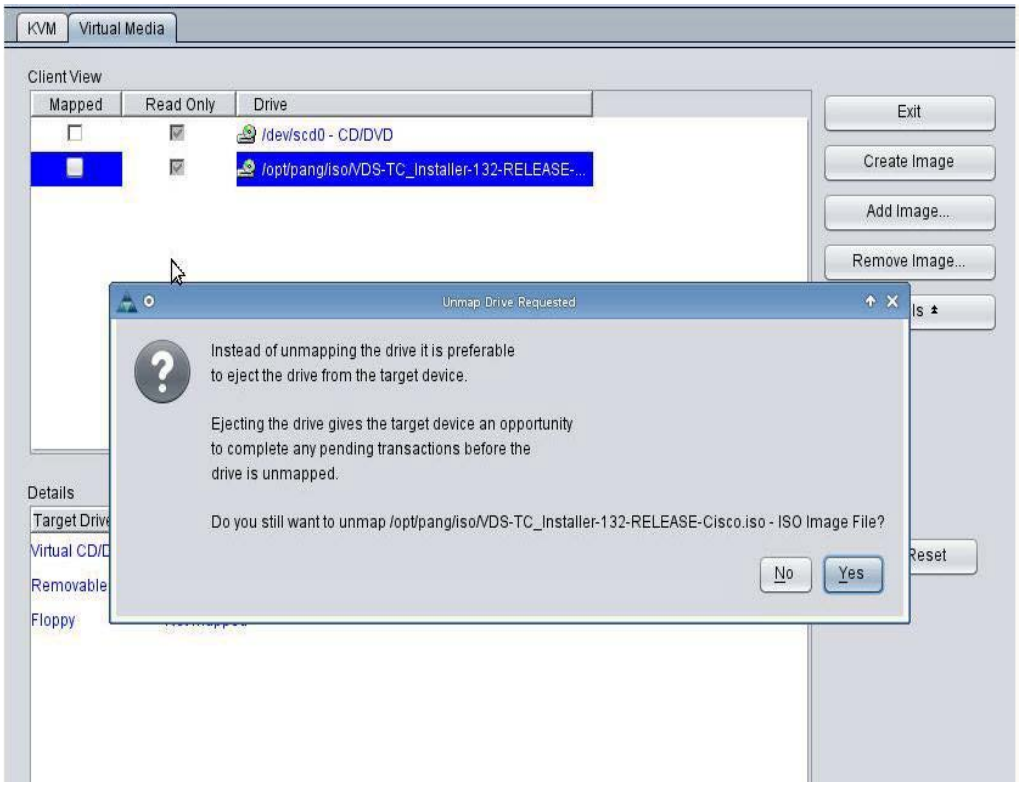
Figure 3-22 Installation Completed Window

Note W*ait* for the system to reboot and display the BIOS splash screen, as shown in Figure 3-13 "System Reboot Window", before proceeding to the next step.

Step 19 From the KVM console window, click the **Virtual Media** tab and uncheck the **Mapped** check box next to the ISO image file.

Step 20 In the Unmap Drive Requested dialog box, click **Yes** to confirm the unmapping the image file. This unmounts the ISO image.

Figure 3-23 Unmap Drive Requested Window



Step 21 Reboot the system by choosing **Macros > Static Macros > Ctrl-Alt-Del** from the KVM console, or by using the CIMC user interface.

Note The first time you reboot the system after the installation can take up to 10 minutes because of the initial disk checkup.

Copying the ISO to the VDS TC Management Server

Next you must copy the ISO image to the management server. Follow this procedure to copy the ISO image to the VDS TC Management Server.

Procedure

Step 1 Using SFTP software, such as WinSCP, connect to the VDS TC Management Server using the IP address that you assigned during the "Configuring the Boot Image" process. Log in using the user name **padmin** and the password that was provided by Cisco.

Step 2 Create the folder **/opt/pang/iso**. Copy the ISO file that you received from Cisco into this folder.

Note You must copy the ISO image to the VDS TC Management Server because it is the only system that has access to the management interfaces of the cache engines and the CIMC.

Starting the VNC Server on the Management Server

Follow this procedure to start the VNC server on the VDS TC Management Server:

Procedure

Step 1 Using SSH software, such as Putty, open an SSH connection to the IP address that was assigned to the VDS TC Management Server.

Step 2 Log into the system using the username **padmin** and the password provided by Cisco.

Step 3 Enter the command **su root** to change to the root user. Enter the password for the root user when prompted. This password is provided by Cisco.

Step 4 Enter the command **vncserver :1** to start the VNC Server.

Step 5 Enter the following commands to enable the virtual media:

a. **cd /etc/init.d/**

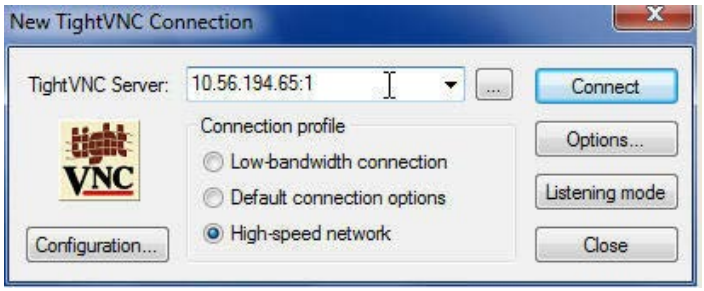
b. **cp boot.local boot.local.bak**

c. **echo "ip route change 10.11.80.0/24 dev bond0 proto kernel scope link src 10.11.80.1 mtu 1400">> boot.local**

d. **./boot.local 2>/dev/null**

Step 6 Use VNC to connect from your local computer to the VDS TC Management Server, using the IP address that you configured.

Figure 3-24 VNC Viewer



Next you will install the VDS TC Cache Engine. This configuration is covered in the next chapter, Chapter 4, “Cache Engine Servers Installation”.

Cache Engine Servers Installation

This chapter describes how to configure the VDS TC Cache Engine servers in a Cisco Blade Server cluster installation including configuring the BIOS and operating system. This chapter includes the following sections:

- Configuring the BIOS and Operating System Using Cisco UCS Manager
- Configuring the Boot Image
- Running the Post Installation Scripts

Configuring the BIOS and Operating System Using Cisco UCS Manager

Note Do not perform these steps until you have completed the proper installation and initial configuration of the Fabric Interconnects and the Cisco UCS Blade Servers. In a multicluster installation, make sure that the IP addresses that you assign to the Fabric Interconnects are in the same subnet as their respective VDS TC Management Server.

For more information, see the *Cisco UCS Manager GUI Configuration Guide, Release 2.2* document available at http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/sw/gui/config/guide/2-2/b_UCSM_GUI_Configuration_Guide_2_2.html.

Preparing for the Configuration

Before you begin the configuration steps, confirm that the Cisco B200 M3 cache engine and the Cisco UCS 6248 UP Fabric Interconnect are using the correct version of BIOS firmware. The BIOS firmware of the Cisco B200 M3 and Cisco UCS 6248 UP Fabric Interconnect should be Release 2.2.3.c.

Follow these steps to check the firmware version that is installed:

Step 1 Open a web browser and enter the IP address of the management port for the Fabric Interconnect. In a redundant installation, enter the Cluster (virtual) IP address. These addresses were configured as part of the initial installation and configuration of the Cisco UCS 6248 UP Fabric Interconnect. The Cisco UCS Manager window appears.

Figure 4-1 Cisco UCS Manager Window

Step 2 Click **Launch UCS Manager**. Click **OK** to open the .jnlp file with Java(TM) Web Start Launcher.

Step 3 In the Cisco UCS Manager Login window that appears, enter the username **admin** and the password that was configured during the initial system setup of the fabric interconnect, and then click **Login**.

Figure 4-2 Cisco UCS Manager Login Window

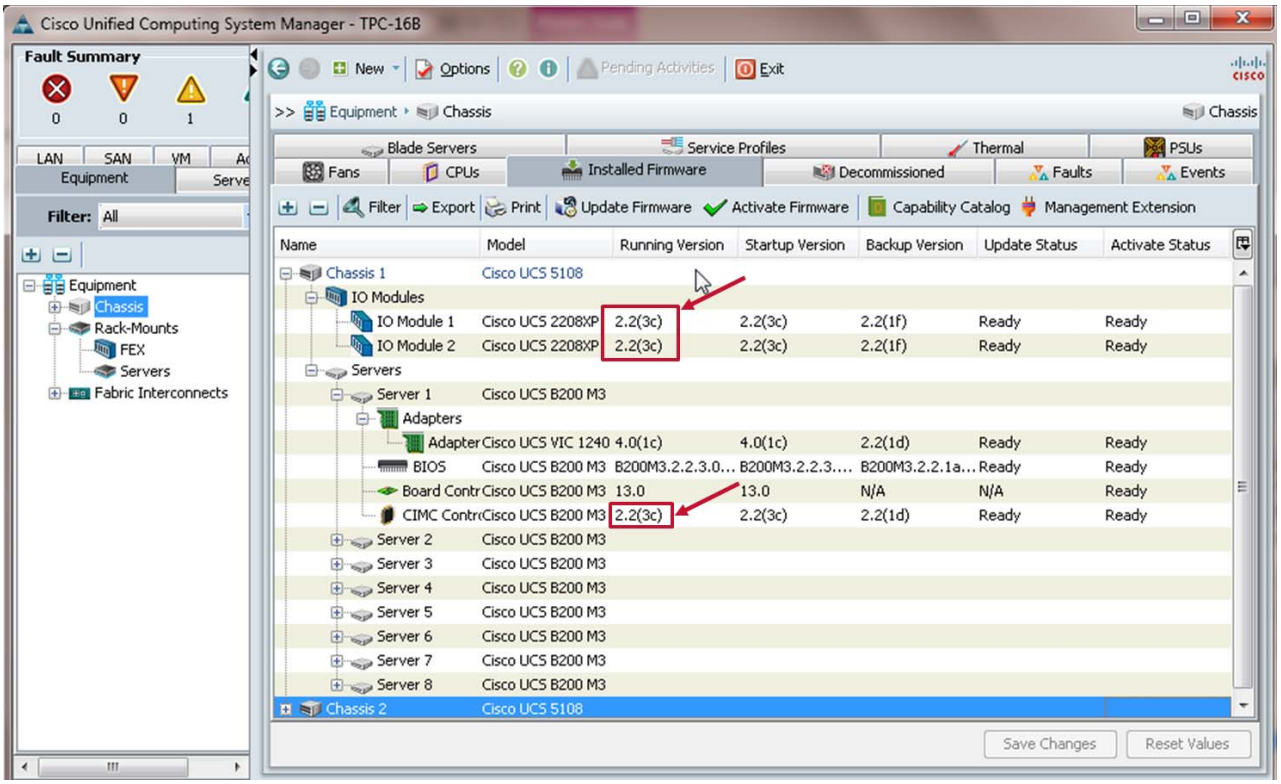
Step 4 In the navigation pane on the left, click the **Equipment** tab.

Step 5 In the navigation pane, choose **Equipment** > **Chassis** and click the **Installed Firmware** tab.

Step 6 Expand **Chassis 1 > IO Modules**. In the Running Version column, confirm that the version is 2.2.3c for the IO modules. For a redundant configuration, expand **Chassis 2> IO Modules**. In the Running Version column, confirm that the version is 2.2.3c for the IO modules.

Step 7 Expand **Chassis 1 > Servers**. Expand each server and confirm that the CIMC Controller for each server has version 2.2.3c in the Running Version column. For a redundant configuration, expand **Chassis 2> Servers**. Expand each server and confirm that the CIMC Controller for each server has version 2.2.3c in the Running Version column.

Figure 4-3 Confirm Firmware Version



Step 8 If an upgrade is required, download the appropriate firmware from Cisco.com and refer to the following documentation to perform the upgrade:

- To upgrade from Cisco UCS Release 2.0 to Cisco UCS Release 2.2, see the *Upgrading Cisco UCS from Release 2.0 to Release 2.2* web page available at http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/sw/upgrading/from2-0/to2-2/b_UpgradingCiscoUCSFrom2-0To2-2.html.
- To upgrade from Cisco UCS Release 2.1 to Cisco UCS Release 2.2, see the *Upgrading Cisco UCS from Release 2.1 to Release 2.2* web page available at http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/sw/upgrading/from2-1/to2-2/b_UpgradingCiscoUCSFrom2-1To2-2.html.

Importing the XML Configuration File

You will import an XML file using the Cisco UCS Manager to configure the VDS TC Cache Engine servers. Use the following procedure to configure the BIOS and Operating System using Cisco UCS Manager.

Procedure

Step 1 To configure the BIOS for the VDS TC cache engines, you must obtain a copy of the XML configuration file that configures the BIOS. The XML configuration file is provided in a .tgz file that is available from the same location as the VDS TC ISO image file on www.cisco.com. Download the .tgz file to the machine from which you will perform the following configuration steps and extract the files. You will need to browse to the location of the files in a later step.

Step 2 Open a web browser and enter the IP address of the management port for the Fabric Interconnect. In a redundant installation, enter the Cluster (virtual) IP address. These addresses were configured as part of the initial installation and configuration of the Cisco UCS 6248 UP Fabric Interconnect. The Cisco UCS Manager window appears.

Figure 4-4 Cisco UCS Manager Window

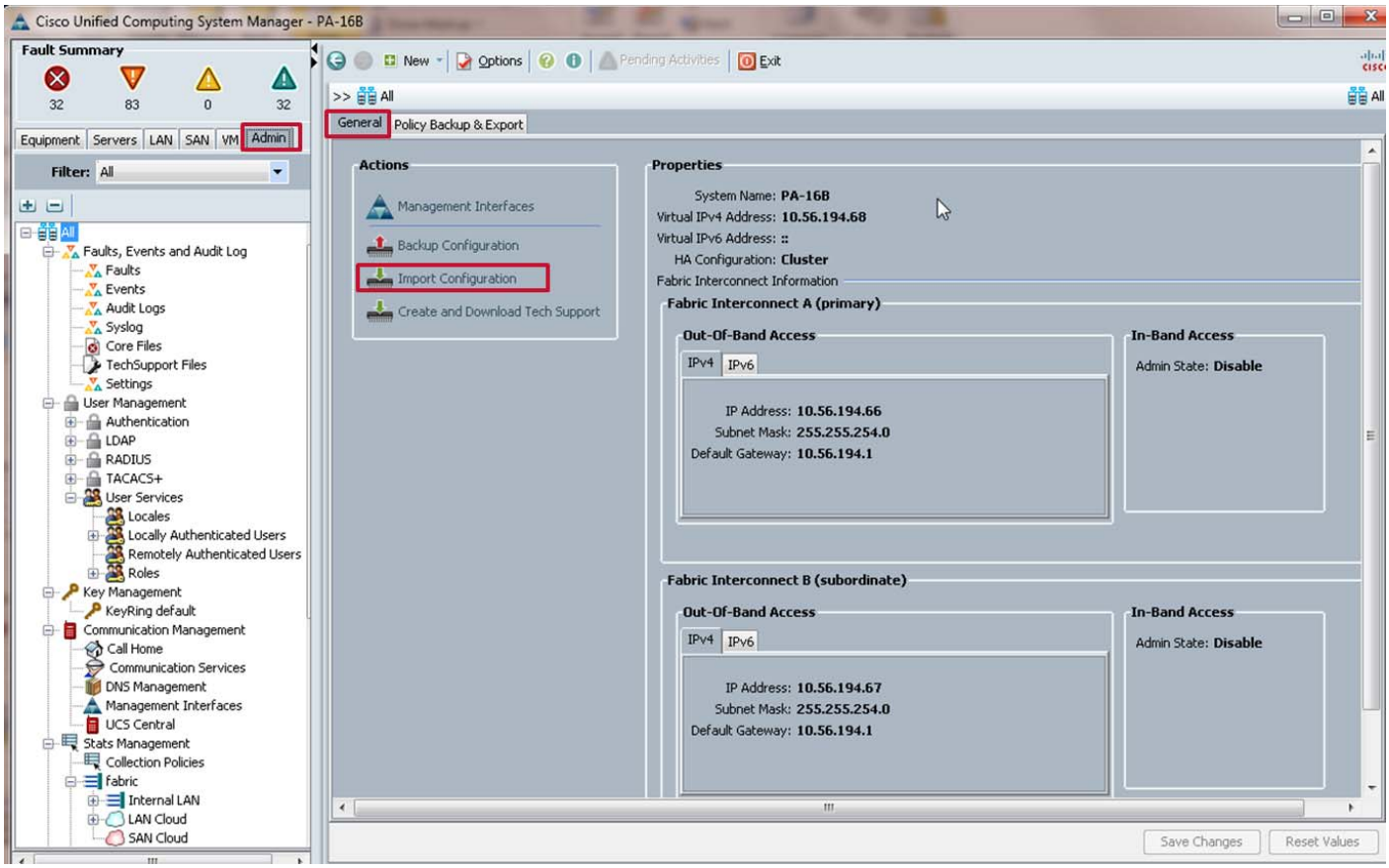
Step 3 Click **Launch UCS Manager**. Click **OK** to open the .jnlp file with Java(TM) Web Start Launcher.

Step 4 In the Cisco UCS Manager Login window that appears, enter the username **admin** and the password that was configured during the initial system setup of the fabric interconnect, and then click **Login**.

Figure 4-5 Cisco UCS Manager Login Window

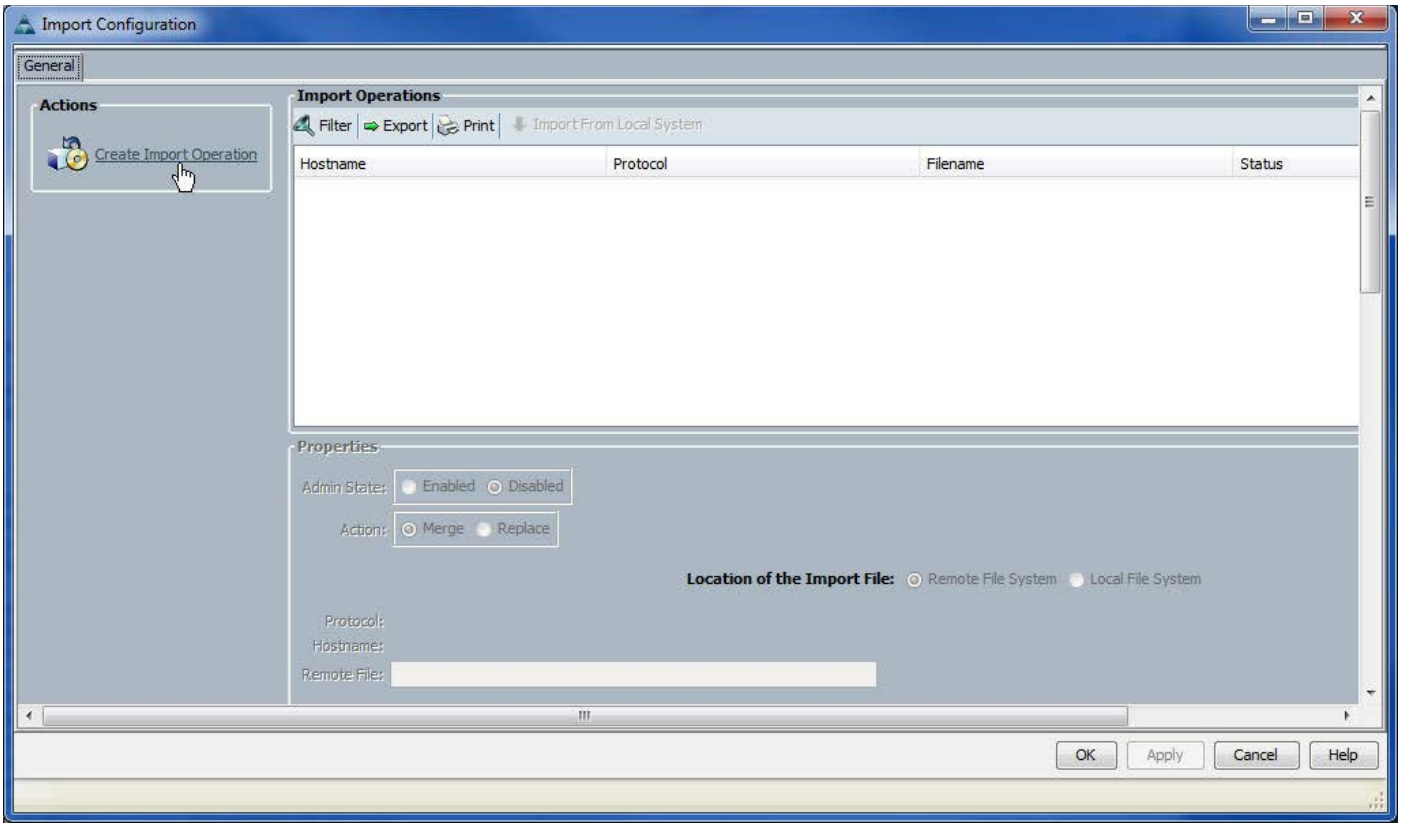
Step 5 From the Cisco Unified Computing System Manager window, click the **Admin** tab in the left pane, click the **General** tab in the work pane, and then in the Actions area click **Import Configuration**.

Figure 4-6 Admin Tab Window



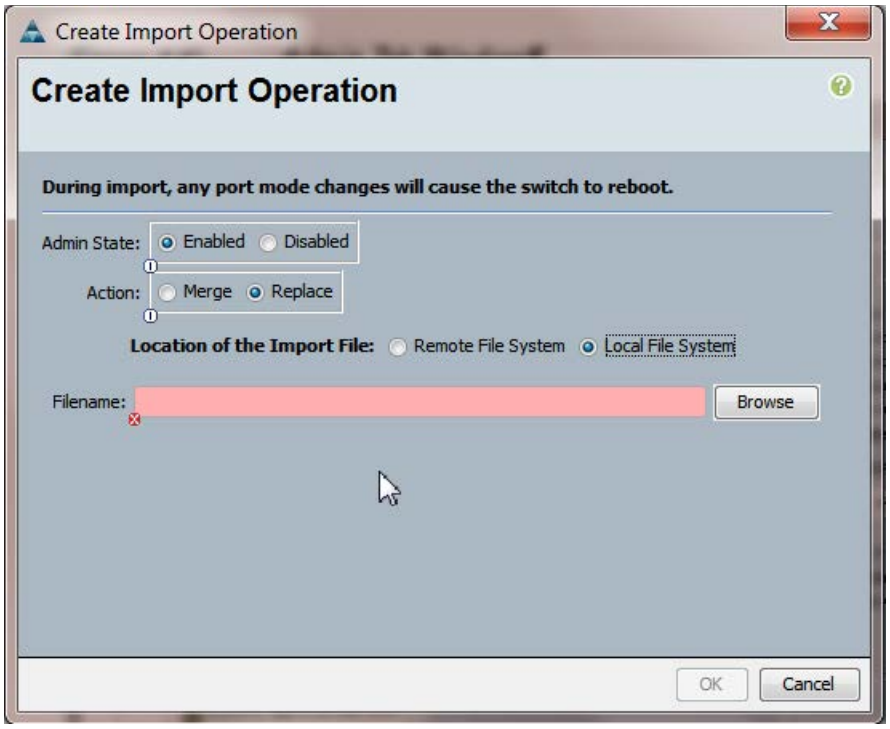
Step 6 The Import Configuration window appears. In this window, click **Create Import Operation**.

Figure 4-7 Import Configuration Window



Step 7 The Create Import Operation Window appears. Set the Admin State to **Enabled**, the Action to **Replace**, and the Location of the Import File to **Local File System**, and then click **Browse**.

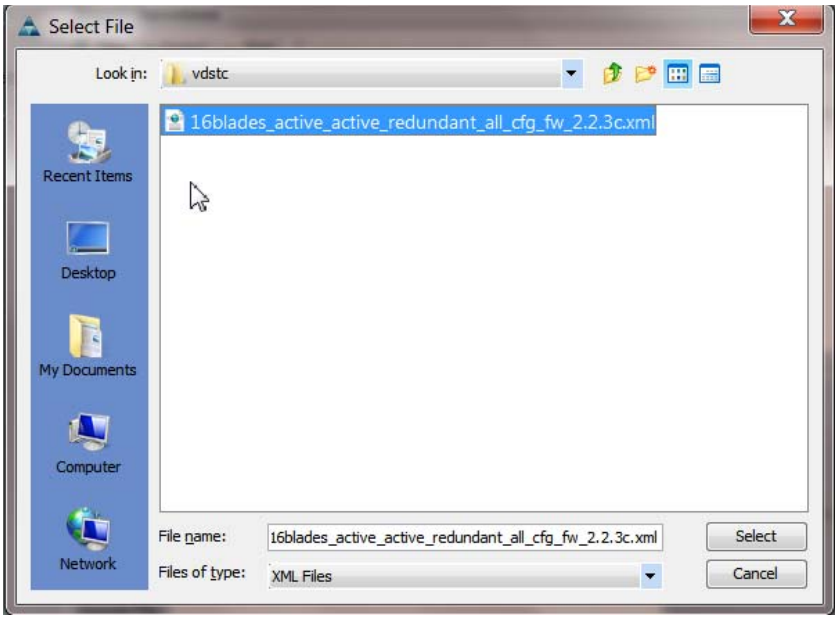
Figure 4-8 Create Import Operation Window



Step 8 From the Select File window, browse to the folder that you downloaded the XML file to in Step 1 in this procedure. Choose the correct file to import based on the number of blade servers you have in your VDS TC configuration and click **Select**. The filename should be #blades_active_active_redundant_all_cfg_fw_2.2.3c.xml, where # is the number of blade servers in your installation. So for example, you would use the file named 16blades_active_active_redundant_all_cfg_fw_2.2.3c.xml for a system that has 16 blade servers.

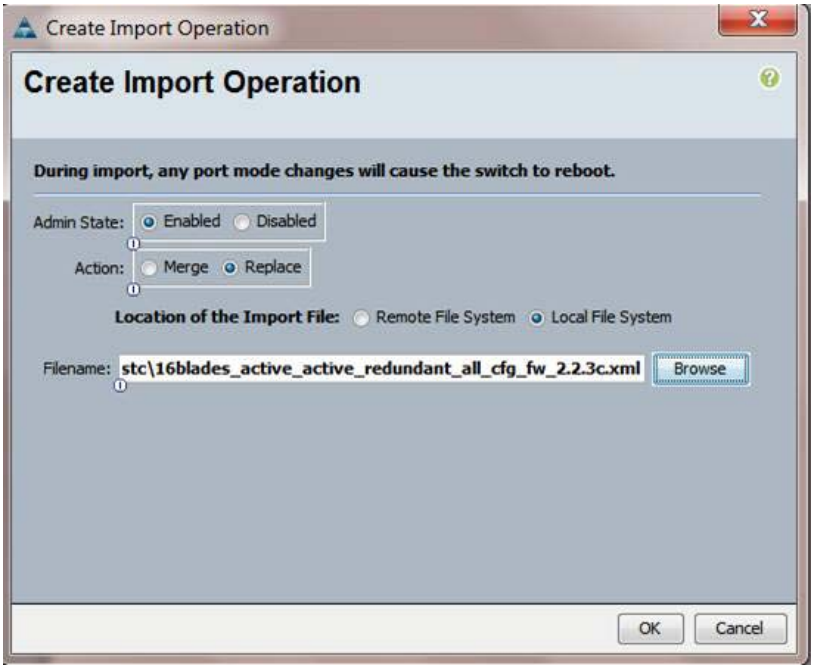
Caution Importing the wrong configuration file could cause problems with the VDS TC installation and cause problems with the VDS TC cache engines. If you are unsure of which file to use, contact your Cisco representative.

Figure 4-9 Select File Window



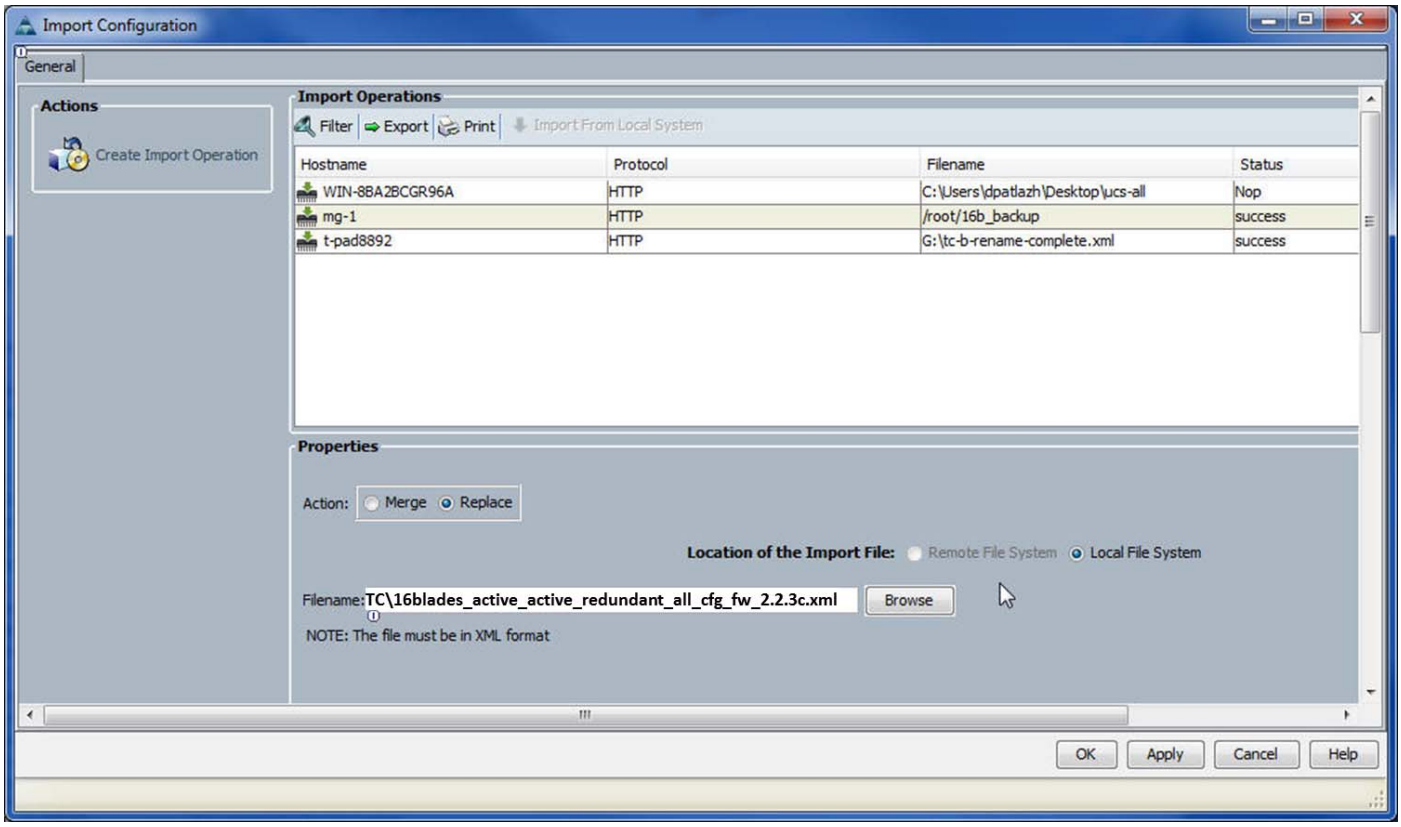
Step 9 The file you selected will now appear in the Browse field of the Create Import Operation window. Click **OK** to begin importing the file from your computer.

Figure 4-10 Create Import Operation Window



Step 10 After the file has finished importing to the system, you will be returned to the Import Configuration window.

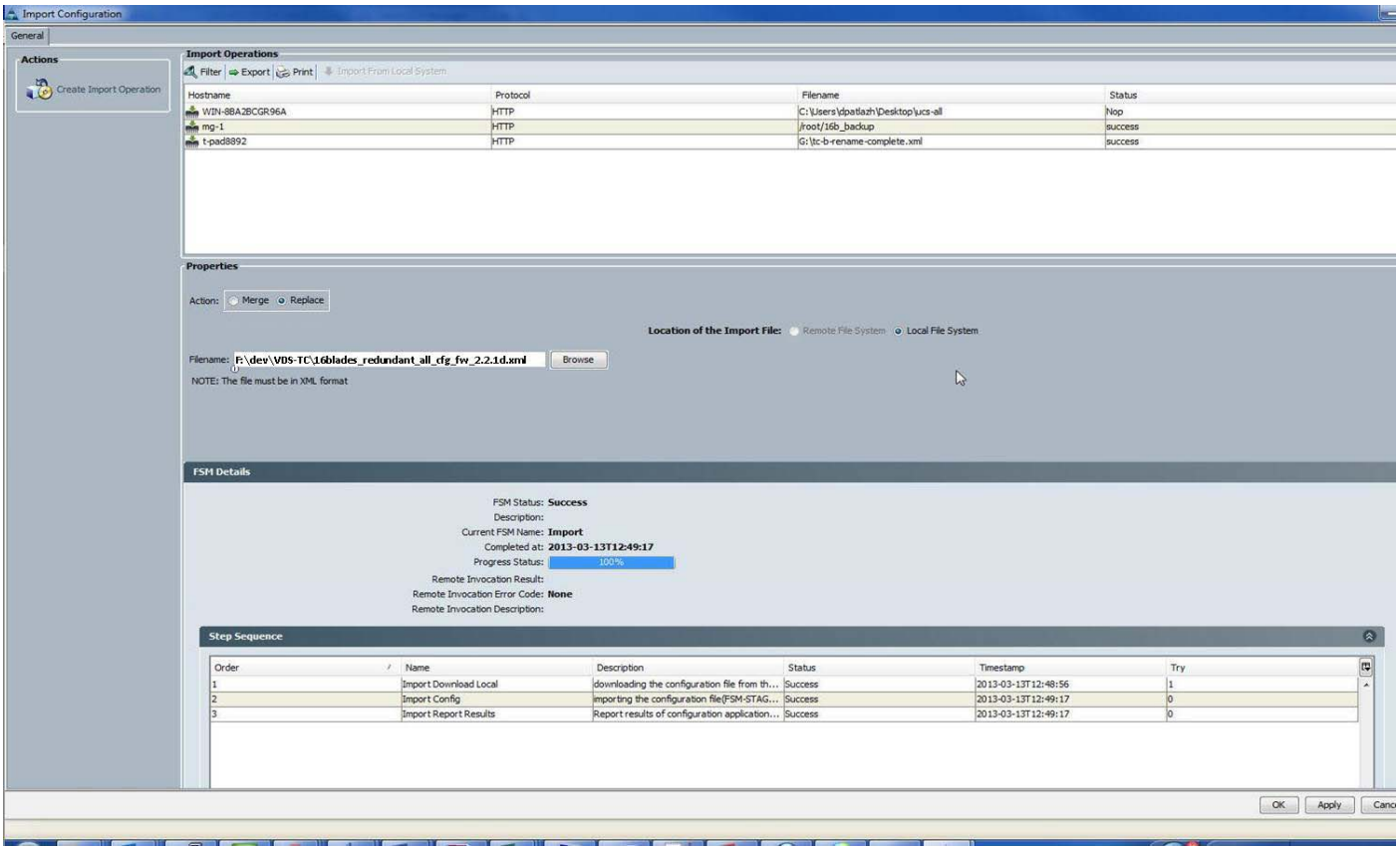
Figure 4-11 Import Configuration Window



Caution Before performing the next step, make sure that the file that appears in the Filename text box in the Properties section of the Import Configuration window is the correct file for your VDS TC Blade Server installation. Applying the wrong configuration file to your system could cause problems with the VDS TC installation and cause problems with the VDS TC cache engines. If you are unsure of which file to use, contact your Cisco representative.

Step 11 Click **Apply** in the Import Configuration window. To view the status of the import, click **FSM Details** to expand the FSM details section of the Import Configuration window.

Figure 4-12 FSM Details Section



Step 12 When the XML file is finished importing, click **OK** to close the Import Configuration window.

Note Some configuration changes may cause the Blades to reboot automatically.

Note After you import the XML configuration file to configure the VDS TC Cache Engine servers, you may need to Acknowledge the chassis or re-acknowledge a specific server.

After you are finished configuring the BIOS and operating system of the VDS TC cache engines, the following vNICs will be created for *each* cache engine:

Table 4-1 vNIC to VLAN Mapping

vNIC	VLAN
eth0	1,50
eth1	1,50
eth2	301, 302, 303, 304
eth3	301, 302, 303, 304
eth4	70
eth5	201

Table 4-1 vNIC to VLAN Mapping

vNIC	VLAN
eth6	202
eth7	203
eth8	204
eth9	201
eth10	202
eth11	203
eth12	204
eth13	70

Step 13 Proceed to the next section, Configuring the Boot Image.

Configuring the Boot Image

The next step in the VDS TC Blade Server Cluster installation process is to configure the boot image on the VDS TC Cache Engines. Use this procedure to configure the boot image:

Note This procedure must be completed on *all* cache engines.

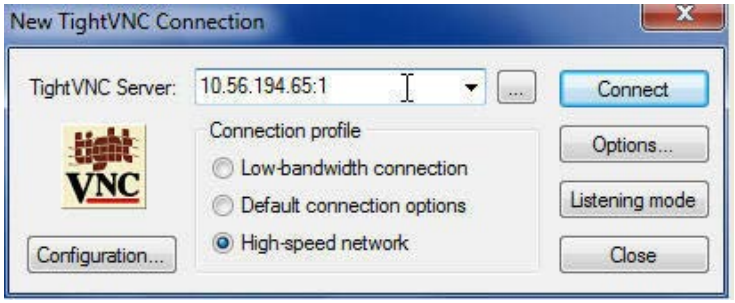
Procedure

Step 1 Use VNC to connect from your local computer to the VDS TC Management Server using the IP address that you configured, adding :1 to the end, for example 10.56.194.65:1. When prompted to enter a password, enter the root password that was provided by Cisco. If you encounter problems opening a VNC client connection to the VDS TC Management Server, you may need to restart VNC Server 1 on the VDS TC Management Server. Follow these steps to restart this server:

a. From an SSH connection to the VDS TC Management server where you are logged in with root permissions, enter the command **rm /tmp/.X11-unix/X1**.

b. Enter the command **vncserver :1** to start the VNC Server.

Figure 4-13 VNC Viewer



Note If you have problems restarting the VNC Server 1 instance, you can also start another VNC Server instance by entering the command **vncserver :2**.

Step 2 From the VNC console terminal window, enter the command **java -version** to check the current version of java. If the version is *not* 1.8.0_31, perform the following steps:

a. Enter the command **rm -rf /root/.java**

b. Enter the command **ln -sf /usr/lib64/jvm/jre1.8.0_31/bin//java /usr/bin/java**

c. Enter the command **ln -sf /usr/lib64/jvm/jre1.8.0_31/bin//javaws /usr/bin/javaws**

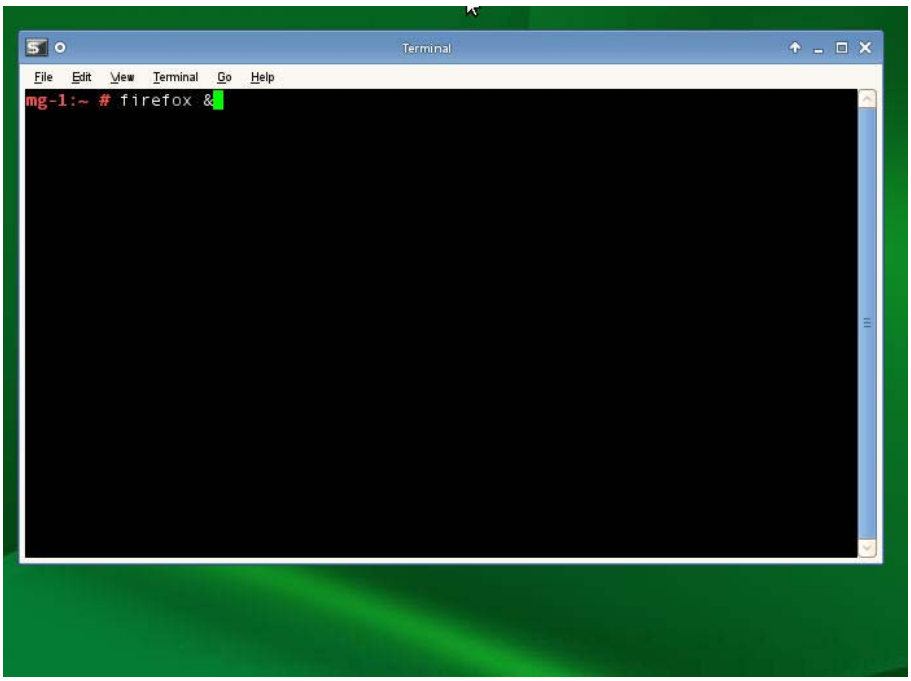
d. Enter the command **java -version** and confirm that the java version is now 1.8.0_31. If not, repeat these steps.

Note If you need to downgrade back to java 1.7, perform the following steps. Only perform these steps if you need to downgrade to Java 1.7.

Step 1: Enter the command **rm -rf /root/.java**
Step 2: Enter the command **ln -sf /usr/lib64/jvm/jre1.7.0_79/bin/javaws /usr/bin/javaws**
Step 3: Enter the command **usr/lib64/jvm/jre1.7.0_79/bin/ControlPanel**
Step 4: From the Control Panel window, click the **Security** tab and set the Security Level to **Medium**.

Step 3 From the VNC console, enter the command **firefox &**.

Figure 4-14 VNC Console



Step 4 In the Firefox window that opens, enter the Management port IP address for the fabric interconnect. In a redundant installation, enter the Cluster (virtual) IP address.

Step 5 The Cisco UCS Manager window appears. From this window, click **Launch KVM Manager**. If you receive a message that says "To view this page ensure that Adobe Flash Player version 10.0.0 or greater is installed." perform the following steps:

a. Close Firefox

b. From the terminal window, enter the command **su –**

c. Enter the command **pkill -9 firefox**

d. Enter the command **cd /root**

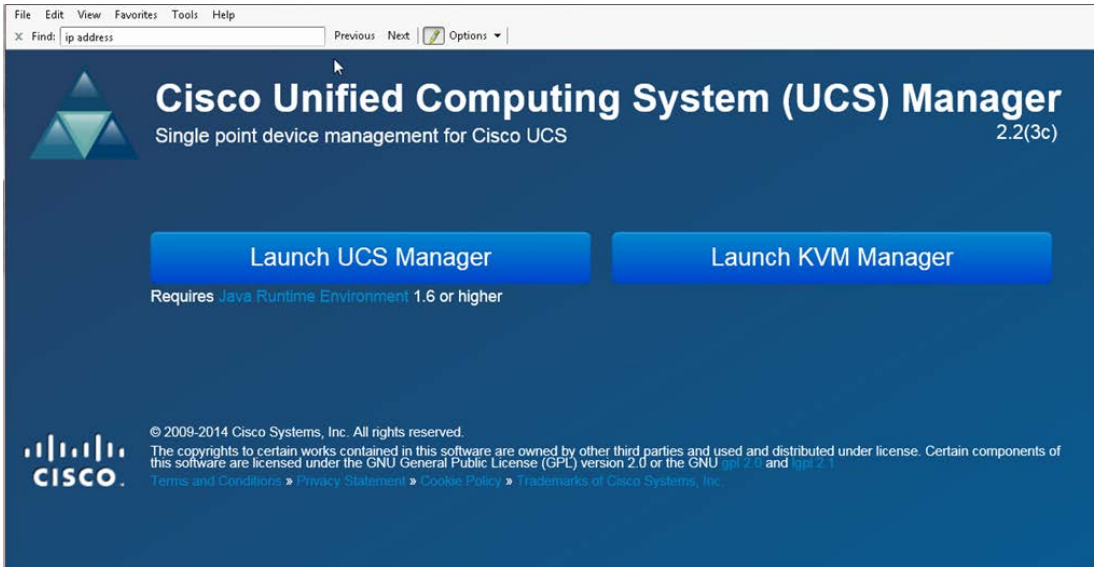
e. Enter the command **mv .mozilla .mozilla.bak**

f. Enter the command **firefox &** to restart Firefox.

g. In the Firefox window that opens, enter the Management port IP address for the fabric interconnect. In a redundant installation, enter the Cluster (virtual) IP address.

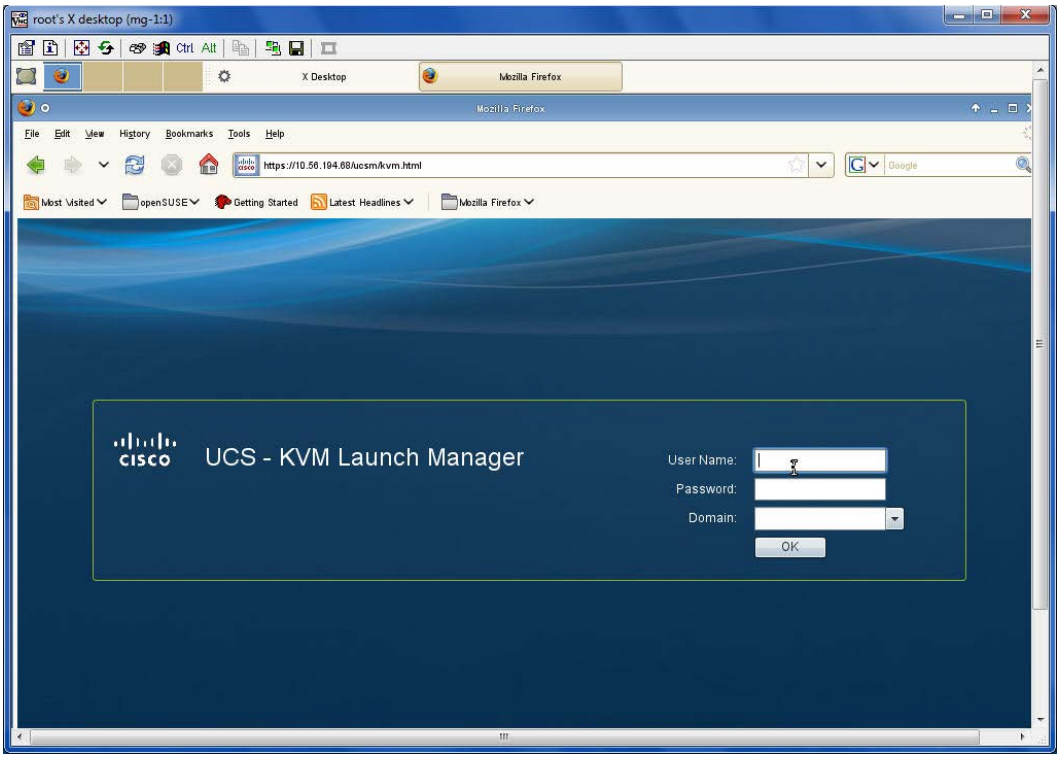
h. Repeat Step 5.

Figure 4-15 Cisco UCS Manager



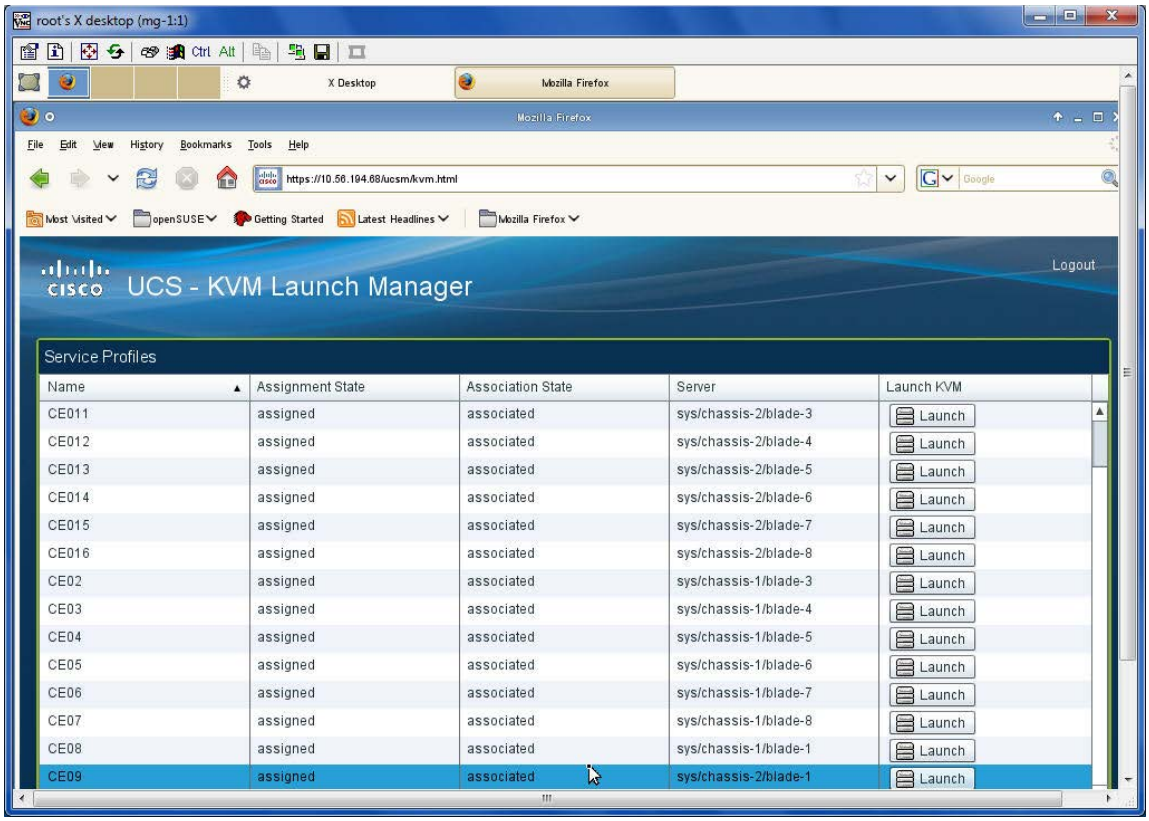
Step 6 The UCS - KVM Launch Manager login window appears. Enter the username **admin** and the password that was configured during the initial system setup of the fabric interconnect (the default password is **password**), and then click **OK**.

Figure 4-16 UCS KVM Launch Manager Login Window



Step 7 The Service Profiles window appears, listing all of the cache engine profiles. From this window, in the row for the cache engine you are configuring, in the Launch KVM column click **Launch** to launch the KVM console.

Figure 4-17 Service Profiles Window



Step 8 Click **OK** to open the .jnlp file with Java(TM) Web Start Launcher.

Step 9 From the Warning Security window, click **Continue**.

Step 10 If you receive a window that asks if you want to run this application, click **Run**.

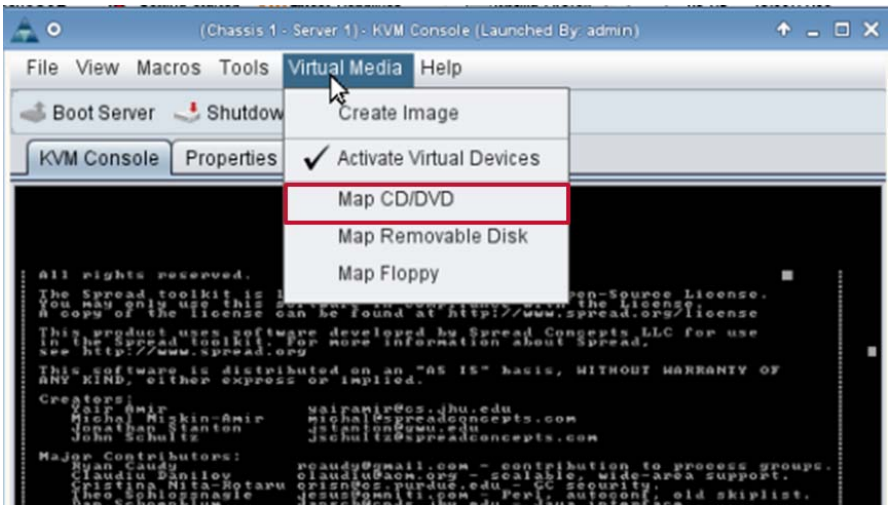
Step 11 From the KVM Console window, make sure the **KVM Console** tab is selected and choose **Virtual Media > Activate Virtual Devices**.

Step 12 If you see the Unencrypted Virtual Media Session window, choose **Accept this session** and click **Apply**.

Figure 4-18 Unencrypted Virtual Media Session

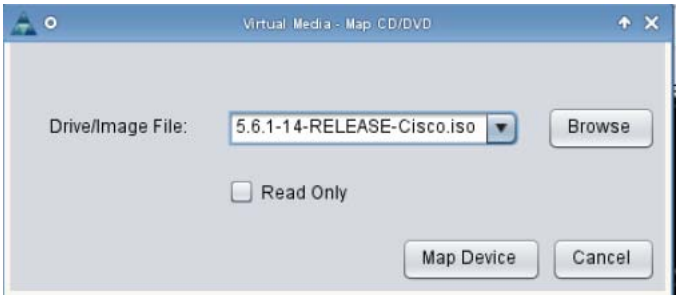
Step 13 Choose **Virtual Media > Map CD/DVD**.

Figure 4-19 Map CD/DVD



Step 14 In the window that opens, browse to the **/opt/pang/iso/** folder to find the ISO installer image and click **Open**.

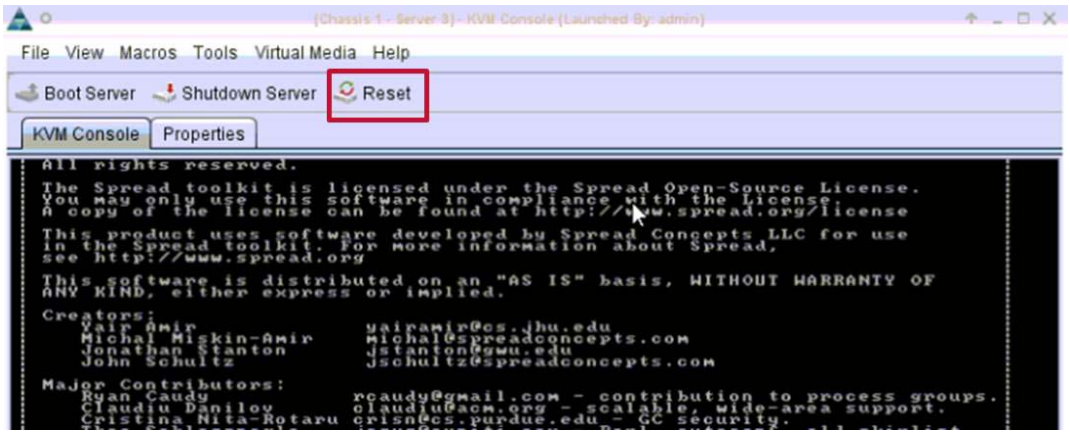
Figure 4-20 Map Device



Step 15 Check the **Read Only** check box and click **Map Device**.

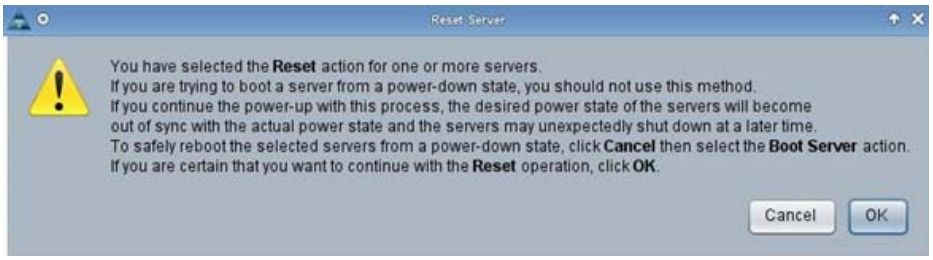
Step 16 Click **Reset** under the menu bar to reboot the cache engine.

Figure 4-21 Reset the Cache Engine



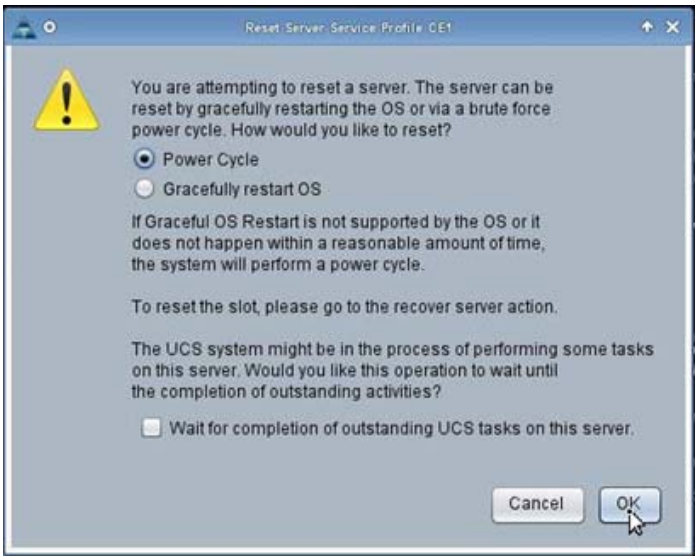
Step 17 From the Reset Server Warning window that appears, click **OK** to reset the server.

Figure 4-22 Reset Server Warning Window



Step 18 From the Reset Server Service window that appears, choose **Power Cycle** and click **OK**.

Figure 4-23 Reset Server Service



Step 19 From the KVM Console window you will see the VDS TC Cache Engine reboot. When you see the prompt to press F6 to enter the boot menu, click the KVM Console window to make sure it has focus and press **F6**. The Please Select Boot Device dialog box appears.

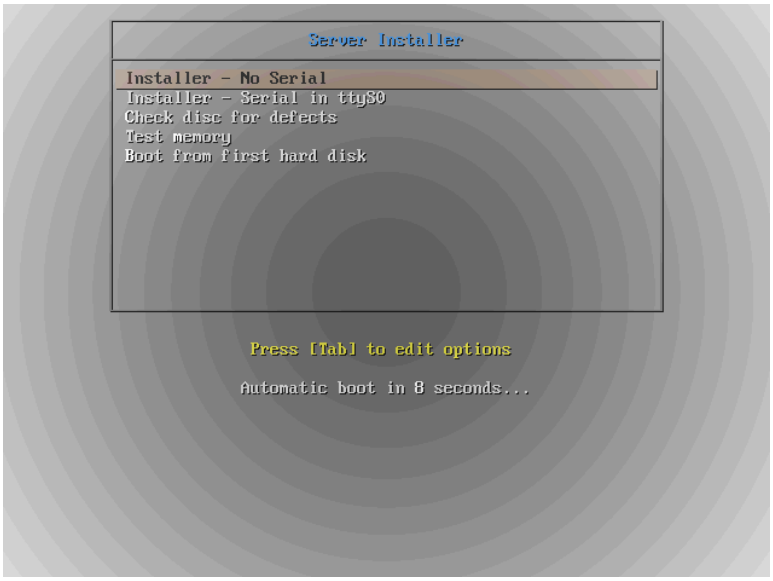
Note You may need to press **F6** several times to see the Please Select Boot Device dialog box.

Figure 4-24 System Reboot Window

Step 20 Using the up and down arrows, choose **Cisco vKVM-Mapped vDVD1.22**. The system will reboot from the virtual ISO image.

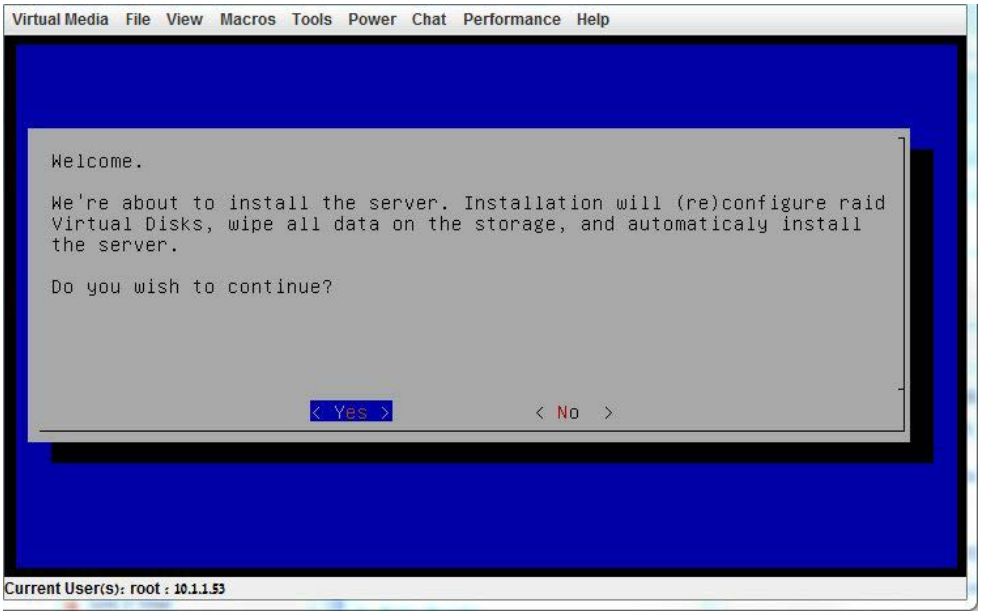
Step 21 When the VDS-TC Installer environment displays in the KVM console window, choose **Installer - No Serial**.

Figure 4-25 VDS TC Installer Window



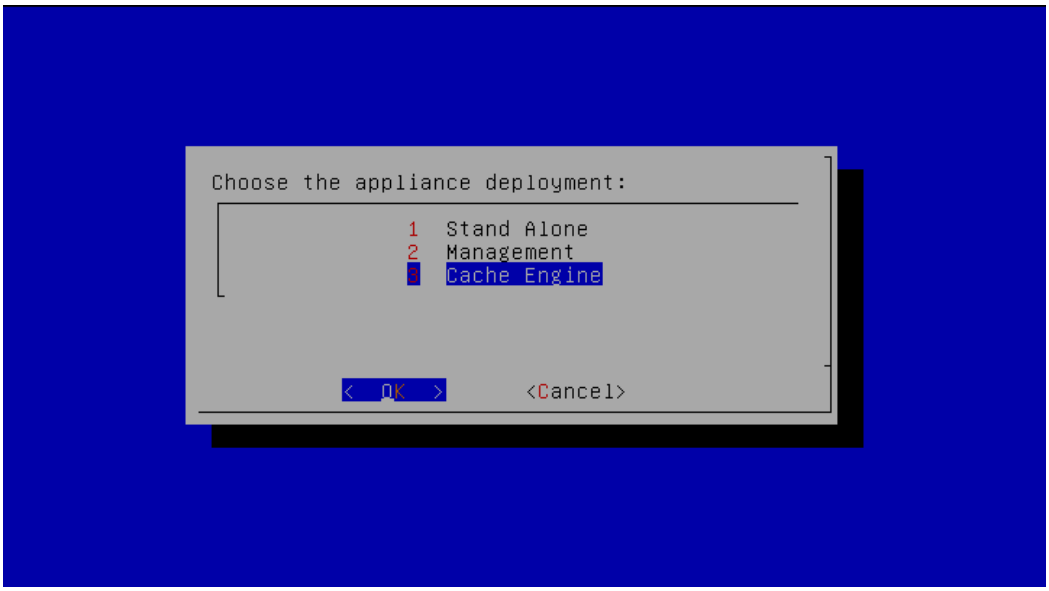
Step 22 When the Welcome screen appears, enter **Y** to continue the installation process.

Figure 4-26 Welcome Screen



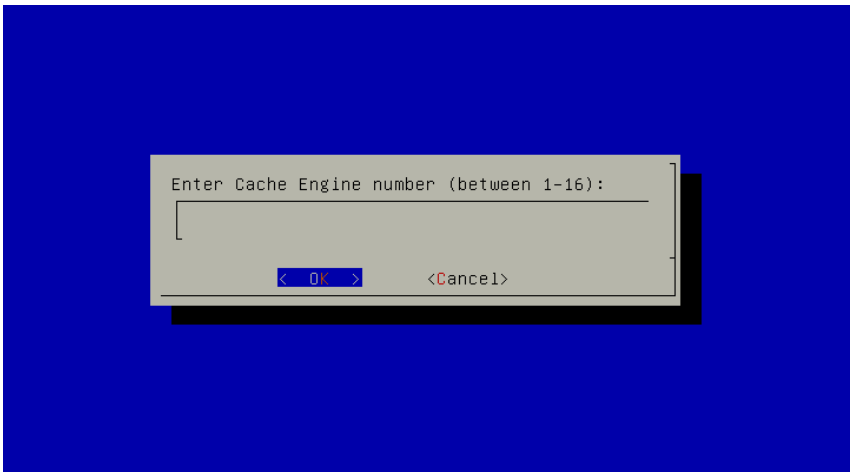
Step 23 When the Choose the Appliance Deployment window appears, choose **Cache Engine** and select **OK**.

Figure 4-27 Choose the Appliance Deployment Window



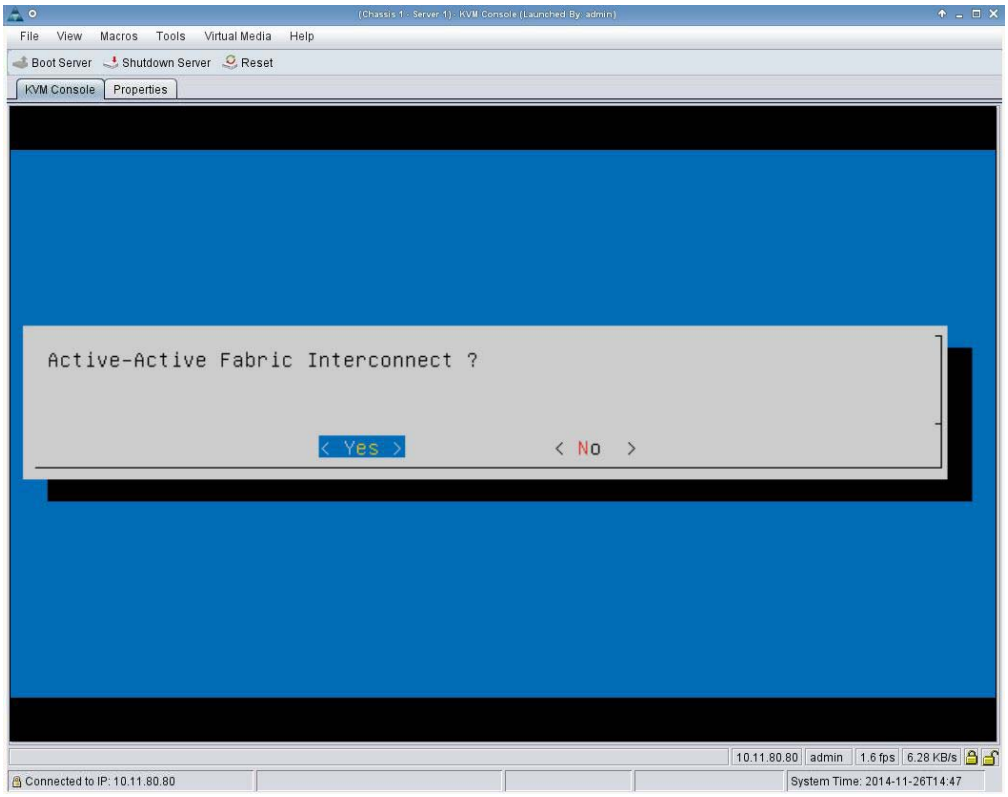
Step 24 When prompted, enter the cache engine number and choose **OK**.

Figure 4-28 Enter Cache Engine Number



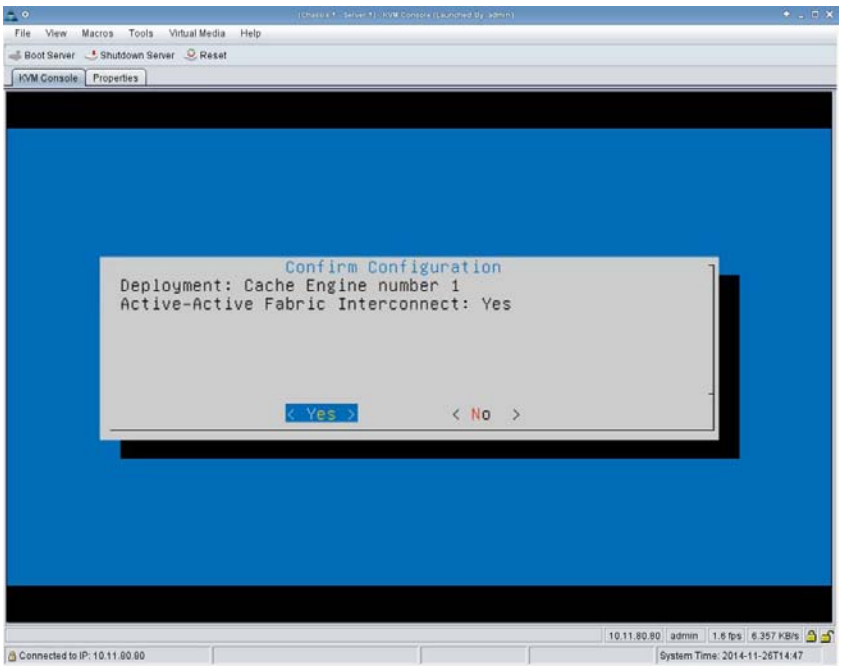
Step 25 From the Active-Active Fabric Interconnect dialog box, choose **yes**.

Figure 4-29 Active-Active Fabric Interconnect



Step 26 Confirm the Cache Engine configuration. If everything is correct, choose **Yes**. If there is a mistake, choose **No** and repeat Step 21 through Step 24.

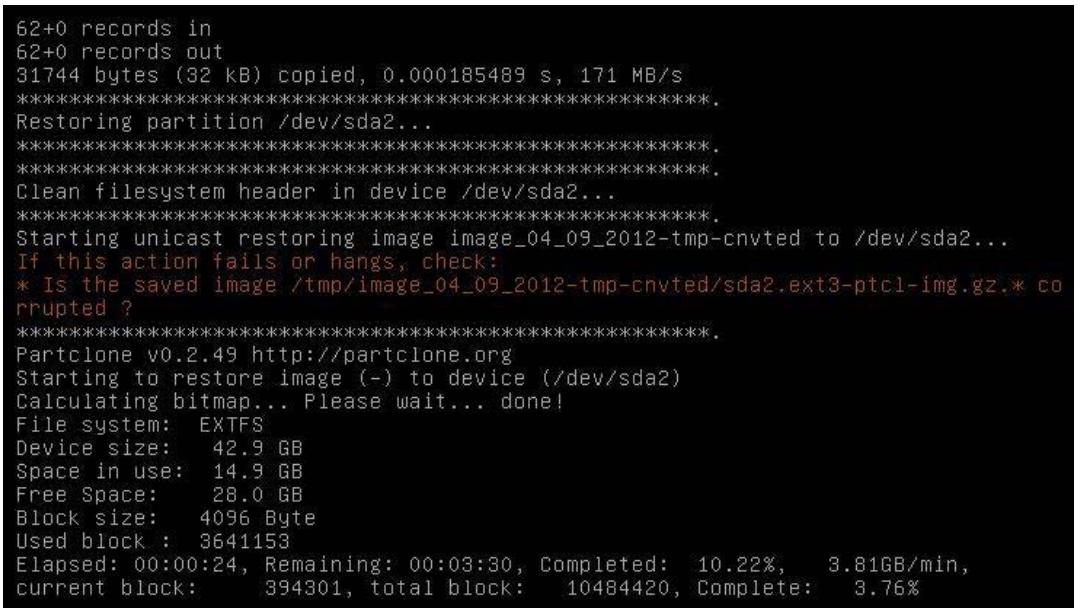
Figure 4-30 Configuration Confirmation



Step 27 From the KVM window you will see the installation begin. You must wait for this installation process to complete before you continue.

Note This installation should take about 40 minutes.

Figure 4-31 Cache Engine Installation Process



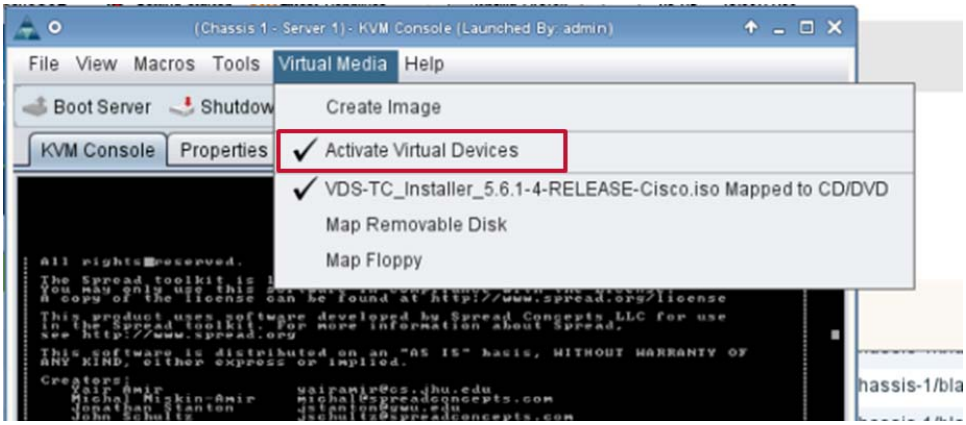
Step 28 When the installation completes, you must unmap the ISO image file. When the “Installation completed. Press <Enter> to reboot.” message appears, press **Enter**.

Figure 4-32 Installation Completed Window

Note *Wait* for the system to reboot and display the BIOS splash screen, as shown in Figure 4-24 "System Reboot Window", before proceeding to the next step.

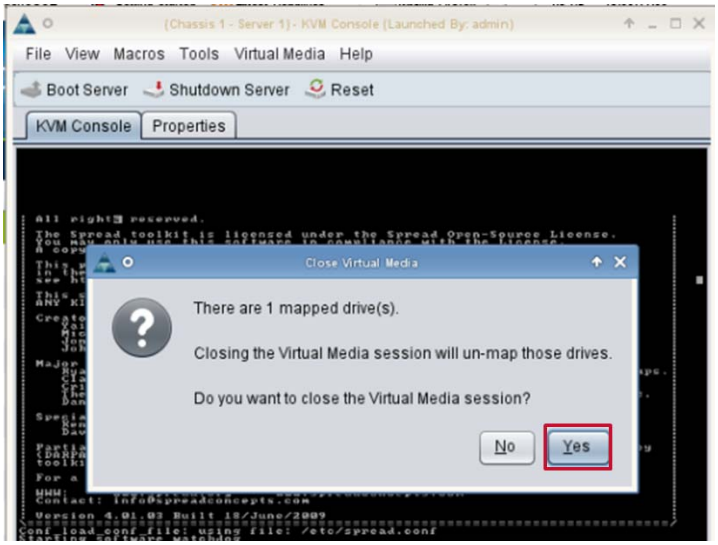
Step 29 After the system reboots, from the KVM Console window, choose **Virtual Media** > **Activate Virtual Devices** to deactivate the virtual devices and unmap the image file.

Figure 4-33 Deactivate Virtual Device



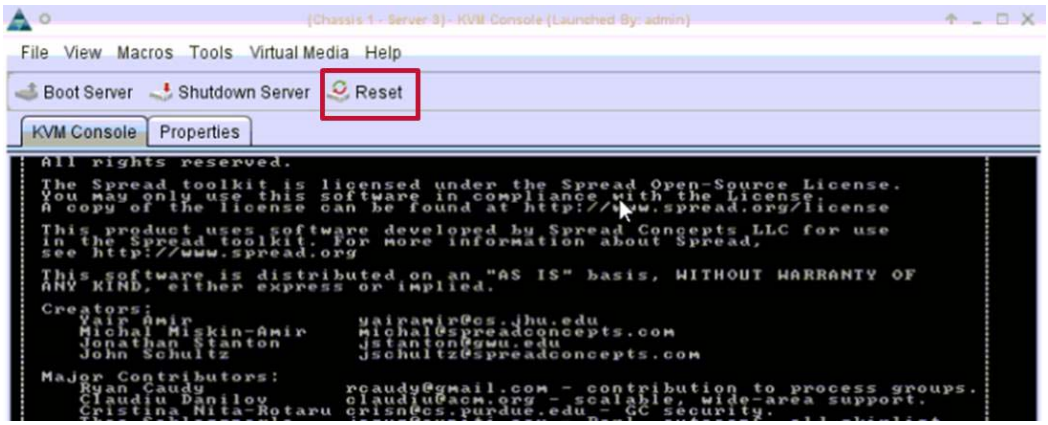
Step 30 From the Close Virtual Media dialog box, click **Yes** to confirm the unmapping of the image file. This unmounts the ISO image.

Figure 4-34 Close Virtual Media



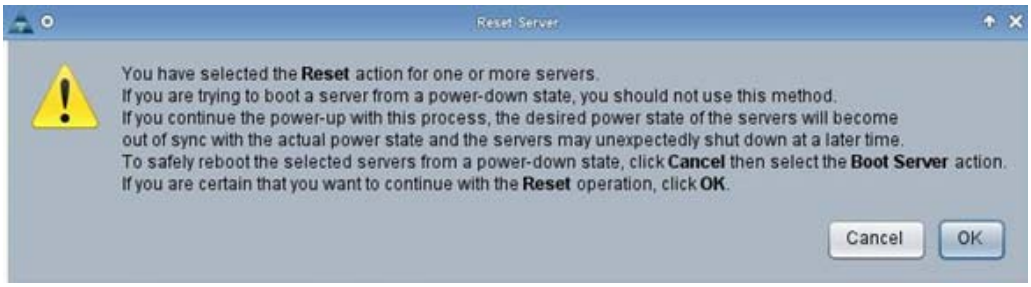
Step 31 Click **Reset** under the menu bar to reboot the cache engine.

Figure 4-35 Reset the Cache Engine



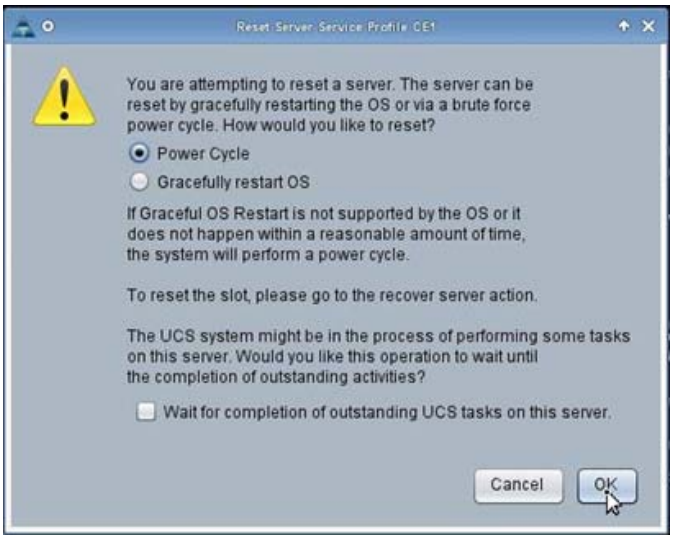
Step 32 From the Reset Server Warning window that appears, click **OK** to reset the server.

Figure 4-36 Reset Server Warning Window



Step 33 From the Reset Server Service window that appears, choose **Power Cycle** and click **OK**.

Figure 4-37 Reset Server Service



Running the Post Installation Scripts

After rebooting the VDS TC Cache Engine, you must run a post installation script. Use this procedure to run this script:

Note This procedure needs to be completed on all Cache Engines.

Procedure

Step 1 From the KVM Console window, on the KVM tab, log in using the root user and the password that was provided by Cisco.

Step 2 Enter the command **cd /opt/pang/utilities/CE/Multipath_Driver**

Step 3 Enter the command **tar -zxvf rdac-LINUX-09.03.0C05.0652-source.tar.gz**

Step 4 Enter the command **cd linuxrdac-09.03.0C05.0652**

Step 5 Enter the command **make clean**

Step 6 Enter the command **make**

Step 7 Enter the command **make install**

Step 8 If you are prompted about whether the new MPP driver should manage the iSCSI storages, answer **yes** to continue.

Step 9 Enter the command **reboot -f** to reboot the cache engine.

Step 10 After the cache engine reboots, log back into the KVM console as the root user, using the password that was provided by Cisco.

Step 11 To verify that the installation of the multipath driver was successful, enter the command **chkconfig mpp**. If the installation was successful, this command should return the following output:

```
mpp on
```

Next you will configure the storage for the cache engines. This configuration is covered in the next chapter, Chapter 5, “Configuring the Cache Storage”.

Configuring the Cache Storage

This chapter includes information about configuring the storage, installing Storage Manager, connecting to the storage using Storage Manager software, and integrating the VDS TC Cache Engines with the storage.

Ensure that you have installed the operating system on your VDS TC Management Server and the VDS TC Cache Engines before starting the configuration in this chapter.

This chapter contains the following sections:

- Configuring the Cache Storage Using IBM Storage Enclosures
  - Installing the Storage Manager Software on the VDS TC Management Server
  - Configuring the First IBM Storage Array
  - Configuring the Remaining IBM Storage Arrays
  - Confirm the Enclosure ID
- Configuring the Cache Storage Using NetApp Storage Enclosures
  - Installing the SANtricity Storage Manager on the VDS TC Management Server
  - Configuring the First NetApp Storage Array
  - Configuring the Remaining NetApp Storage Arrays
  - Confirm the Tray ID
- Configuring the Storage Array and Formatting Storage Disks

Configuring the Cache Storage Using IBM Storage Enclosures

Note This process is only for the IBM storage enclosure. If you are installing the NetApp E2724 storage enclosure, refer to the Configuring the Cache Storage Using NetApp Storage Enclosures section.

Installing the Storage Manager Software on the VDS TC Management Server

Use this procedure to install the Storage Manager software on the VDS TC Management Server:

Procedure

Step 1 If you do not already have a VNC client connection open to the VDS TC Management Server, open one now. If you encounter problems opening a VNC client connection to the VDS TC Management Server, you may need to restart VNC Server 1 on the VDS TC Management Server. Follow these steps to restart this server:

a. From an SSH connection to the VDS TC Management server where you are logged in with root permissions, enter the command **rm /tmp/.X11-unix/X1**.

b. Enter the command **vncserver :1** to start the VNC Server.

Note If you have problems restarting the VNC Server 1 instance, you can also start another VNC Server instance by entering the command **vncserver :2**.

Step 2 From the VNC console window, if you are prompted to log in, enter the root user with the password that was provided by Cisco. If you are not prompted to log in, enter the **whoami** command to determine the username of the current session. Make sure that you are logged in as *root*. If you are not logged in as root, enter the **su root** command to switch to the root user. Enter the password that was provided by Cisco for the root account.

Step 3 From the VNC console, enter the command **cd /opt/pang/utilities/MGMT/IBM/DS3500** to change folders.

Step 4 Enter the command **tar -zxvf SM10.86_Linux_64bit_x86-64_SMIA-10.86.x5.43.tgz**.

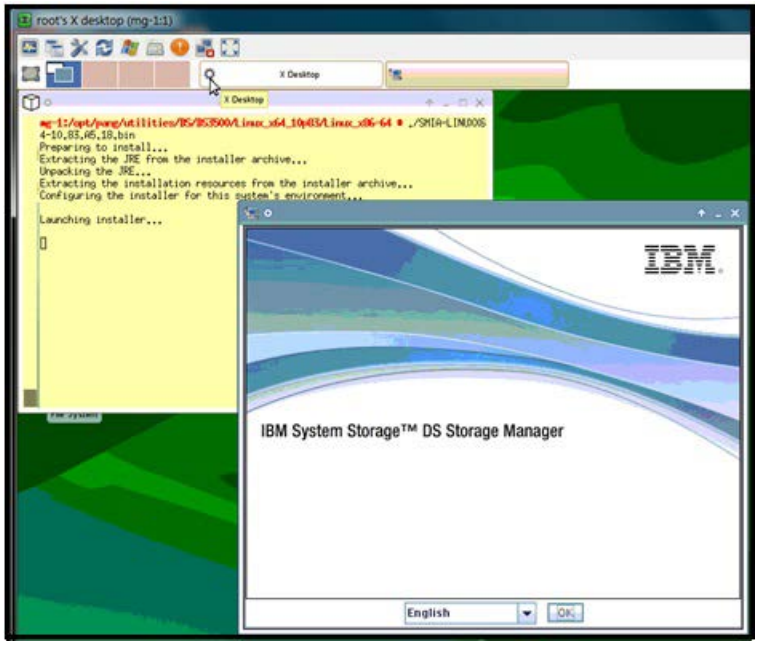
Step 5 After the files are extracted, enter the command **cd ./Linux_x64_10p86/Linux_x86-64/** to change folders.

Step 6 Enter the command **chmod 777 SMIA-LINUXX64-10.86.0A05.0043.bin** to set permissions on the file.

Step 7 Next, to start the Management Station installation enter the command **./SMIA-LINUXX64-10.86.0A05.0043.bin**.

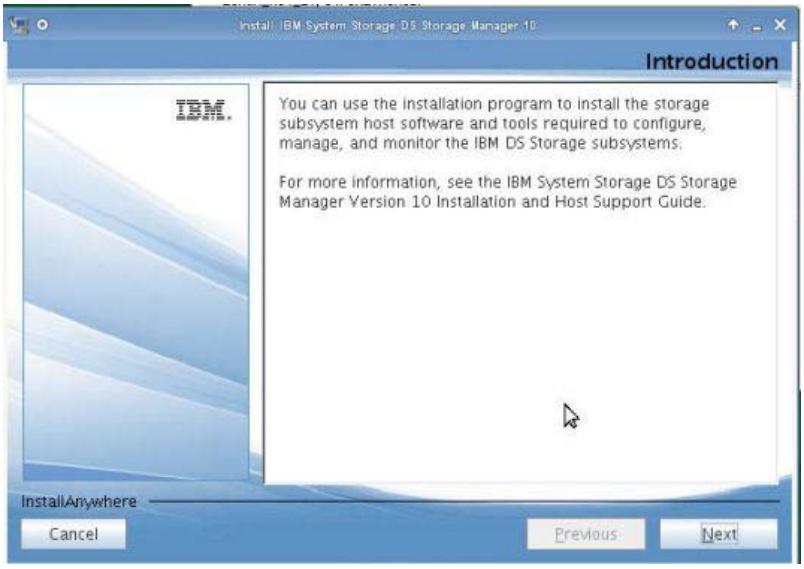
Step 8 The IBM System Storage™ DS Storage Manager installation window appears. From the initial screen, click **OK** to continue in English.

Figure 5-1 IBM DS Storage Manager Initial Screen



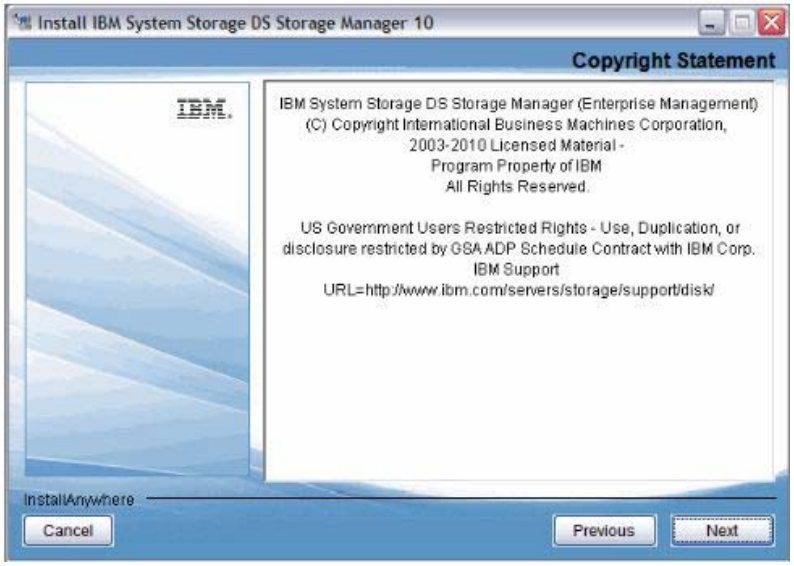
Step 9 The Introduction window appears. Click **Next**.

Figure 5-2 IBM DS Storage Manager Introduction Window



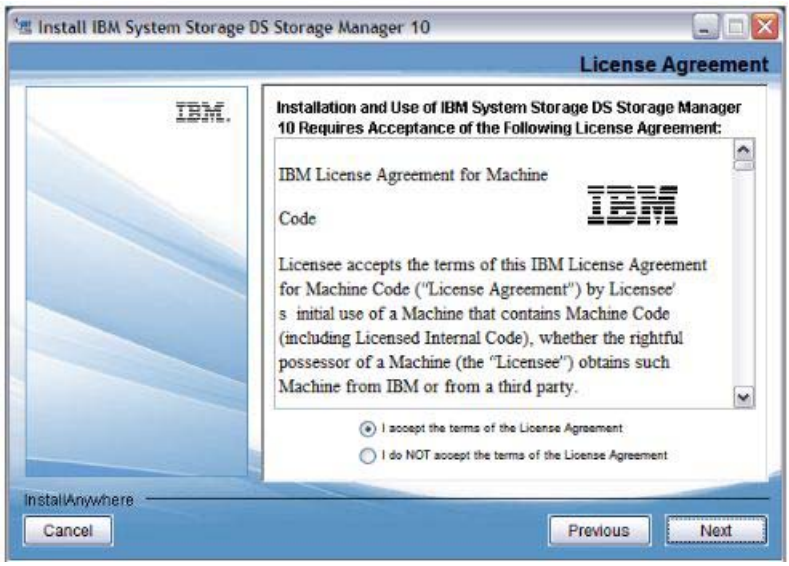
Step 10 The Copyright Window appears. Click **Next**.

Figure 5-3 IBM DS Storage Manager Copyright Window



Step 11 Choose **I accept the terms of the License Agreement** and click **Next**.

Figure 5-4 IBM DS Storage Manager License Agreement

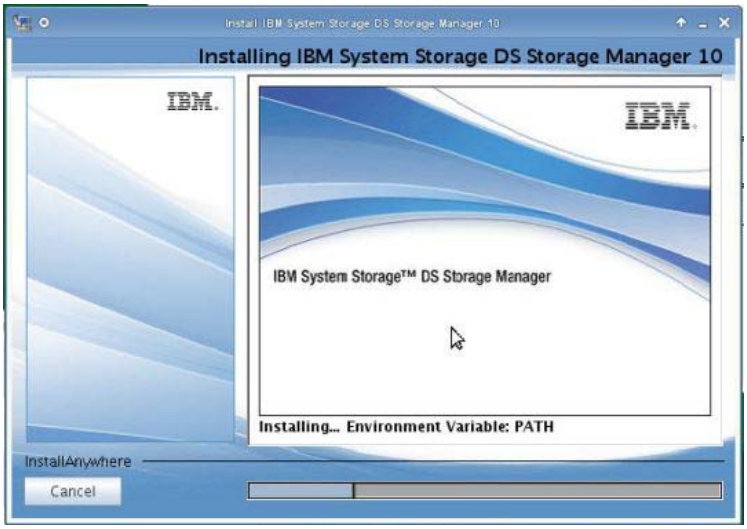


Step 12 From the Select Installation Type window, click **Management Station** and click **Next**.

Figure 5-5 Installation Type Window

Step 13 You will see the installation begin.

Figure 5-6 IBM DS Storage Manager Installation



Step 14 When the installation completes, click **Done**.

Figure 5-7 IBM DS Manager Installation Complete

Configuring the First IBM Storage Array

After the Management Station installation completes, you must configure the first storage array. Use this procedure to configure the first storage array:

Procedure

Step 1 After the Management Station installation completes, in the xterm window enter the command **cd /opt/IBM_DS/client** to change folders.

Step 2 Enter the command **./SMclient** to start the The IBM System Storage™ DS Storage Manager software.

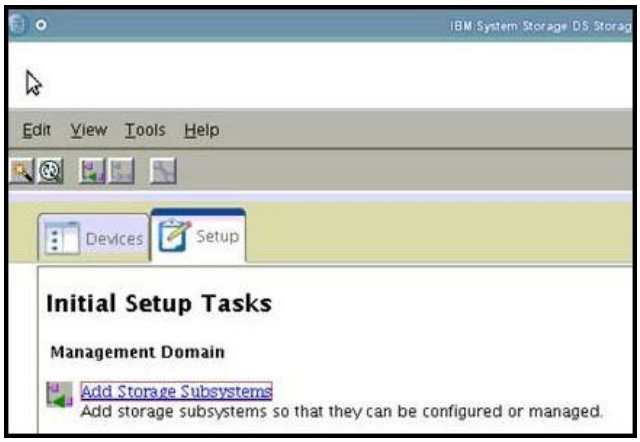
Step 3 Power down all storage arrays that you are not currently configuring or that are not already configured. For example, if you are configuring storage array 1, it should be the only storage array powered up. When powering up a storage array, wait at least 5 minutes before you proceed.

Caution Verify, physically, that only *one* none-configured storage array is powered-up.

Step 4 From the Storage Manager client, click the **Setup** tab.

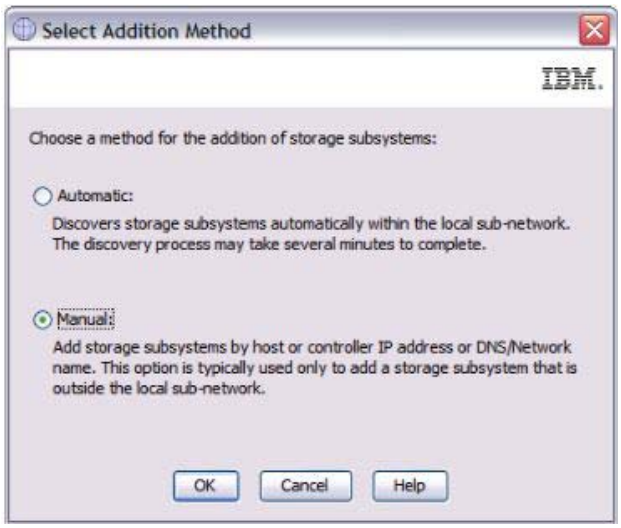
Step 5 From the Initial Setup Tasks window, click **Add Storage Subsystem**.

Figure 5-8 Initial Setup Tasks



Step 6 From the Select Addition Method window, click Manual.

Figure 5-9 Select Addition Method



Step 7 From the Add New Storage Subsystem window, in the first Controller field under Out-of-band Management, enter 192.168.128.101.

Step 8 In the second Controller field under Out-of-Band Management, enter 192.168.128.102.

Note Ensure that a single IP address is entered in each controller field.

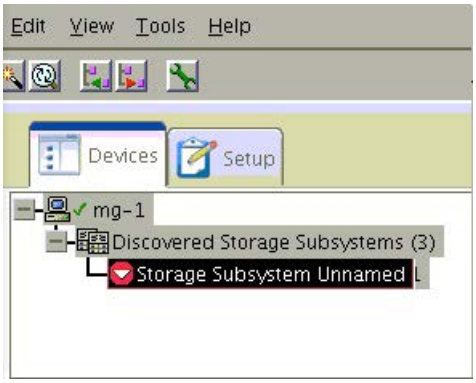
Step 9 Click **Add**.

Figure 5-10 Add New Storage Subsystem Window

Step 10 From the Add Additional Devices window, click **No**.

Step 11 From the Devices tab, click **Storage Subsystem Unnamed**.

Figure 5-11 Storage Subsystem

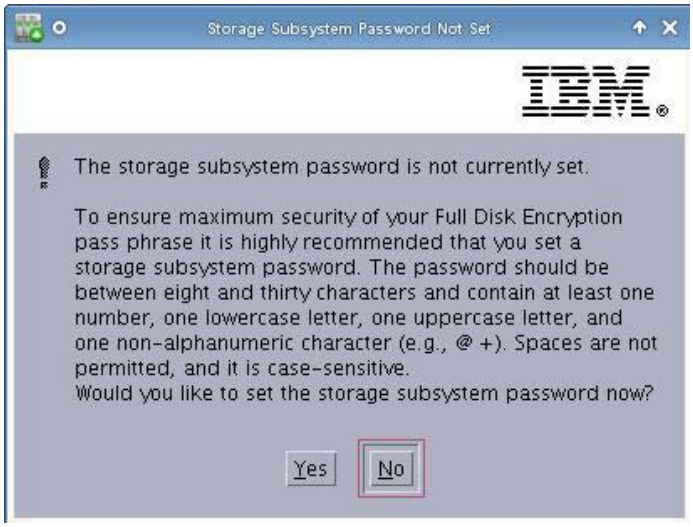


Step 12 From the Unnamed Disk Pool Automatic Configuration window, click **No**.

Figure 5-12 Unamed Disk Pool Automatic Configuration

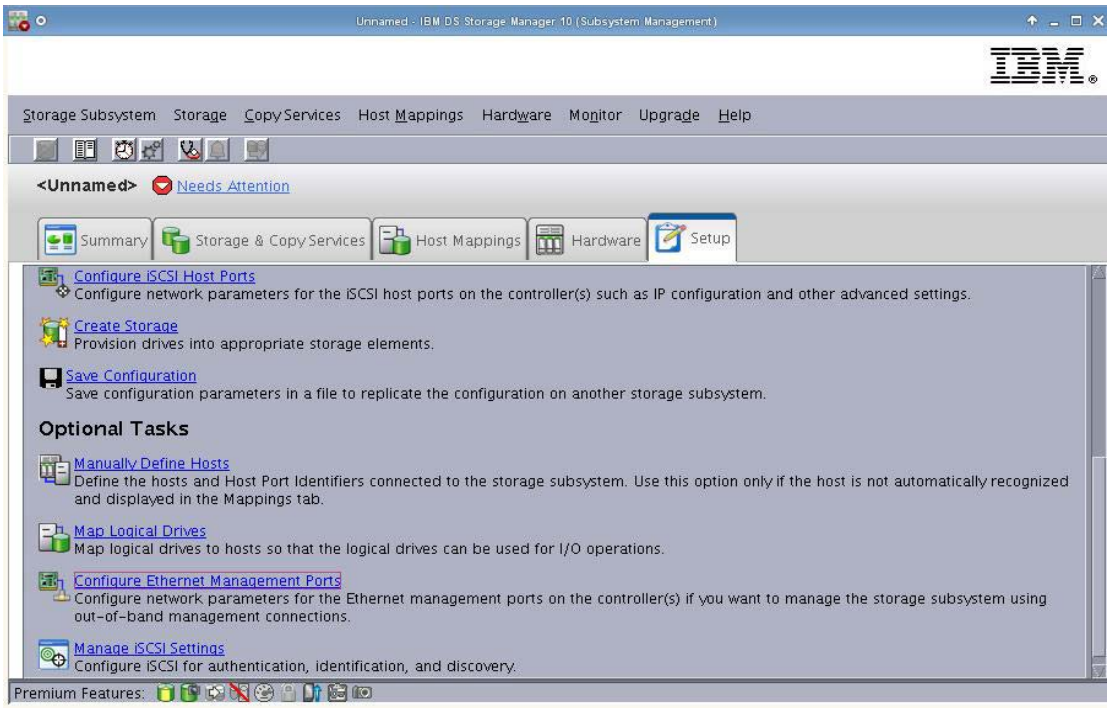
Step 13 In the Storage Subsystem Password dialog box, click **No**.

Figure 5-13 Storage Subsystem Password Dialog Box



Step 14 In the Initial Setup Tasks window, click the **Setup** tab and click **Configure Ethernet Management Ports**.

Figure 5-14 Configure Ethernet Management Ports



Step 15 From the window that appears, from the Ethernet Port drop-down list ensure Controller A, Port 1 is selected.

Step 16 From the Speed and Duplex Mode drop-down list, choose **Auto-negotiate**.

Step 17 From the IPv4 Settings tab, click the **Specify Configuration** radio button.

Step 18 In the IP address field, enter **10.11.18.200**.

Step 19 In the Subnet Mask field, enter **255.255.255.0**.

Step 20 From the Ethernet Port drop-down list, choose **Controller B, Port 1**.

Step 21 From the Speed and Duplex Mode drop-down list, choose **Auto-negotiate**.

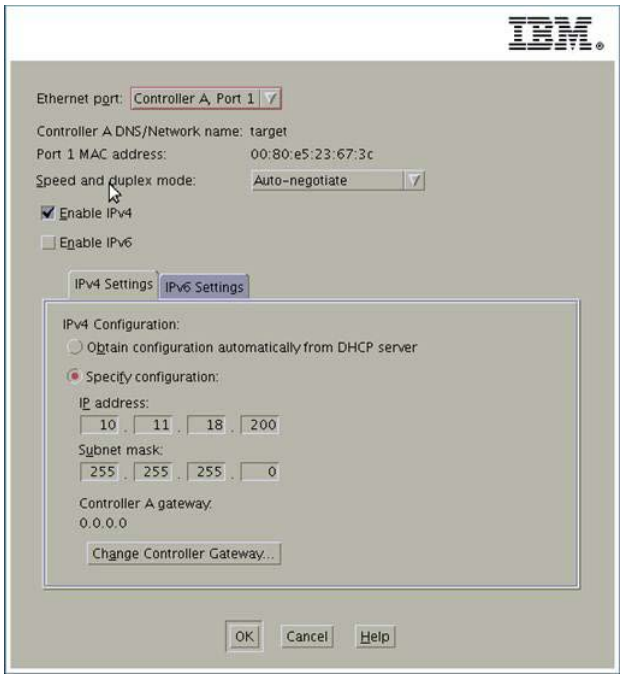
Step 22 From the IPv4 Settings tab, click the **Specify Configuration** radio button.

Step 23 In the IP address field, enter **10.11.18.201**.

Step 24 In the Subnet Mask field, enter **255.255.255.0**.

Step 25 Click **OK**. The storage array disconnects.

Figure 5-15 Controller Configuration



Step 26 Close the subsystem management window.

Step 27 From the Enterprise Management window, remove the system that was previously added using the default factory IPs (The system is highlighted in red when the IP addresses change.)

Step 28 Click the **Setup** tab and click **Add Storage Subsystem** to re-add the system with the new IP addresses.

Step 29 From the Add New Storage Subsystem window, in the IP address fields under Out-of-band Management, enter 10.11.18.200 and 10.11.18.201. These are the IP addresses that were assigned to Controller A, port 1 and Controller B, port1.

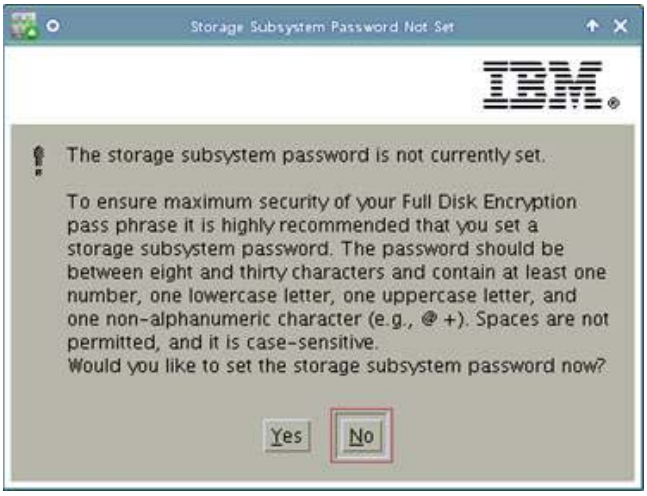
Step 30 Click **Add**.

Figure 5-16 Add New Storage Subsystem Window

Step 31 In the Automatic Configuration window, click **No**.

Step 32 In the Storage Subsystem Password window, click **No**.

Figure 5-17 Password Not Set Window

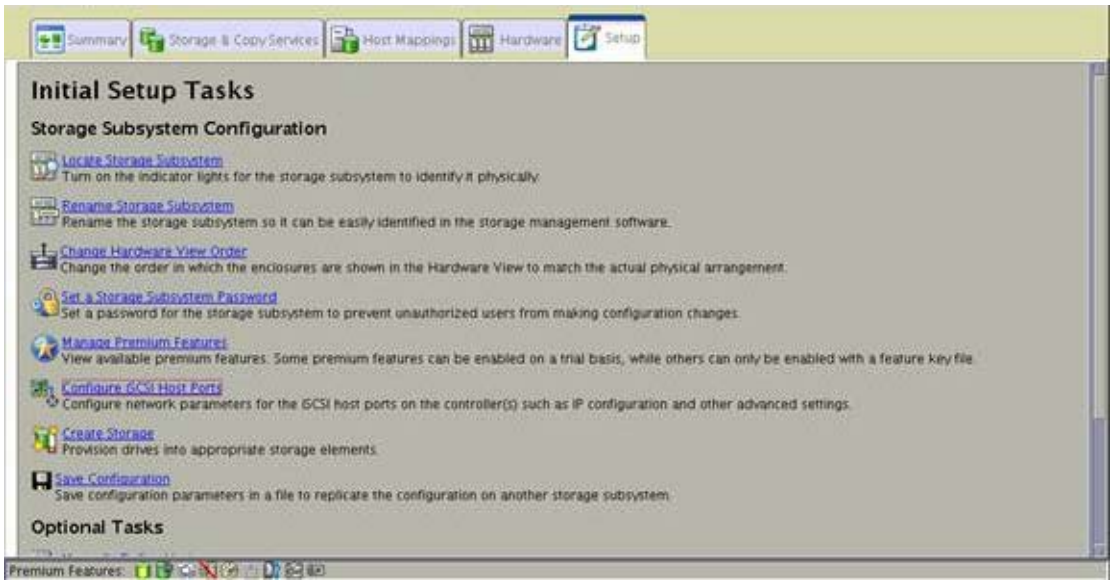


Step 33 From the Initial Setup Tasks window, click the **Setup** tab.

Step 34 Click **Configure iSCSI Host Ports**.

Caution If the user-interface does not show the **Configure iSCSI Host Ports** link, you should STOP here and contact the storage vendor, because this storage array is not running the correct firmware version that supports iSCSI configuration. You must update the storage firmware to version 07.86.40.

Figure 5-18 Configure iSCSI Host Ports



Step 35 From the window that appears, from the Ethernet Port drop-down list choose **Controller A, HIC 1, Port 3**.

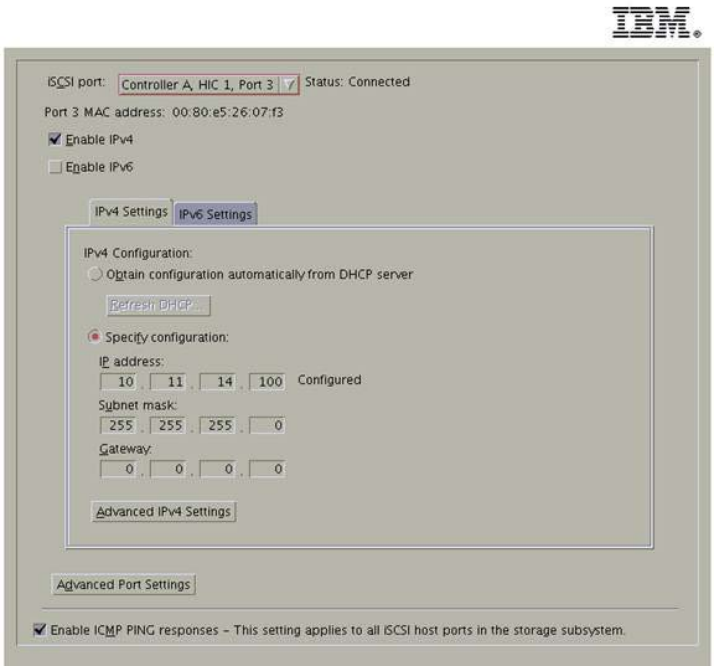
Step 36 Ensure that the Enable IPv4 check box is checked and that the IPv6 check box is ***not*** checked.

Step 37 From the IPv4 Settings tab, click the **Specify Configuration** radio button.

Step 38 In the IP address field, enter **10.11.14.100**.

Step 39 In the Subnet Mask field, enter **255.255.255.0**.

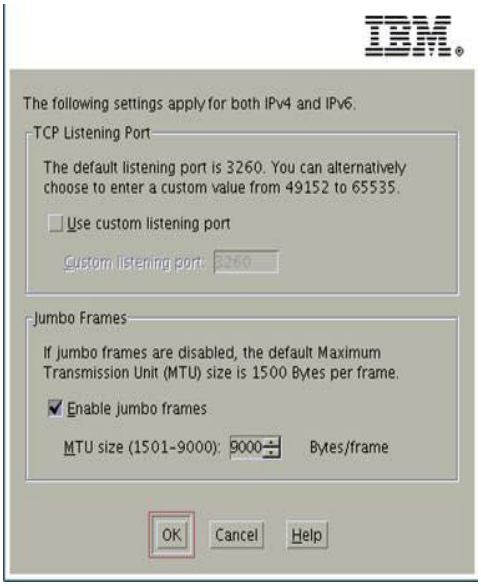
Figure 5-19 Configure IP Address



Step 40 Click **Advanced Port Settings**.

Step 41 From the window that appears, check the **Enable Jumbo Frames** check box and enter **9000** in the MTU Size field.

Figure 5-20 Enable Jumbo Frames



Step 42 Repeat Steps 35 through 41 for the following ports and click **OK** when finished:

- Controller A port 4: 10.11.15.100

- Controller A port 5: 10.11.16.100
- Controller A port 6: 10.11.17.100
- Controller B port 3: 10.11.14.101
- Controller B port 4: 10.11.15.101
- Controller B port 5: 10.11.16.101
- Controller B port 6: 10.11.17.101

Configuring the Remaining IBM Storage Arrays

Next you must configure the remaining storage enclosures. To do this, power up the next storage enclosure to be configured. Wait five minutes to make sure the unit is powered up and then repeat Steps 4 through 43 in the Configuring the First IBM Storage Array section. Use the Storage Enclosure Management IP Addresses table to determine the management IP addresses to assign to the different enclosures and use the iSCSI Port Addresses table to determine the IP addresses to assign to the ports en each enclosure.

Table 5-1 Storage Enclosure Management IP Addresses

Enclosure	Management IP Addresses
Enclosure 2	10.11.18.202, 10.11.18.203
Enclosure 3	10.11.18.204, 10.11.18.205
Enclosure 4	10.11.18.206, 10.11.18.207
Enclosure 5	10.11.18.208, 10.11.18.209

Table 5-2 iSCSI Port Addresses

Enclosure	Port	IP Address
Enclosure 2	Controller A, port 3	10.11.14.102
Enclosure 2	Controller A, port 4	10.11.15.102
Enclosure 2	Controller A, port 5	10.11.16.102
Enclosure 2	Controller A, port 6	10.11.17.102
Enclosure 2	Controller B, port 3	10.11.14.103
Enclosure 2	Controller B, port 4	10.11.15.103
Enclosure 2	Controller B, port 5	10.11.16.103
Enclosure 2	Controller B, port 6	10.11.17.103
Enclosure 3	Controller A, port 3	10.11.14.104
Enclosure 3	Controller A, port 4	10.11.15.104
Enclosure 3	Controller A, port 5	10.11.16.104
Enclosure 3	Controller A, port 6	10.11.17.104
Enclosure 3	Controller B, port 3	10.11.14.105
Enclosure 3	Controller B, port 4	10.11.15.105

Table 5-2 iSCSI Port Addresses

Enclosure	Port	IP Address
Enclosure 3	Controller B, port 5	10.11.16.105
Enclosure 3	Controller B, port 6	10.11.17.105
Enclosure 4	Controller A, port 3	10.11.14.106
Enclosure 4	Controller A, port 4	10.11.15.106
Enclosure 4	Controller A, port 5	10.11.16.106
Enclosure 4	Controller A, port 6	10.11.17.106
Enclosure 4	Controller B, port 3	10.11.14.107
Enclosure 4	Controller B, port 4	10.11.15.107
Enclosure 4	Controller B, port 5	10.11.16.107
Enclosure 4	Controller B, port 6	10.11.17.107
Enclosure 5	Controller A, port 3	10.11.14.108
Enclosure 5	Controller A, port 4	10.11.15.108
Enclosure 5	Controller A, port 5	10.11.16.108
Enclosure 5	Controller A, port 6	10.11.17.108
Enclosure 5	Controller B, port 3	10.11.14.109
Enclosure 5	Controller B, port 4	10.11.15.109
Enclosure 5	Controller B, port 5	10.11.16.109
Enclosure 5	Controller B, port 6	10.11.17.109

Confirm the Enclosure ID

Use this procedure to configure the storage:

Procedure

Step 1 Before you configure the storage devices, you must verify that the Enclosure ID is 99 for each storage subsystem. Follow these steps to confirm the Enclosure ID and change if necessary:

Note Perform these steps on all of the storage subsystems:

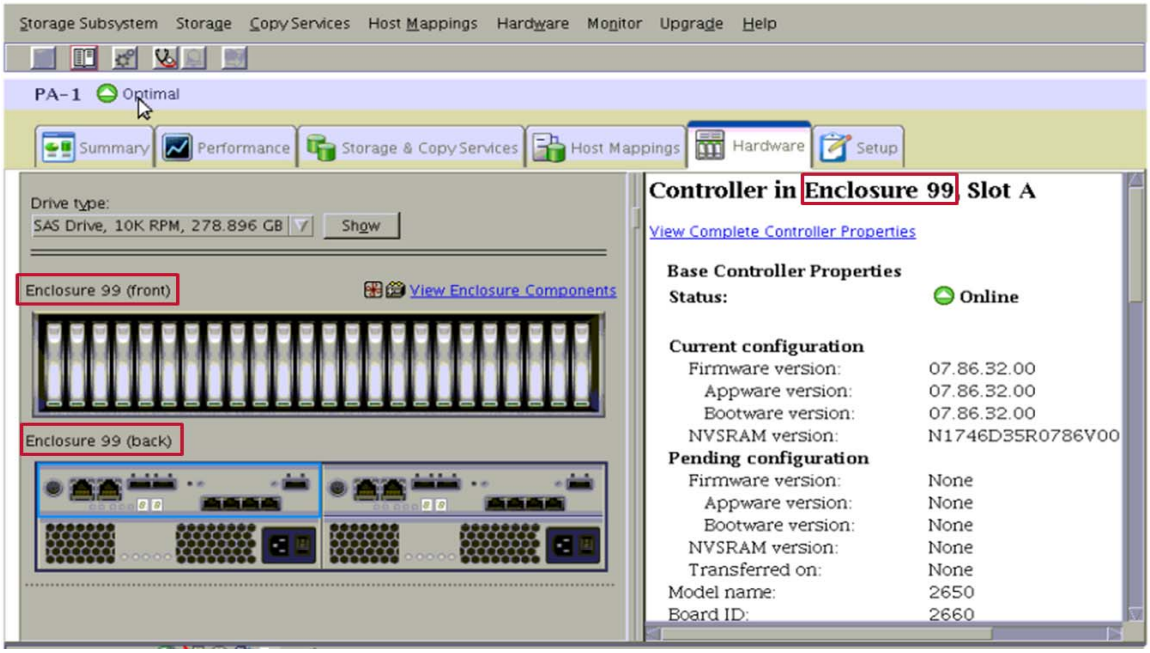
a. From the IBM DS Storage Manager, click the **Devices** tab.

b. Right-click the storage subsystem and choose **Manage Storage Subsystem**.

c. Click the **Hardware** tab.

d. From the Hardware tab, verify that the Enclosure ID is 99. You can verify this information in multiple places on the Hardware tab, as shown in the following figure.

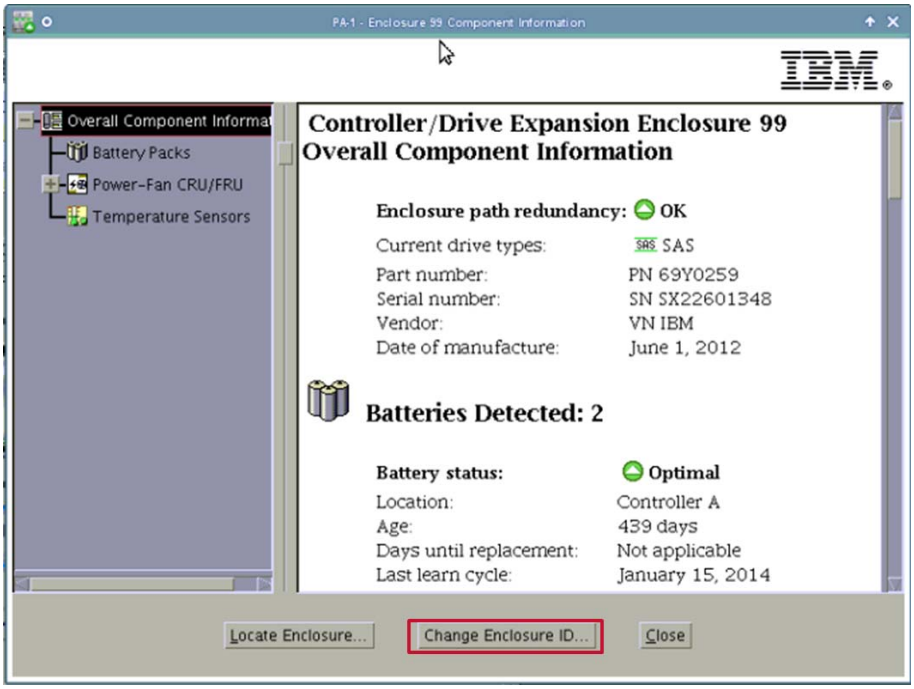
Figure 5-21 Storage Subsystem Enclosure ID



e. If the Enclosure ID is 99, go to step j. If the Enclosure ID is not 99, click **View Enclosure Components**, located above the front view of the enclosure.

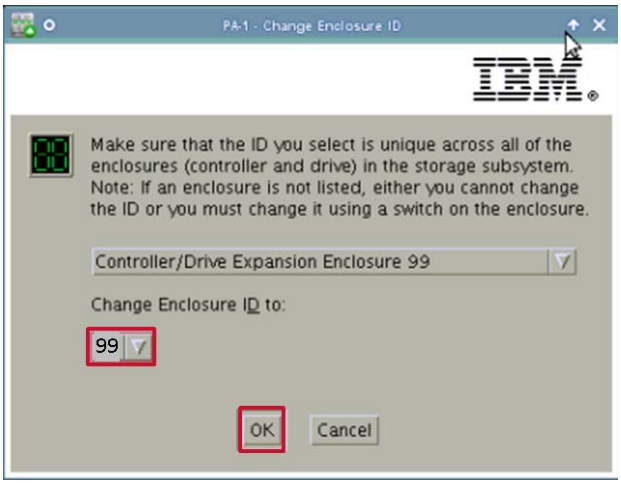
f. From the Enclosure Component Information window, click **Change Enclosure ID**.

Figure 5-22 Enclosure Component Information



g. The Change Enclosure ID window appears. From this window, choose **99** from the "Change Enclosure ID to" drop-down list and click **OK**.

Figure 5-23 Change Enclosure ID



h. Click **Close** to close the Enclosure Component Information window.

i. Choose **Storage Subsystem** > **Exit** to close the Subsystem Management window.

j. Repeat these steps for the rest of the storage subsystems.

Note Repeat these steps for the rest of the storage subsystems. When you have finished confirming the enclosure ID on the rest of the storage subsystems, continue to the Configuring the Storage Array and Formatting Storage Disks. Do *not* perform the steps in the "Configuring the Cache Storage Using NetApp Storage Enclosures" section.

Configuring the Cache Storage Using NetApp Storage Enclosures

Note This process is only for the NetApp E2724 Storage. If you have an IBM storage enclosure, refer to the Configuring the Cache Storage Using IBM Storage Enclosures section.

Installing the SANtricity Storage Manager on the VDS TC Management Server

Follow these steps to install the NetApp Storage Manager software on the VDS TC Management Server:

Procedure

Step 1 Obtain the SANtricity Storage Manager software from your Cisco representative.

Step 2 If you do not already have a VNC client connection open to the VDS TC Management Server, open one now. If you encounter problems opening a VNC client connection to the VDS TC Management Server, you may need to restart VNC Server 1 on the VDS TC Management Server. Follow these steps to restart this server:

a. From an SSH connection to the VDS TC Management server where you are logged in with root permissions, enter the command **rm /tmp/.X11-unix/X1**.

b. Enter the command **vncserver :1** to start the VNC Server.

Note If you have problems restarting the VNC Server 1 instance, you can also start another VNC Server instance by entering the command **vncserver :2**.

Step 3 From the VNC console window, if you are prompted to log in, enter the root user with the password that was provided by Cisco. If you are not prompted to log in, enter the **whoami** command to determine the username of the current session. Make sure that you are logged in as *root*. If you are not logged in as root, enter the **su root** command and switch to the root user. Enter the password that was provided by Cisco for the root account.

Step 4 Enter the command **mkdir /opt/pang/utilities/MGMT/NetApp/** to create a folder for the SANtricity Storage Manager software.

Step 5 Enter the command **mkdir /opt/pang/utilities/MGMT/NetApp/E2700_SM_11_20_0A** to create a subfolder for the SANtricity Storage Manager software.

Step 6 Using SFTP software, such as WinSCP, connect to the VDS TC Management Server using the IP address. Log in using the user name **padmin** and the password that was provided by Cisco.

Step 7 Copy the SANtricity Storage Manager software file that you received from Cisco into the **/tmp** folder. and close the SFTP software.

Step 8 From the VNC console window logged in as root, enter the command **cd /opt/pang/utilities/MGMT/NetApp/E2700_SM_11_20_0A** to change folders.

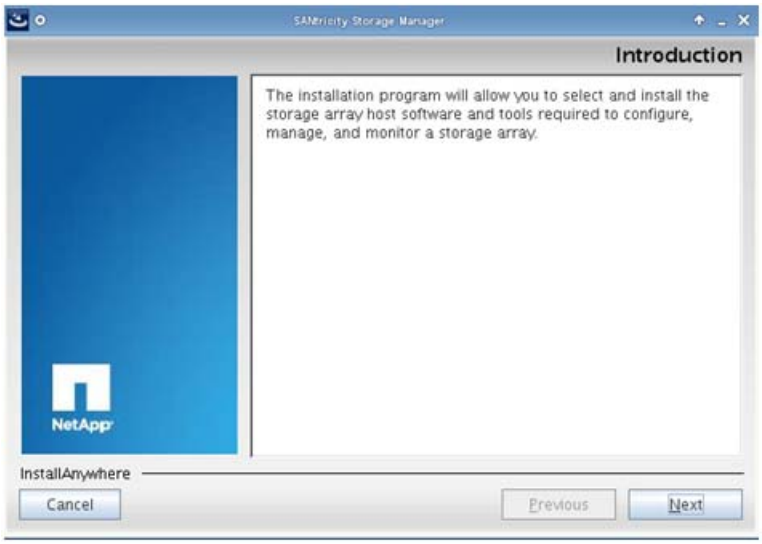
Step 9 Enter the command **cp /tmp/SMIA-LINUXX64-11.20.0A00.0002.bin SMIA-LINUXX64-11.20.0A00.0002.bin** to copy the SANtricity Storage Manager software to the correct location.

Step 10 Enter the command **chmod 777 SMIA-LINUXX64-11.20.0A00.0002.bin** to set permissions on the file.

Step 11 Next, enter the command **./SMIA-LINUXX64-11.20.0A00.0002.bin** to start the Management Station installation.

Step 12 The SANtricity ™ ES Storage Manager installation window appears. From the Introduction window screen, click **Next**.

Figure 5-24 SANtricity Storage Manager Initial Screen



Step 13 Choose **I accept the terms of the License Agreement** and click **Next**.

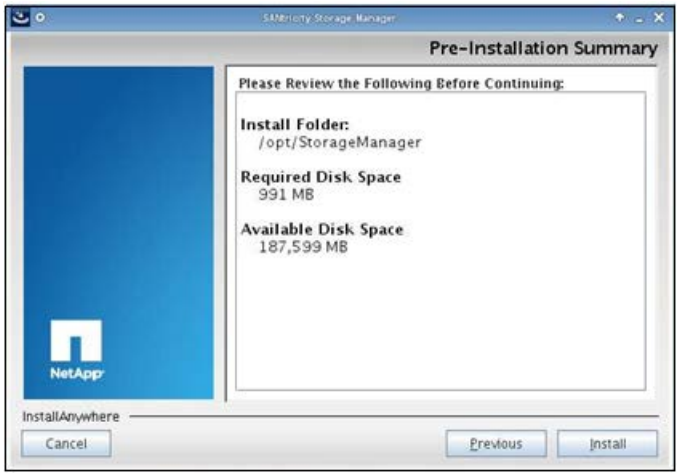
Figure 5-25 SANtricity Storage Manager License Agreement

Step 14 From the Select Installation Type window, click **Management Station** and click **Next**.

Figure 5-26 Installation Type Window

Step 15 In the Pre-Installation Summary window, the installation destination is displayed in addition to the required disk space, and available disk space. Verify the installation details and click **Install** to begin the installation.

Figure 5-27 Pre-Installation Summary

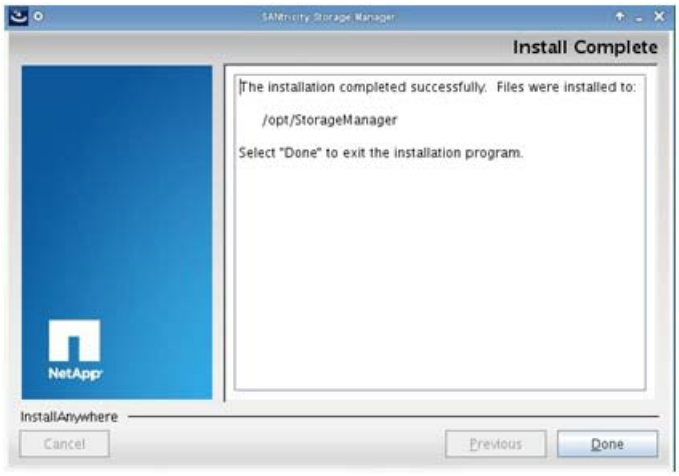


Step 16 The installation procedure begins.

Figure 5-28 SANtricity Storage Manager Installation

Step 17 When the installation completes, click **Done**.

Figure 5-29 SANtricity Manager Installation Complete



Configuring the First NetApp Storage Array

After the Management Station installation completes, you must configure the first storage array. Follow these steps to configure the first storage array:

Procedure

Step 1 After the Management Station installation completes, from the xterm window, enter the command **cd /opt/SMgr/client** to change folders.

Step 2 Enter the command **./SMclient** to start the SANtricity ™ ES Storage Manager software.

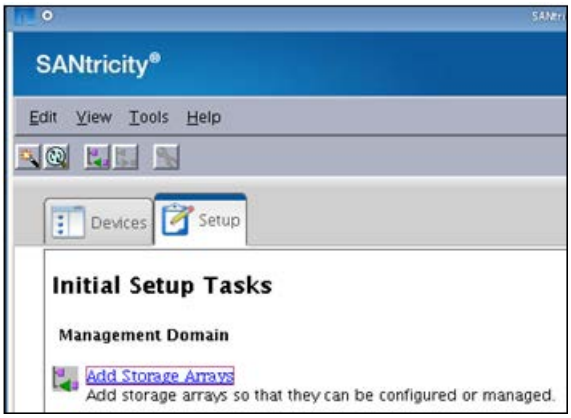
Step 3 Power down all storage arrays that you are not currently configuring or that are not already configured. For example, if you are configuring storage array 1, it should be the only storage array powered up. When powering up a storage array, wait at least 5 minutes before you proceed.

Caution Verify, physically, that only *one* none-configured storage array is powered-up.

Step 4 From the Storage Manager, click the **Setup** tab.

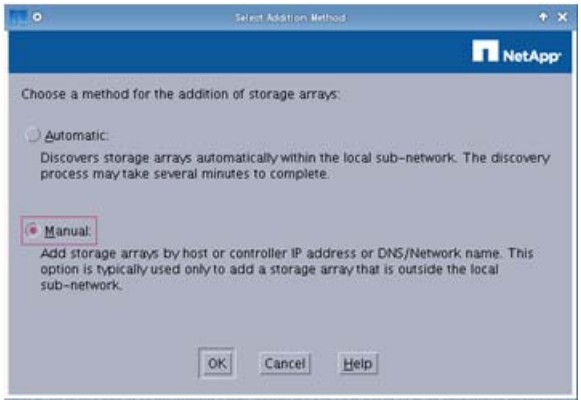
Step 5 From the Initial Setup Tasks window, click **Add Storage Arrays**.

Figure 5-30 Initial Setup Tasks



Step 6 From the Select Addition Method window, click **Manual**.

Figure 5-31 Select Addition Method



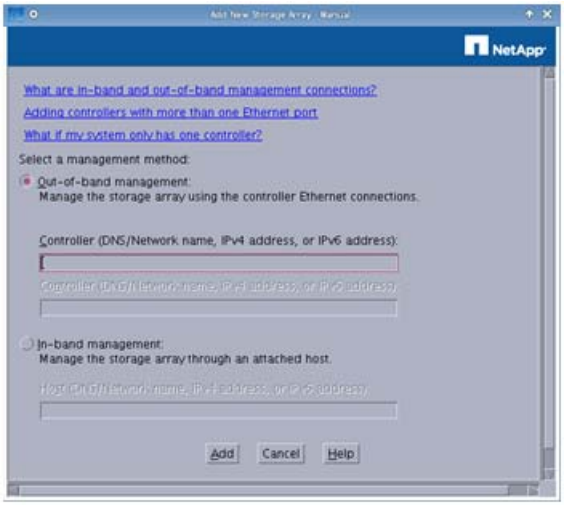
Step 7 From the Add New Storage Array window, in the first Controller field under Out-of-band Management, enter **192.168.128.101**.

Step 8 In the second Controller field under Out-of-Band Management, enter **192.168.128.102**.

Note Ensure that a single IP address is entered in each controller field.

Step 9 Click **Add**.

Figure 5-32 Add New Storage Array Window



Step 10 From the Add Additional Devices window, click **No**.

Step 11 From the Devices tab, click **Storage Array Unnamed**.

Figure 5-33 Storage Array

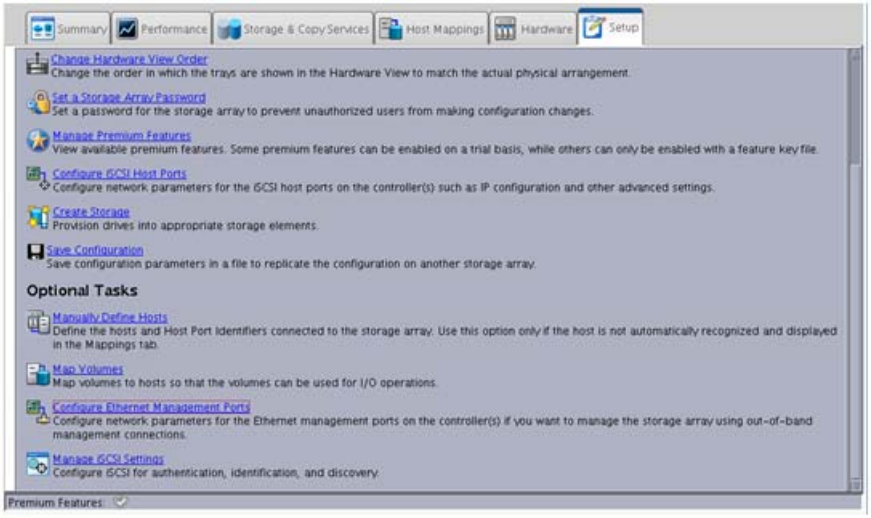
Step 12 From the Unnamed Disk Pool Automatic Configuration window, click **No**.

Figure 5-34 Un-named Disk Pool Automatic Configuration

Note If the Storage Array Password dialog box appears, click **No**.

Step 13 In the Initial Setup Tasks window, click the **Setup** tab and click **Configure Ethernet Management Ports**.

Figure 5-35 Configure Ethernet Management Ports



Step 14 From the window that appears, from the Ethernet Port drop-down list ensure that **Controller A, Port 1** is selected.

Step 15 From the Speed and Duplex Mode drop-down list, choose **Auto-negotiate**.

Step 16 From the IPv4 Settings tab, click the **Specify Configuration** radio button.

Step 17 In the IP address field, enter **10.11.18.200**.

Step 18 In the Subnet Mask field, enter **255.255.255.0**.

Step 19 From the Ethernet Port drop-down list, choose **Controller B, Port 1**.

Step 20 From the Speed and Duplex Mode drop-down list, choose **Auto-negotiate**.

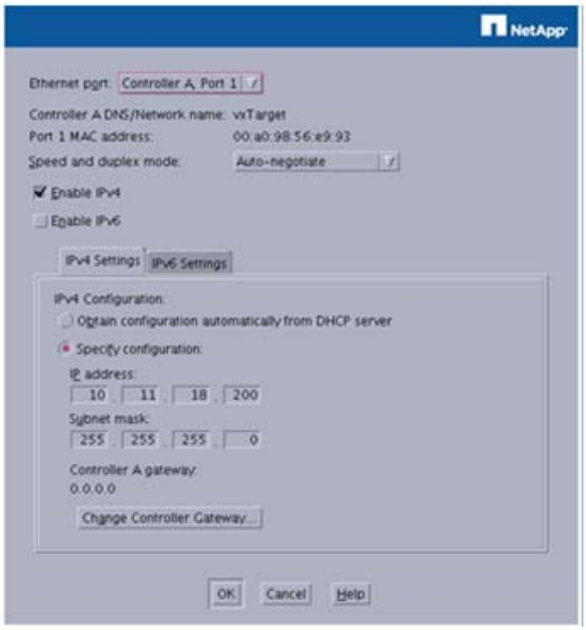
Step 21 From the IPv4 Settings tab, click the **Specify Configuration** radio button.

Step 22 In the IP address field, enter **10.11.18.201**.

Step 23 In the Subnet Mask field, enter **255.255.255.0**.

Step 24 Click **OK**. The storage array disconnects.

Figure 5-36 Controller Configuration



Step 25 Close the Array management window.

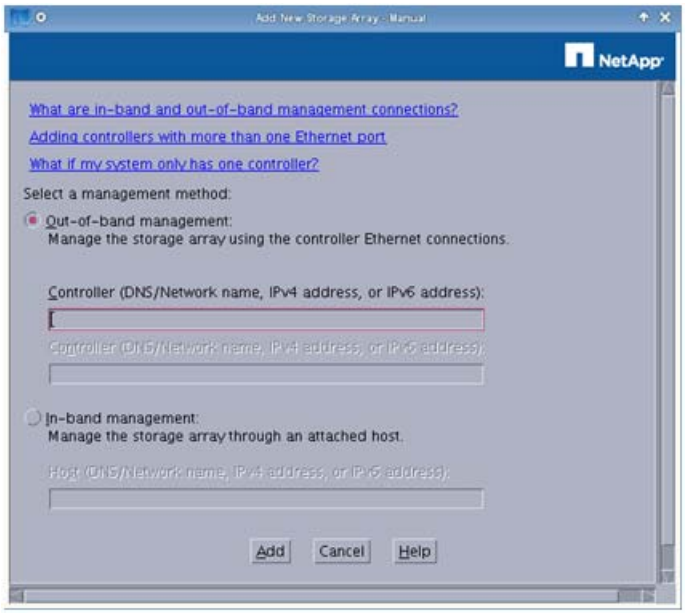
Step 26 From the Enterprise Management window, remove the system that was previously added using the default factory IP addresses (The system is highlighted in red when the IP addresses change.)

Step 27 Click the **Setup** tab and click **Add Storage Array** to re-add the system with the new IP addresses.

Step 28 From the Add New Storage Array window, in the IP address fields under Out-of-band Management, enter **10.11.18.200** and **10.11.18.201**. These are the IP addresses that were assigned to Controller A, port 1 and Controller B, port1.

Step 29 Click **Add**.

Figure 5-37 Add New Storage Array Window



Step 30 From the Automatic Configuration window, click **No**.

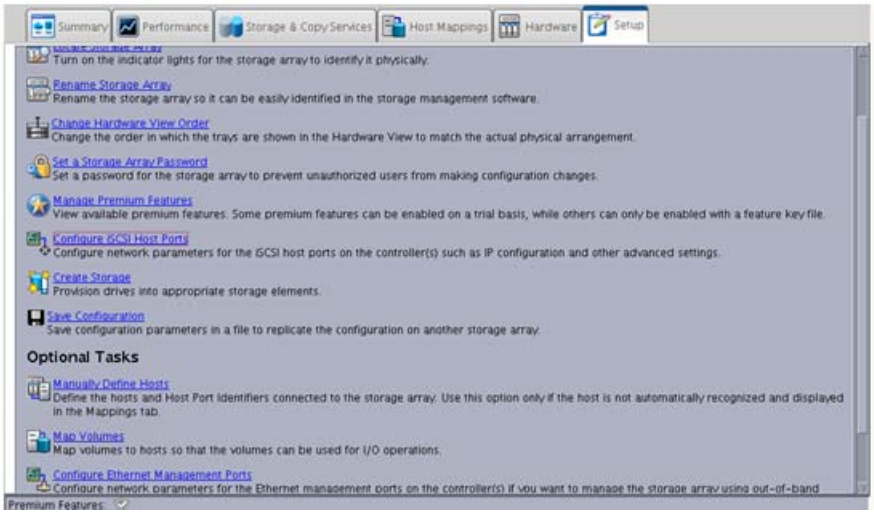
Note If the Storage Array Password dialog box appears, click **No**.

Step 31 From the Initial Setup Tasks window, click the **Setup** tab.

Step 32 Click **Configure iSCSI Host Ports**.

Caution If the user-interface does not show the **Configure iSCSI Host Ports** link, STOP here and contact the storage vendor because this storage array is not running the correct firmware version that supports an iSCSI configuration.

Figure 5-38 Configure iSCSI Host Ports



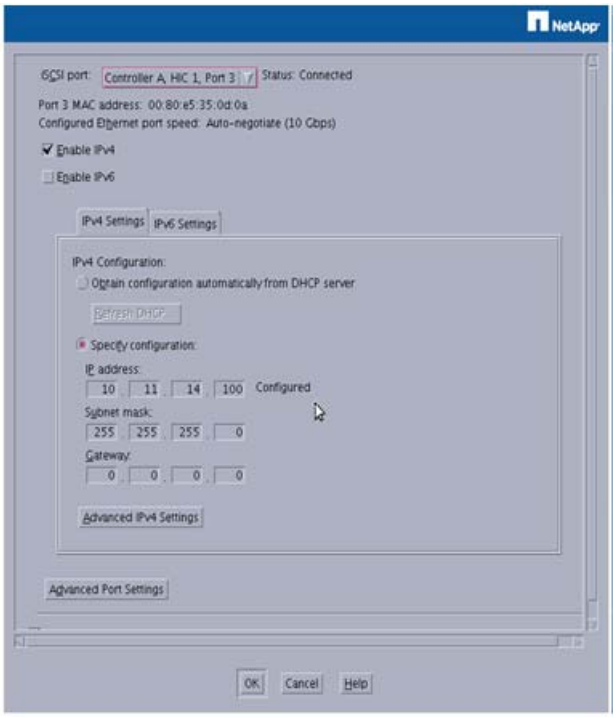
Step 33 From the window that appears, from the Ethernet Port drop-down list choose **Controller A, HIC 1, Port 3**.

Step 34 From the IPv4 Settings tab, click the **Specify Configuration** radio button.

Step 35 In the IP address field, enter **10.11.14.100**.

Step 36 In the Subnet Mask field, enter **255.255.255.0**.

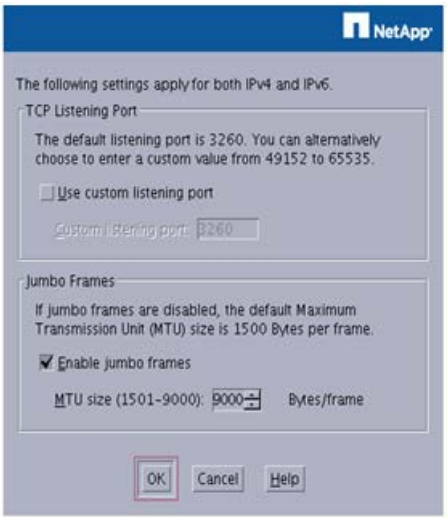
Figure 5-39 Configure IP Address



Step 37 Click **Advanced Port Settings**.

Step 38 From the window that appears, check the **Enable Jumbo Frames** check box and enter **9000** in the MTU Size field.

Figure 5-40 Enable Jumbo Frames



Step 39 Repeat Steps 33 through 38 for the following ports:

- Controller A port 4: 10.11.15.100
- Controller B port 3: 10.11.14.101
- Controller B port 4: 10.11.15.101

Step 40 Click **OK** when finished.

Configuring the Remaining NetApp Storage Arrays

Next you must configure the remaining storage enclosures. To do this, power up the next storage enclosure to be configured. Wait five minutes to make sure that the unit is powered up and then repeat Steps 4 through 40 from the Configuring the First NetApp Storage Array section. Use the Storage Enclosure Management IP Addresses table to determine the management IP addresses for assigning the different enclosures and use the iSCSI Port Addresses table to determine the IP addresses to assign to the ports en each enclosure.

Table 5-3 Storage Enclosure Management IP Addresses

Enclosure	Management IP Addresses
Enclosure 2	10.11.18.202, 10.11.18.203
Enclosure 3	10.11.18.204, 10.11.18.205
Enclosure 4	10.11.18.206, 10.11.18.207
Enclosure 5	10.11.18.208, 10.11.18.209
Enclosure 6	10.11.18.210, 10.11.18.211

Table 5-4 iSCSI Port Addresses

Enclosure	Port	IP Address
Enclosure 2	Controller A, port 3	10.11.14.102
Enclosure 2	Controller A, port 4	10.11.15.102
Enclosure 2	Controller B, port 3	10.11.14.103
Enclosure 2	Controller B, port 4	10.11.15.103
Enclosure 3	Controller A, port 3	10.11.14.104
Enclosure 3	Controller A, port 4	10.11.15.104
Enclosure 3	Controller B, port 3	10.11.14.105
Enclosure 3	Controller B, port 4	10.11.15.105
Enclosure 4	Controller A, port 3	10.11.14.106
Enclosure 4	Controller A, port 4	10.11.15.106
Enclosure 4	Controller B, port 3	10.11.14.107
Enclosure 4	Controller B, port 4	10.11.15.107
Enclosure 5	Controller A, port 3	10.11.14.108

Table 5-4 iSCSI Port Addresses (continued)

Enclosure	Port	IP Address
Enclosure 5	Controller A, port 4	10.11.15.108
Enclosure 5	Controller B, port 3	10.11.14.109
Enclosure 5	Controller B, port 4	10.11.15.109
Enclosure 6	Controller A, port 3	10.11.14.110
Enclosure 6	Controller A, port 4	10.11.15.110
Enclosure 6	Controller B, port 3	10.11.14.111
Enclosure 6	Controller B, port 4	10.11.15.111

Confirm the Tray ID

Step 1 Before you configure the storage devices, you must verify that the Tray ID is 99 for each Storage Array. Follow these steps to confirm the Tray ID and change if necessary:

Note Perform these steps on all of the Storage Array:

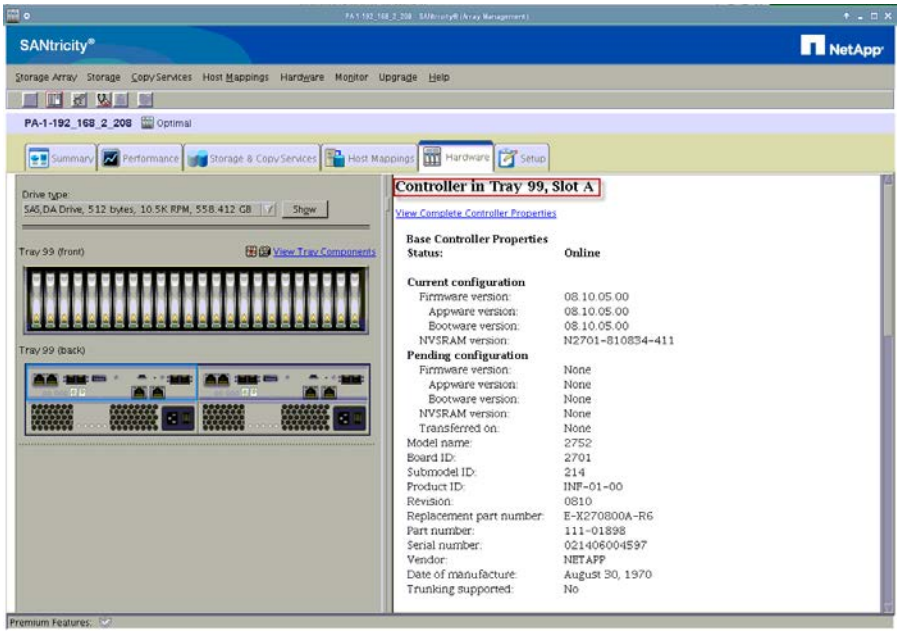
a. From the SANtricity Storage Manager, click the **Devices** tab.

b. Right-click the storage subsystem and choose **Manage Storage Array**.

c. Click the **Hardware** tab.

d. From the Hardware tab, verify that the Tray ID is **99**. You can verify this information in multiple places on the Hardware tab, as shown in the following figure.

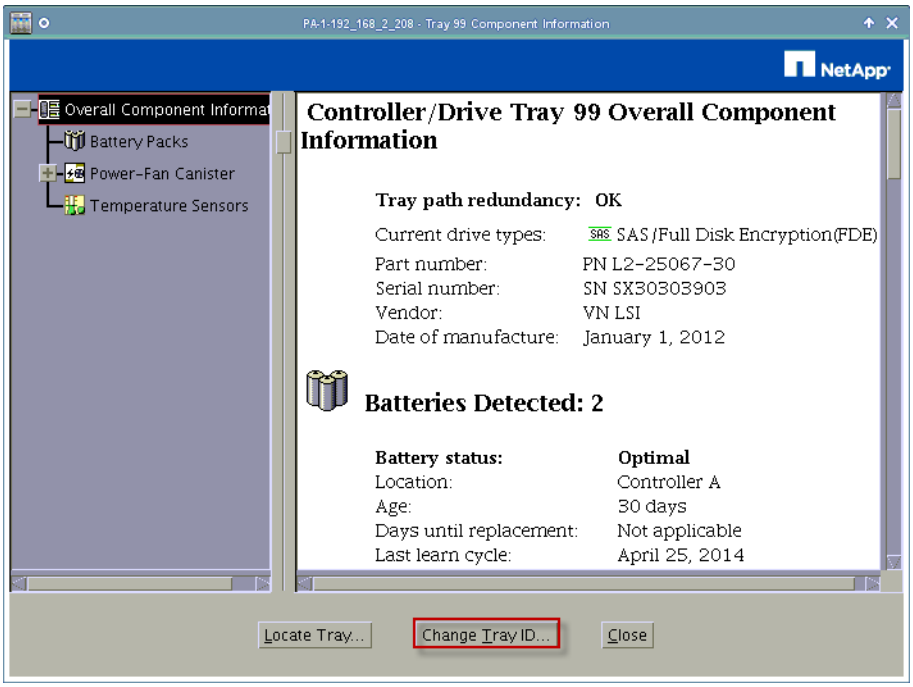
Figure 5-41 Storage Array Tray ID



e. If the Tray ID is 99, go to step j. If the Tray ID is not 99, click **View Tray Components**, located above the front view of the Tray.

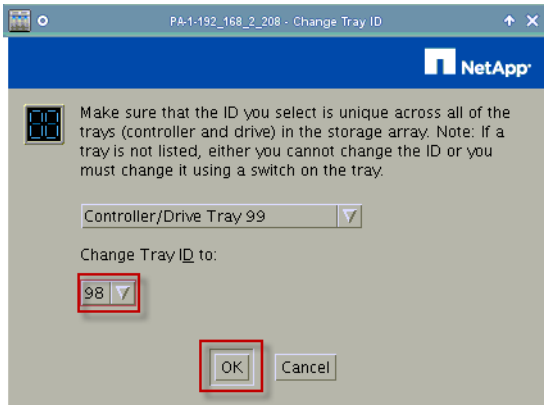
f. From the Tray Component Information window, click **Change Tray ID**.

Figure 5-42 Tray Component Information



g. The Change Tray ID window appears. From this window, choose 99 from the “Change Tray ID to” drop-down list and click OK.

Figure 5-43 Change Tray ID



h. Click **Close** to close the Tray Component Information window.

i. Choose **Storage Array > Exit** to close the Array Management window.

j. Repeat these steps for the rest of the Storage Array.

Note Continue with the Configuring the Storage Array and Formatting Storage Disks section.

Configuring the Storage Array and Formatting Storage Disks

Use this procedure to configure the storage and format the storage disks:

Procedure

Step 1 From the VNC console connection to the VDS TC Management Server, enter the command **cd /opt/pang/useful/configure_storages/** to change folders.

Step 2 Next, enter the command **./configure_storages.py -s** [*no_of_storage_enclosures*] **-b** [*no_of_blades*], where *no_of_blades* is the number of cache engine blade servers in the system.

Note The configure storages script will format the data disks.

The following warning message regarding the disk formatting will appear:

```
********** WARNING! **********
All storages are about to be reconfigured. All data on the data disks will be lost.
       Do you want to continue? (y/n)
```

Step 3 To continue the storages configuration and formatting of the their disks, enter **y**.

Step 4 Follow the on screen instructions. If prompted, enter the password for the root user that was provided by Cisco.

Note You may be prompted to enter the password several times.

Step 5 If you see the message “MegaCLI is not installed, so SSD disks will not be detected and formatted. Do you wish to continue anyway?”, enter **Y**.

```
waiting 60 seconds for disks to appear
MegaCli is not installed, so SSD disks will not be detected and formatted.
Do you wish to continue anyway? (y/n)
y
```

Note This script may take more than an hour to finish.

Step 6 After running this script, the storage arrays should be configured and formatted and all of the VDS TC Cache Engines will connect to the storage enclosures.

Next you will install and configure the Cisco VDS TC Cluster Software. This configuration is covered in the next chapter, Chapter 6, “Installing and Configuring the Cisco VDS TC Cluster Software”.

Installing and Configuring the Cisco VDS TC Cluster Software

This chapter includes information for installing the VDS TC Cluster platform software, including pre-installation and post-installation steps.

The VDS TC Cluster software installation script installs the VDS TC caching software and installs management tools, such as the VDS TC Management software, SNMP MIBs, and the CLI environment. Upon completion, the installer performs some verification tests, such as verifying the directory structure accessibility and the reachability of IP addresses.

Note The steps in this chapter should only be run on the VDS TC Management Server. The procedures in this chapter will distribute the Cisco software packages to all of the servers.

This chapter contains the following sections:

- Installing the Management Environment and Software
- Post Installation Steps

Installing the Management Environment and Software

Use this procedure to install the management environment and software:

Procedure

Step 1 Using an SSH session that is connected to the VDS TC Management server, enter the command **su root** to login as the root user.

Step 2 Enter the command **cd /tftpboot** to change folders.

Step 3 Enter the **ls** command to see the name of the archive file. The file you are looking for will start with **VDS-TC_FI** and will include **Server_Cluster** in the filename. Record the name of this file because you will need it in a later step. The numbers in the archive file represent the version of the VDS TC caching software. For example, the file named VDS-TC_FI_5.6.1b58_Server_Cluster.tar.gz would be for a VDS TC Cluster installation and the version number of the software is 5.6.1b58.

Step 4 Enter the command **mkdir** *version*, where *version* is the version number in the archive file you discovered in Step 3. For example, if the file you discovered in Step 3 was VDS-TC_FI_5.6.1b58_Server_Cluster.tar.gz, enter the command **mkdir 5.6.1b58**.

Step 5 Use the **cd** command to change to the directory you created in Step 4, for example **cd 5.6.1b58**.

Step 6 You must extract the VDS-TC software from the packed archive, located in the /tftpboot folder. Enter the command **tar -zxvf ..**/*archive_name*, where *archive_name* is the name of the file you discovered in Step 3. For example, enter the command **tar -zxvf ../VDS-TC_FI_5.6.1b58_Server_Cluster.tar.gz**.

Step 7 Next you must edit the GA_installer.rc file to reflect the number of cache engine servers to be installed in the Cluster. Use the command **vi GA_installer.rc** to edit this file. The following is an example of what that file should look like for the first time install of four servers and the management server.

```
#MANAGEMENT_SOFTWARE {no, yes}
MANAGEMENT_SOFTWARE=yes

#UPGRADEL_CACHE_SOFTWARE {all, none, space separated list(ce-1 ce-2 ce-3 ce-4 ce-5 ce-6
ce-7 ce-8 ce-9 ce-10 ce-11 ce-12 ce-13 ce-14 ce-15 ce-16)}
UPGRADEL_CACHE_SOFTWARE=ce-1 ce-2 ce-3 ce-4

UPGRADE_TAR_BALL=<filename>.tar.gz
MANAGEMENT_ENVIRONMENT=yes
GRACE_UPGRADE=yes
FIRST_INSTALL=yes
```

Step 8 To adjust the number of cache engine servers being installed, edit the line UPGRADEL_CACHE_SOFTWARE=ce-1 ce-2 ce-3 ce-4, listing the cache engines that you are installing.

Step 9 When you are finished editing the GA_installer.rc file, in the vi editor enter **:x** and press **Enter** to save and exit the file.

Step 10 Enter the command **./GA_installer.sh** to run the first installation script.

Step 11 At the Enter primary name server IP prompt, enter the IP address of your primary DNS server.

Note If a DNS server is unavailable, enter 0.0.0.0 as the IP address of the DNS server to prevent system functionality from being negatively affected.

Step 12 Enter **y** to confirm the entry.

Step 13 At the Enter secondary name server IP prompt, enter the IP address of your secondary DNS server.

Note If a secondary DNS server is unavailable, leave this entry blank.

Step 14 Enter **y** to confirm the entry.

Step 15 The GA Installer script displays a summary of the configuration. Review this configuration. If the configuration is correct, press **Y** to proceed. If the configuration is not correct, press **N** to exit the installation and start over.

Step 16 When asked if you want to change the management IPv4 settings, enter **N** unless you need to change the IP address information that was configured during the original VDS TC Management Server installation. If you enter **Y**, enter information at the following prompts:

- Management IPv4 address ():
- Management IPv4 netmask ():
- Default IPv4 gateway ():

Note To accept the current setting, press **Enter**.

Step 17 When asked if you want to change the management IPv6 settings, enter **N**.

Note While the VDS TC software contains the infrastructure to configure IPv6 on the management server, this functionality is not currently supported.

Step 18 Wait for the installation script to finish before continuing on to the next step.

Note This script may take up to an hour to finish.

Post Installation Steps

Use the following procedure after installing the management environment and software to perform the post installation steps. Part of the post installation steps is to copy a configuration file to the VDS TC Management Server. The configuration file sets the environment variables and configuration for the VDS TC application. A sample configuration file is provided in a .tgz file that is available from the same location as the VDS TC ISO image file on www.cisco.com. In this section you will copy an example configuration file, edit this file, and import the new configuration file to the VDS TC Management Server. For more information about editing the configuration files in this section, see the *Cisco Videoscape Distribution Suite Transparent Caching Software Configuration Guide* (part number OL-28016-03).

Procedure

Step 1 Download the configuration .tgz file that is available from the same location as the VDS TC ISO image file on www.cisco.com. In this .tgz file, locate the sample configuration file that matches the number of VDS TC Cache Engines that are installed in your VDS TC Blade Server installation.

Step 2 Edit the sample configuration file and make the required changes in the following sections. For more information on editing the required parameters in the cluster_conf.xml file, see the *Cisco Videoscape Distribution Suite Transparent Caching Software Configuration Guide* (part number OL-28016-02).

- The <mgmt-config> controls the management IP environment section.
- The <network> section controls the data network addresses.
- The <service> section controls the cache out port configuration.

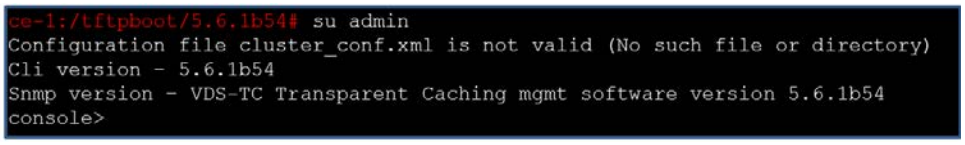
Step 3 Save your changes and rename the file cluster_conf.xml.

Step 4 Using SFTP software, such as WinSCP, connect to the management IP address that you assigned to the VDS TC Management Server. Log in using the user name **padmin** and the password that was provided by Cisco.

Step 5 Copy the example configuration file that you saved in Step 3 into the /tftpboot folder on the VDS TC Management Server.

Step 6 From an SSH session that is connected to the VDS TC Management Server, enter the command **su admin**. The system will notify you that the cluster_conf.xml file is not valid because the file does not exit and then the Regular mode prompt, console>, appears.

Figure 6-1 System Notification of no cluster_conf.xml File



Note If you need to open a new SSH window to the VDS TC cache engine, enter the management IP address of the VDS TC cache engine and log in using the username **padmin** and the password that was provided by Cisco. Enter the command **su root** to change to the root user and when prompted, enter the password for the root user that was provided by Cisco.

Step 7 To log into the Enable mode, you need the system ID to use for the password. Enter the command **show systemid** to determine the system ID.

Step 8 Enter the command **enable** to switch to Enable mode. Enter the system ID discovered in Step 7 for the password, excluding the leading *. The prompt changes to console#.

Step 9 To be able to import and apply the new configuration, enter the command **config** to switch to Configuration mode.

Step 10 To import the edited configuration file, enter the command **import 127.0.0.1 cluster_conf.xml**.

Step 11 To confirm your changes to the configuration file, enter the command **diff**. The new configuration parameters are indicated by a plus (+) sign as the first character on the line.

Step 12 To apply the imported configuration file, enter the command **apply**. After you enter the **apply** command, the system may ask you to confirm some of the settings. If prompted to confirm any settings, either enter **y** to confirm the entry or enter **n** to ignore that particular setting if necessary.

Step 13 After the **apply** command is complete, if you are logged out of the VDS TC CLI, repeat Steps 6 through Step 8 to log back in to enable mode.

Caution If you have configured the timezone of the VDS TC management server or cache engines, or if you have configured the VDS TC management server to use an external NTP time server, you must repeat the NTP configuration after importing a cluster_conf file.

Step 14 Enter the command **show cluster-bus-ip** to check if the spread communication among cluster members is set to broadcast.

```
console# show cluster-bus-ip
Processing...
MG-1: [Broadcast]
CE-1: [Broadcast]
CE-2: [Broadcast]
CE-3: [Broadcast]
CE-4: [Broadcast]
CE-5: [Broadcast]
CE-6: [Broadcast]
CE-7: [Broadcast]
CE-8: [Broadcast]
OK. All the CEs are configured to work with Broadcast IP.
```

Step 15 If the communication is set to broadcast, continue on to the Installing the License section. If the communication is set to multicast instead of broadcast, enter the command **cluster-bus-ip broadcast**. For example:

```
configuration# cluster-bus-ip broadcast
Processing...
All the CEs are configured to work with Broadcast IP.
```

Step 16 Enter the command **exit** to exit the Configuration mode.

Step 17 Enter the command **show cluster-bus-ip** to confirm that the management server and all cache engines are configured to use broadcast. For example:

```
console# show cluster-bus-ip
Processing...
MG-1: [Broadcast]
CE-1: [Broadcast]
CE-2: [Broadcast]
CE-3: [Broadcast]
CE-4: [Broadcast]
CE-5: [Broadcast]
CE-6: [Broadcast]
CE-7: [Broadcast]
CE-8: [Broadcast]
OK. All the CEs are configured to work with Broadcast IP.
```

Installing the License

After importing the configuration file you need to install a valid license. After you obtain a valid VDS TC license from Cisco use this procedure to install the VDS TC license:

Procedure

Step 1 Copy the license file to the /tftpboot/ folder on the VDS TC Management Server using SFTP software, such as WinSCP.

Step 2 To import the license file to the system from the VDS TC Enable mode CLI, enter the command **license import 127.0.0.1** *filename*, where *filename* is the license file name. When you enter this command, the details of the license will be displayed. Verify the features of the license and the expiration date.

Step 3 To activate the imported license, enter the command **license activate**. Enter **Y** when prompted to confirm the activation.

Step 4 After activating the license, exit completely from the VDS TC CLI.

Step 5 To confirm that the license is activated, log back into the CLI of the system using the username **admin**. From the VDS TC CLI prompt, enter the command **enable**. When prompted, enter the Enable mode password and press **Enter**. Enter the command **show license** to confirm that the license is activated.

Note If you see the message "No valid license found", make sure that you exit *completely* from the CLI of the VDS TC system and repeat Step 5.

Step 6 Enter the command **oper service start** to start the VDS TC service.

Step 7 To confirm that the VDS TC service has successfully started, enter the command **show status** and look for a device state of "started".

Cisco VDS TC Blade Server Cabling Guides when Using the NetApp E2724 Storage Enclosures

Revised: August 2015, OL-31422-03

This appendix provides cabling guidelines for cabling a VDS TC Cluster solution that uses Cisco Blade Servers and a Cisco Nexus 7004 or 7710 switch for the data and management switch.

There are six different configurations available for a VDS TC Blade Server Cluster installation that use the Cisco Nexus 7004 or 7710 switch for the data and management switch. This appendix provides a separate set of tables for each one of these configurations:

- VDS-TC-4B Non-Redundant Cabling Scheme
- VDS-TC-4B Redundant Cabling Scheme
- VDS-TC-8B Non-Redundant Cabling Scheme
- VDS-TC-8B Redundant Cabling Scheme
- VDS-TC-16B Non-Redundant Cabling Scheme
- VDS-TC-16B Redundant Cabling Scheme

VDS-TC-4B Non-Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-4B non-redundant solution.

Cisco Nexus 7004 or 7710 Switch Cabling (VDS-TC-4B Non-Redundant)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7710 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eht3/5	FEX-1	Fex Fabric 10Gb Uplink port 1	
	Eth3/6	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink port 3	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	

Cisco 2232TME Fabric Extender Cabling (VDS-TC-4B Non-Redundant)

Note All management connections, including management connections to the NetApp storage enclosures, from the Cisco 2232TME Fabric Extender use a 1000Base-T CAT5 or CAT6 cable. The connections to the iSCSI ports on the storage enclosures use a 10GBASE-T CAT6 or CAT7 cable. The connections to the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7710	Remote Device	Remote Port	Notes
Fabric Extender	1	Ethernet101/1/1	NetApp Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	NetApp Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	NetApp Storage 1	Controller2 Mgmt port 1	
	4	Ethernet101/1/4	NetApp Storage 2	Controller2 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	Port 1	
	10	Ethernet101/1/10	Fabric Interconnect	Management port	
	13	Ethernet101/1/13	NetApp Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	NetApp Storage 1	Controller2 port 3	
	15	Ethernet101/1/15	NetApp Storage 2	Controller1 port 3	
	16	Ethernet101/1/16	NetApp Storage 2	Controller2 port 3	
	10Gb Uplink port 1		Nexus 7004 or 7710	Eth3/5	
	10Gb Uplink port 2		Nexus 7004 or 7710	Eth3/6	
	10Gb Uplink port 3		Nexus 7004 or 7710	Eth3/7	
	10Gb Uplink port 4		Nexus 7004 or 7710	Eth3/8	

Cisco UCS 6248 UP Fabric Interconnect Cabling (VDS-TC-4B Non-Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Fabric Interconnect	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/29	Nexus 7004 or 7710	Eth3/13	
	Eth1/30	Nexus 7004 or 7710	Eth3/14	
	Eth1/31	Nexus 7004 or 7710	Eth3/15	
	Eth1/32	Nexus 7004 or 7710	Eth3/16	

VDS-TC-4B Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-4B redundant solution.

Cisco Nexus 7004 or 7710 Switch Cabling (VDS-TC-4B Redundant)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7710 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eth3/5	FEX-2	Fex Fabric 10Gb Uplink port 2	
	Eth3/6	FEX-2	Fex Fabric 10Gb Uplink port 4	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	

Cisco Nexus 7004 or 7710 Switch Cabling (VDS-TC-4B Redundant) (continued)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 with Line Card in Slot 4 or Nexus 7710 with Line Card in Slot 8	Eth4/5 or Eth8/5	FEX-2	Fex Fabric 10Gb Uplink port 1	
	Eth4/6 or Eth8/6	FEX-2	Fex Fabric 10Gb Uplink port 3	
	Eth4/7 or Eth8/7	FEX-1	Fex Fabric 10Gb Uplink port 1	
	Eth4/8 or Eth8/8	FEX-1	Fex Fabric 10Gb Uplink port 3	
	Eth4/13 or Eth8/13	UCS-FI-6248UP (FI 2)	Eth1/29	
	Eth4/14 or Eth8/14	UCS-FI-6248UP (FI 2)	Eth1/30	
	Eth4/15 or Eth8/15	UCS-FI-6248UP (FI 2)	Eth1/31	
	Eth4/16 or Eth8/16	UCS-FI-6248UP (FI 2)	Eth1/32	
	Eth4/29 or Eth8/29	PBR Router	To customer environment	
	Eth4/30 or Eth8/30	PBR Router	To customer environment	
	Eth4/31 or Eth8/31	PBR Router	To customer environment	
	Eth4/32 or Eth8/32	PBR Router	To customer environment	
	Eth4/37 or Eth8/37	PBR Router	To customer environment	
	Eth4/38 or Eth8/38	PBR Router	To customer environment	
	Eth4/39 or Eth8/39	PBR Router	To customer environment	
	Eth4/40 or Eth8/40	PBR Router	To customer environment	

Cisco 2232TME Fabric Extender 1 (FEX-1) Cabling (VDS-TC-4B Redundant)

Note All management connections, including management connections to the NetApp storage enclosures, from the Cisco 2232TME Fabric Extender use a 1000Base-T CAT5 or CAT6 cable. The connections to the iSCSI ports on the storage enclosures use a 10GBASE-T CAT6 or CAT7 cable. The connections to the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7710	Remote Device	Remote Port	Notes
Fabric Extender 1	1	Ethernet101/1/1	NetApp Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	NetApp Storage 2	Controller1 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	Port 1	
	10	Ethernet101/1/10	Fabric Interconnect	Management port	
	13	Ethernet101/1/13	NetApp Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	NetApp Storage 2	Controller1 port 3	
	18	Ethernet101/1/18	NetApp Storage 1	Controller 2 port 4	
	19	Ethernet101/1/19	NetApp Storage 2	Controller 2 port 4	
	10Gb Uplink port 1		Nexus 7004 or 7710	Eth3/5	
	10Gb Uplink port 2		Nexus 7004 or 7710	Eth3/6	
	10Gb Uplink port 3		Nexus 7004 or 7710	Eth4/5 or Eth8/5	
	10Gb Uplink port 4		Nexus 7004 or 7710	Eth4/6 or Eth8/5	

Cisco 2232TME Fabric Extender 2 (FEX-2) Cabling (VDS-TC-4B Redundant)

Note All management connections, including management connections to the NetApp storage enclosures, from the Cisco 2232TME Fabric Extender use a 1000Base-T CAT5 or CAT6 cable. The connections to the iSCSI ports on the storage enclosures use a 10GBASE-T CAT6 or CAT7 cable. The connections to the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7710	Remote Device	Remote Port	Notes
Fabric Extender 2	1	Ethernet102/1/1	NetApp Storage 1	Controller2 Mgmt port 1	
	2	Ethernet102/1/2	NetApp Storage 2	Controller2 Mgmt port 1	
	9	Ethernet102/1/9	Management Server	Port 1	
	10	Ethernet102/1/10	Fabric Interconnect	Management port	
	13	Ethernet102/1/13	NetApp Storage 1	Controller2 port 3	
	14	Ethernet102/1/14	NetApp Storage 2	Controller2 port 3	
	18	Ethernet102/1/18	NetApp Storage 1	Controller1 port 4	
	19	Ethernet102/1/19	NetApp Storage 2	Controller1 port 4	
	10Gb Uplink port 1		Nexus 7004 or 7710	Eth3/7	
	10Gb Uplink port 2		Nexus 7004 or 7710	Eth3/8	
	10Gb Uplink port 3		Nexus 7004 or 7710	Eth4/7 or Eth8/7	
	10Gb Uplink port 4		Nexus 7004 or 7710	Eth4/8 or Eth 8/8	

Cisco UCS 6248 UP Fabric Interconnect 1 (FI-1) Cabling (VDS-TC-4B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-1	L1	FI-2	L1	
	L2	FI-2	L2	
	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/29	Nexus 7004 or 7710	Eth3/13	
	Eth1/30	Nexus 7004 or 7710	Eth3/14	
	Eth1/31	Nexus 7004 or 7710	Eth3/15	
	Eth1/32	Nexus 7004 or 7710	Eth3/16	

Cisco UCS 6248 UP Fabric Interconnect 2 (FI-2) Cabling (VDS-TC-4B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-2	L1	FI-1	L1	
	L2	FI-1	L2	
	Eth1/1	Chassis 1	Fabric port 2/1	
	Eth1/2	Chassis 1	Fabric port 2/2	
	Eth1/3	Chassis 1	Fabric port 2/3	
	Eth1/4	Chassis 1	Fabric port 2/4	
	Eth1/29	Nexus 7004 or 7710	Eth4/13 or Eth8/13	
	Eth1/30	Nexus 7004 or 7710	Eth4/14 or Eth8/14	
	Eth1/31	Nexus 7004 or 7710	Eth4/15 or Eth8/15	
	Eth1/32	Nexus 7004 or 7710	Eth4/16 or Eth8/16	

VDS-TC-8B Non-Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-8B non-redundant solution.

Cisco Nexus 7004 or 7710 Switch Cabling (VDS-TC-8B Non-Redundant)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7710 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eht3/5	FEX-1	Fex Fabric 10Gb Uplink port 1	
	Eth3/6	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink port 3	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/17	UCS-FI-6248UP (FI 1)	Eth1/25	
	Eth3/18	UCS-FI-6248UP (FI 1)	Eth1/26	
	Eth3/19	UCS-FI-6248UP (FI 1)	Eth1/27	
	Eth3/20	UCS-FI-6248UP (FI 1)	Eth1/28	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	

Cisco 2232TME Fabric Extender Cabling (VDS-TC-8B Non-Redundant)

Note All management connections, including management connections to the NetApp storage enclosures, from the Cisco 2232TME Fabric Extender use a 1000Base-T CAT5 or CAT6 cable. The connections to the iSCSI ports on the storage enclosures use a 10GBASE-T CAT6 or CAT7 cable. The connections to the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7710	Remote Device	Remote Port	Notes
Fabric Extender	1	Ethernet101/1/1	NetApp Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	NetApp Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	NetApp Storage 3	Controller1 Mgmt port 1	
	4	Ethernet101/1/4	NetApp Storage 1	Controller2 Mgmt port 1	
	5	Ethernet101/1/5	NetApp Storage 2	Controller2 Mgmt port 1	
	6	Ethernet101/1/6	NetApp Storage 3	Controller2 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	Port 1	
	10	Ethernet101/1/10	Fabric Interconnect	Management port	
	13	Ethernet101/1/13	NetApp Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	NetApp Storage 1	Controller2 port 3	
	15	Ethernet101/1/15	NetApp Storage 2	Controller1 port 3	
	16	Ethernet101/1/16	NetApp Storage 2	Controller2 port 3	
	17	Ethernet101/1/17	NetApp Storage 3	Controller1 port 3	
	18	Ethernet101/1/18	NetApp Storage 3	Controller2 port 3	
	10Gb Uplink port 1		Nexus 7004 or 7710	Eth3/5	
	10Gb Uplink port 2		Nexus 7004 or 7710	Eth3/6	
	10Gb Uplink port 3		Nexus 7004 or 7710	Eth3/7	
	10Gb Uplink port 4		Nexus 7004 or 7710	Eth3/8	

Cisco UCS 6248 UP Fabric Interconnect Cabling (VDS-TC-8B Non-Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Fabric Interconnect	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/5	Chassis 1	Fabric port 1/5	
	Eth1/6	Chassis 1	Fabric port 1/6	
	Eth1/7	Chassis 1	Fabric port 1/7	
	Eth1/8	Chassis 1	Fabric port 1/8	
	Eth1/25	Nexus 7004 or 7710	Eth3/17	
	Eth1/26	Nexus 7004 or 7710	Eth3/18	
	Eth1/27	Nexus 7004 or 7710	Eth3/19	
	Eth1/28	Nexus 7004 or 7710	Eth3/20	
	Eth1/29	Nexus 7004 or 7710	Eth3/13	
	Eth1/30	Nexus 7004 or 7710	Eth3/14	
	Eth1/31	Nexus 7004 or 7710	Eth3/15	
	Eth1/32	Nexus 7004 or 7710	Eth3/16	

VDS-TC-8B Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-8B redundant solution.

Cisco Nexus 7004 Switch Cabling (VDS-TC-8B Redundant)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7710 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eth3/5	FEX-2	Fex Fabric 10Gb Uplink port 2	
	Eth3/6	FEX-2	Fex Fabric 10Gb Uplink port 4	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/17	UCS-FI-6248UP (FI 1)	Eth1/25	
	Eth3/18	UCS-FI-6248UP (FI 1)	Eth1/26	
	Eth3/19	UCS-FI-6248UP (FI 1)	Eth1/27	
	Eth3/20	UCS-FI-6248UP (FI 1)	Eth1/28	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	

Cisco Nexus 7004 Switch Cabling (VDS-TC-8B Redundant) (continued)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 with Line Card in Slot 4 or Nexus 7710 with Line Card in Slot 8	Eth4/5 or Eth8/5	FEX-2	Fex Fabric 10Gb Uplink port 1	
	Eth4/6 or Eth8/6	FEX-2	Fex Fabric 10Gb Uplink port 3	
	Eth4/7 or Eth8/7	FEX-1	Fex Fabric 10Gb Uplink port 1	
	Eth4/8 or Eth8/8	FEX-1	Fex Fabric 10Gb Uplink port 3	
	Eth4/13 or Eth8/13	UCS-FI-6248UP (FI 2)	Eth1/29	
	Eth4/14 or Eth8/14	UCS-FI-6248UP (FI 2)	Eth1/30	
	Eth4/15 or Eth8/15	UCS-FI-6248UP (FI 2)	Eth1/31	
	Eth4/16 or Eth8/16	UCS-FI-6248UP (FI 2)	Eth1/32	
	Eth4/17 or Eth8/17	UCS-FI-6248UP (FI 2)	Eth1/25	
	Eth4/18 or Eth8/18	UCS-FI-6248UP (FI 2)	Eth1/26	
	Eth4/19 or Eth8/19	UCS-FI-6248UP (FI 2)	Eth1/27	
	Eth4/20 or Eth8/20	UCS-FI-6248UP (FI 2)	Eth1/28	
	Eth4/29 or Eth8/29	PBR Router	To customer environment	
	Eth4/30 or Eth8/30	PBR Router	To customer environment	
	Eth4/31 or Eth8/31	PBR Router	To customer environment	
	Eth4/32 or Eth8/32	PBR Router	To customer environment	
	Eth4/37 or Eth8/37	PBR Router	To customer environment	
	Eth4/38 or Eth8/38	PBR Router	To customer environment	
	Eth4/39 or Eth8/39	PBR Router	To customer environment	
	Eth4/40 or Eth8/40	PBR Router	To customer environment	

Cisco 2232TME Fabric Extender 1 (FEX-1) Cabling (VDS-TC-8B Redundant)

Note All management connections, including management connections to the NetApp storage enclosures, from the Cisco 2232TME Fabric Extender use a 1000Base-T CAT5 or CAT6 cable. The connections to the iSCSI ports on the storage enclosures use a 10GBASE-T CAT6 or CAT7 cable. The connections to the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7710	Remote Device	Remote Port	Notes
Fabric Extender 1	1	Ethernet101/1/1	NetApp Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	NetApp Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	NetApp Storage 3	Controller1 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	Port 1	
	10	Ethernet101/1/10	Fabric Interconnect	Management port	
	13	Ethernet101/1/13	NetApp Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	NetApp Storage 2	Controller1 port 3	
	15	Ethernet101/1/15	NetApp Storage 3	Controller1 port 3	
	18	Ethernet101/1/18	NetApp Storage 1	Controller2 port 4	
	19	Ethernet101/1/19	NetApp Storage 2	Controller2 port 4	
	20	Ethernet101/1/20	NetApp Storage 3	Controller2 port 4	
	10Gb Uplink port 1		Nexus 7004 or 7710	Eth3/5	
	10Gb Uplink port 2		Nexus 7004 or 7710	Eth3/6	
	10Gb Uplink port 3		Nexus 7004 or 7710	Eth4/5 or Eth8/5	
	10Gb Uplink port 4		Nexus 7004 or 7710	Eth4/6 or Eth8/6	

Cisco 2232TME Fabric Extender 2 (FEX-2) Cabling (VDS-TC-8B Redundant)

Note All management connections, including management connections to the NetApp storage enclosures, from the Cisco 2232TME Fabric Extender use a 1000Base-T CAT5 or CAT6 cable. The connections to the iSCSI ports on the storage enclosures use a 10GBASE-T CAT6 or CAT7 cable. The connections to the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7710	Remote Device	Remote Port	Notes
Fabric Extender 2	1	Ethernet102/1/1	NetApp Storage 1	Controller2 Mgmt port 1	
	2	Ethernet102/1/2	NetApp Storage 2	Controller2 Mgmt port 1	
	3	Ethernet102/1/3	NetApp Storage 3	Controller2 Mgmt port 1	
	9	Ethernet102/1/9	Management Server	Port 2	
	10	Ethernet102/1/10	Fabric Interconnect	Management port	
	13	Ethernet102/1/13	NetApp Storage 1	Controller2 port 3	
	14	Ethernet102/1/14	NetApp Storage 2	Controller2 port 3	
	15	Ethernet102/1/15	NetApp Storage 3	Controller2 port 3	
	18	Ethernet102/1/18	NetApp Storage 1	Controller1 port 4	
	19	Ethernet102/1/19	NetApp Storage 2	Controller1 port 4	
	20	Ethernet102/1/20	NetApp Storage 3	Controller1 port 4	
	10Gb Uplink port 1		Nexus 7004 or 7710	Eth3/7	
	10Gb Uplink port 2		Nexus 7004 or 7710	Eth3/8	
	10Gb Uplink port 3		Nexus 7004 or 7710	Eth4/7 or Eth8/7	
	10Gb Uplink port 4		Nexus 7004 or 7710	Eth4/8 or Eth8/8	

Cisco UCS 6248 UP Fabric Interconnect 1 (FI-1) Cabling (VDS-TC-8B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-1	L1	FI-2	L1	
	L2	FI-2	L2	
	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/5	Chassis 1	Fabric port 1/5	
	Eth1/6	Chassis 1	Fabric port 1/6	
	Eth1/7	Chassis 1	Fabric port 1/7	
	Eth1/8	Chassis 1	Fabric port 1/8	
	Eth1/25	Nexus 7004 or 7710	Eth3/17	
	Eth1/26	Nexus 7004 or 7710	Eth3/18	
	Eth1/27	Nexus 7004 or 7710	Eth3/19	
	Eth1/28	Nexus 7004 or 7710	Eth3/20	
	Eth1/29	Nexus 7004 or 7710	Eth3/13	
	Eth1/30	Nexus 7004 or 7710	Eth3/14	
	Eth1/31	Nexus 7004 or 7710	Eth3/15	
	Eth1/32	Nexus 7004 or 7710	Eth3/16	

Cisco UCS 6248 UP Fabric Interconnect 2 (FI-2) Cabling (VDS-TC-8B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-2	L1	FI-1	L1	
	L2	FI-1	L2	
	Eth1/1	Chassis 1	Fabric port 2/1	
	Eth1/2	Chassis 1	Fabric port 2/2	
	Eth1/3	Chassis 1	Fabric port 2/3	
	Eth1/4	Chassis 1	Fabric port 2/4	
	Eth1/5	Chassis 1	Fabric port 2/5	
	Eth1/6	Chassis 1	Fabric port 2/6	
	Eth1/7	Chassis 1	Fabric port 2/7	
	Eth1/8	Chassis 1	Fabric port 2/8	
	Eth1/25	Nexus 7004 or 7710	Eth4/17 or Eth8/17	
	Eth1/26	Nexus 7004 or 7710	Eth4/18 or Eth8/18	
	Eth1/27	Nexus 7004 or 7710	Eth4/19 or Eth8/19	
	Eth1/28	Nexus 7004 or 7710	Eth4/20 or Eth8/20	
	Eth1/29	Nexus 7004 or 7710	Eth4/13 or Eth8/13	
	Eth1/30	Nexus 7004 or 7710	Eth4/14 or Eth8/14	
	Eth1/31	Nexus 7004 or 7710	Eth4/15 or Eth8/15	
	Eth1/32	Nexus 7004 or 7710	Eth4/16 or Eth8/16	

VDS-TC-16B Non-Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-16B non-redundant solution.

Cisco Nexus 7004 or 7710 Switch Cabling (VDS-TC-16B Non-Redundant)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 77101 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eth3/5	FEX-2	Fex Fabric 10Gb Uplink 2	
	Eth3/6	FEX-2	Fex Fabric 10Gb Uplink 4	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink 2	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink 4	
	Eth3/9	FEX-2	Fex Fabric 10GB Uplink 1	
	Eth3/10	FEX-2	Fex Fabric 10GB Uplink 3	
	Eth3/11	FEX-1	Fex Fabric 10GB Uplink 1	
	Eth3/12	FEX-1	Fex Fabric 10GB Uplink 3	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/17	UCS-FI-6248UP (FI 1)	Eth1/25	
	Eth3/18	UCS-FI-6248UP (FI 1)	Eth1/26	
	Eth3/19	UCS-FI-6248UP (FI 1)	Eth1/27	
	Eth3/20	UCS-FI-6248UP (FI 1)	Eth1/28	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	
	Eth3/41	UCS-FI-6248UP (FI 1)	Eth1/17	
	Eth3/42	UCS-FI-6248UP (FI 1)	Eth1/18	
	Eth3/43	UCS-FI-6248UP (FI 1)	Eth1/19	
	Eth3/44	UCS-FI-6248UP (FI 1)	Eth1/20	

Cisco Nexus 7004 or 7710 Switch Cabling (VDS-TC-16B Non-Redundant) (continued)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7710 with Line Card in Slot 3	Eth3/45	UCS-FI-6248UP (FI 1)	Eth1/21	
	Eth3/46	UCS-FI-6248UP (FI 1)	Eth1/22	
	Eth3/47	UCS-FI-6248UP (FI 1)	Eth1/23	
	Eth3/48	UCS-FI-6248UP (FI 1)	Eth1/24	

Cisco 2232TME Fabric Extender Cabling (VDS-TC-16B Non-Redundant)

Note All management connections, including management connections to the NetApp storage enclosures, from the Cisco 2232TME Fabric Extender use a 1000Base-T CAT5 or CAT6 cable. The connections to the iSCSI ports on the storage enclosures use a 10GBASE-T CAT6 or CAT7 cable. The connections to

the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7710	Remote Device	Remote Port	Notes
Fabric Extender	1	Ethernet101/1/1	NetApp Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	NetApp Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	NetApp Storage 3	Controller1 Mgmt port 1	
	4	Ethernet101/1/4	NetApp Storage 4	Controller1 Mgmt port 1	
	5	Ethernet101/1/5	NetApp Storage 5	Controller1 Mgmt port 1	
	6	Ethernet101/1/6	NetApp Storage 6	Controller1 Mgmt port 1	
	7	Ethernet101/1/7	NetApp Storage 1	Controller2 Mgmt port 1	
	8	Ethernet101/1/8	NetApp Storage 2	Controller2 Mgmt port 1	
	9	Ethernet101/1/9	NetApp Storage 3	Controller2 Mgmt port 1	
	10	Ethernet101/1/10	NetApp Storage 4	Controller2 Mgmt port 1	
	11	Ethernet101/1/11	NetApp Storage 5	Controller2 Mgmt port 1	
	12	Ethernet101/1/12	NetApp Storage 6	Controller2 Mgmt port 1	
	13	Ethernet101/1/13	Management Server	Port 1	
	14	Ethernet101/1/14	Fabric Interconnect	Management port	
	15	Ethernet101/1/15	NetApp Storage 1	Controller1 port 3	
	16	Ethernet101/1/16	NetApp Storage 1	Controller2 port 3	
	17	Ethernet101/1/17	NetApp Storage 2	Controller1 port 3	
	18	Ethernet101/1/18	NetApp Storage 2	Controller2 port 3	
	19	Ethernet101/1/19	NetApp Storage 3	Controller1 port 3	
	20	Ethernet101/1/20	NetApp Storage 3	Controller2 port 3	
	21	Ethernet101/1/21	NetApp Storage 4	Controller1 port 3	
	22	Ethernet101/1/22	NetApp Storage 4	Controller2 port 3	
	23	Ethernet101/1/23	NetApp Storage 5	Controller1 port 3	
	24	Ethernet101/1/24	NetApp Storage 5	Controller2 port 3	
	25	Ethernet101/1/25	NetApp Storage 6	Controller1 port 3	
	26	Ethernet101/1/26	NetApp Storage 6	Controller2 port 3	
	10Gb Uplink port 1		Nexus 7004 or 7710	Eth3/5	
	10Gb Uplink port 2		Nexus 7004 or 7710	Eth3/6	
	10Gb Uplink port 3		Nexus 7004 or 7710	Eth3/7	
	10Gb Uplink port 4		Nexus 7004 or 7710	Eth3/8	

Cisco UCS 6248 UP Fabric Interconnect Cabling (VDS-TC-16B Non-Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Fabric Interconnect	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/5	Chassis 1	Fabric port 1/5	
	Eth1/6	Chassis 1	Fabric port 1/6	
	Eth1/7	Chassis 1	Fabric port 1/7	
	Eth1/8	Chassis 1	Fabric port 1/8	
	Eth1/9	Chassis 2	Fabric port 1/1	
	Eth1/10	Chassis 2	Fabric port 1/2	
	Eth1/11	Chassis 2	Fabric port 1/3	
	Eth1/12	Chassis 2	Fabric port 1/4	
	Eth1/13	Chassis 2	Fabric port 1/5	
	Eth1/14	Chassis 2	Fabric port 1/6	
	Eth1/15	Chassis 2	Fabric port 1/7	
	Eth1/16	Chassis 2	Fabric port 1/8	
	Eth1/17	Nexus 7004 or 7710	Eth3/41	
	Eth1/18	Nexus 7004 or 7710	Eth3/42	
	Eth1/19	Nexus 7004 or 7710	Eth3/43	
	Eth1/20	Nexus 7004 or 7710	Eth3/44	
	Eth1/21	Nexus 7004 or 7710	Eth3/45	
	Eth1/22	Nexus 7004 or 7710	Eth3/46	
	Eth1/23	Nexus 7004 or 7710	Eth3/47	
	Eth1/24	Nexus 7004 or 7710	Eth3/48	
	Eth1/25	Nexus 7004 or 7710	Eth3/17	
	Eth1/26	Nexus 7004 or 7710	Eth3/18	
	Eth1/27	Nexus 7004 or 7710	Eth3/19	
	Eth1/28	Nexus 7004 or 7710	Eth3/20	
	Eth1/29	Nexus 7004 or 7710	Eth3/13	
	Eth1/30	Nexus 7004 or 7710	Eth3/14	

Cisco UCS 6248 UP Fabric Interconnect Cabling (VDS-TC-16B Non-Redundant) (continued)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Fabric Interconnect	Eth1/31	Nexus 7004 or 7710	Eth3/15	
	Eth1/32	Nexus 7004 or 7710	Eth3/16	

VDS-TC-16B Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-16B redundant solution.

Cisco Nexus 7004 Switch Cabling (VDS-TC-16B Redundant)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 with Line Card in Slot 3 or 7710 with Line Cards in Slot 1, 2, and 3	Eth 3/1 or Eth2/30	MGMT uplink	To customer environment	
	Eth3/5 or Eth3/21	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/6 or Eth3/22	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/7 or Eth3/23	FEX-2	Fex Fabric 10Gb Uplink port 2	
	Eth3/8 or Eth3/24	FEX-2	Fex Fabric 10Gb Uplink port 4	
	Eth3/13 or Eth1/17	UCS-FI-6248UP (FI 1)	Eth1/17	
	Eth3/14 or Eth1/18	UCS-FI-6248UP (FI 1)	Eth1/18	
	Eth3/15 or Eth1/19	UCS-FI-6248UP (FI 1)	Eth1/19	
	Eth3/16 or Eth1/20	UCS-FI-6248UP (FI 1)	Eth1/20	
	Eth3/17 or Eth1/21	UCS-FI-6248UP (FI 1)	Eth1/21	
	Eth3/18 or Eth1/22	UCS-FI-6248UP (FI 1)	Eth1/22	
	Eth3/19 or Eth1/23	UCS-FI-6248UP (FI 1)	Eth1/23	
	Eth3/20 or Eth1/24	UCS-FI-6248UP (FI 1)	Eth1/24	
	Eth3/29 or Eth1/33	PBR Router 1-2	To customer environment	Port channel
	Eth3/30 or Eth1/34	PBR Router 1-2	To customer environment	Port channel
	Eth3/31 or Eth1/35	PBR Router 1-2	To customer environment	Port channel
	Eth3/32 or Eth1/36	PBR Router 1-2	To customer environment	Port channel
	Eth3/37 or Eth1/37	PBR Router 1-2	To customer environment	Port channel
	Eth3/38 or Eth1/38	PBR Router 1-2	To customer environment	Port channel
	Eth3/39 or Eth1/39	PBR Router 1-2	To customer environment	Port channel
	Eth3/40 or Eth1/40	PBR Router 1-2	To customer environment	Port channel
	Eth3/41 or Eth1/25	UCS-FI-6248UP (FI 2)	Eth1/25	
	Eth3/42 or Eth1/26	UCS-FI-6248UP (FI 2)	Eth1/26	
	Eth3/43 or Eth1/27	UCS-FI-6248UP (FI 2)	Eth1/27	
	Eth3/44 or Eth1/28	UCS-FI-6248UP (FI 2)	Eth1/28	
	Eth3/45 or Eth1/29	UCS-FI-6248UP (FI 2)	Eth1/29	
	Eth3/46 or Eth1/30	UCS-FI-6248UP (FI 2)	Eth1/30	
	Eth3/47 or Eth1/31	UCS-FI-6248UP (FI 2)	Eth1/31	
	Eth3/48 or Eth1/32	UCS-FI-6248UP (FI 2)	Eth1/32	

Cisco Nexus 7004 Switch Cabling (VDS-TC-16B Redundant) (continued)

Note All connections from the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 with Line Card in Slot 4 or Nexus 7710 with Line Card in Slot 8, 9, and 10	Eth4/1 or Eth9/30	MGMT uplink	To customer environment	
	Eth4/5 or Eth8/23	FEX-2	Fex Fabric 10Gb Uplink port 2	
	Eth4/6 or Eth8/24	FEX-2	Fex Fabric 10Gb Uplink port 4	
	Eth4/7 or Eth8/21	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth4/8 or Eth8/22	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth4/13 or Eth10/13	UCS-FI-6248UP (FI 2)	Eth1/17	
	Eth4/14 or Eth10/14	UCS-FI-6248UP (FI 2)	Eth1/18	
	Eth4/15 or Eth10/15	UCS-FI-6248UP (FI 2)	Eth1/19	
	Eth4/16 or Eth10/16	UCS-FI-6248UP (FI 2)	Eth1/20	
	Eth4/17 or Eth10/17	UCS-FI-6248UP (FI 2)	Eth1/21	
	Eth4/18 or Eth10/18	UCS-FI-6248UP (FI 2)	Eth1/22	
	Eth4/19 or Eth10/19	UCS-FI-6248UP (FI 2)	Eth1/23	
	Eth4/20 or Eth10/20	UCS-FI-6248UP (FI 2)	Eth1/24	
	Eth4/29 or Eth10/33	PBR Router 3-4	To customer environment	Port channel
	Eth4/30 or Eth10/34	PBR Router 3-4	To customer environment	Port channel
	Eth4/31 or Eth10/35	PBR Router 3-4	To customer environment	Port channel
	Eth4/32 or Eth10/36	PBR Router 3-4	To customer environment	Port channel
	Eth4/37 or Eth10/37	PBR Router 3-4	To customer environment	Port channel
	Eth4/38 or Eth10/38	PBR Router 3-4	To customer environment	Port channel
	Eth4/39 or Eth10/39	PBR Router 3-4	To customer environment	Port channel
	Eth4/40 or Eth10/40	PBR Router 3-4	To customer environment	Port channel
	Eth4/41 or Eth10/25	UCS-FI-6248UP (FI 1)	Eth1/25	
	Eth4/42 or Eth10/26	UCS-FI-6248UP (FI 1)	Eth1/26	
	Eth4/43 or Eth10/27	UCS-FI-6248UP (FI 1)	Eth1/27	
	Eth4/44 or Eth10/28	UCS-FI-6248UP (FI 1)	Eth1/28	
	Eth4/45 or Eth10/29	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth4/46 or Eth10/30	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth4/47 or Eth10/31	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth4/48 or Eth10/32	UCS-FI-6248UP (FI 1)	Eth1/32	

Cisco 2232TME Fabric Extender 1 (FEX-1) Cabling (VDS-TC-16B Redundant)

Note All management connections, including management connections to the NetApp storage enclosures, from the Cisco 2232TME Fabric Extender use a 1000Base-T CAT5 or CAT6 cable. The connections to the iSCSI ports on the storage enclosures use a 10GBASE-T CAT6 or CAT7 cable. The connections to the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported

Local Device	Local Port	Reference on Nexus 7004/7710	Remote Device	Remote Port	Notes
Fabric Extender 1	1	Ethernet101/1/1	NetApp Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	NetApp Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	NetApp Storage 3	Controller1 Mgmt port 1	
	4	Ethernet101/1/4	NetApp Storage 4	Controller1 Mgmt port 1	
	5	Ethernet101/1/5	NetApp Storage 5	Controller1 Mgmt port 1	
	6	Ethernet101/1/6	NetApp Storage 6	Controller1 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	port 1	
	10	Ethernet101/1/10	Fabric Interconnect	Management port	
	13	Ethernet101/1/13	NetApp Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	NetApp Storage 2	Controller1 port 3	
	15	Ethernet101/1/15	NetApp Storage 3	Controller1 port 3	
	16	Ethernet101/1/16	NetApp Storage 4	Controller1 port 3	
	17	Ethernet101/1/17	NetApp Storage 5	Controller1 port 3	
	18	Ethernet101/1/18	NetApp Storage 6	Controller1 port 3	
	19	Ethernet101/1/19	NetApp Storage 1	Controller2 port 4	
	20	Ethernet101/1/20	NetApp Storage 2	Controller2 port 4	
	21	Ethernet101/1/21	NetApp Storage 3	Controller2 port 4	
	22	Ethernet101/1/22	NetApp Storage 4	Controller2 port 4	
	23	Ethernet101/1/23	NetApp Storage 5	Controller2 port 4	
	24	Ethernet101/1/24	NetApp Storage 6	Controller2 port 4	
	10Gb Uplink port 1		Nexus 7004 or 7710	Eth3/5 or Eth3/21	
	10Gb Uplink port 2		Nexus 7004 or 7710	Eth3/6 or Eth3/22	
	10Gb Uplink port 3		Nexus 7004 or 7710	Eth4/5 or Eth8/23	
	10Gb Uplink port 4		Nexus 7004 or 7710	Eth4/6 or Eth8/24	

Cisco 2232TME Fabric Extender 2 (FEX-2) Cabling (VDS-TC-16B Redundant)

Note All management connections, including management connections to the NetApp storage enclosures, from the Cisco 2232TME Fabric Extender use a 1000Base-T CAT5 or CAT6 cable. The connections to the iSCSI ports on the storage enclosures use a 10GBASE-T CAT6 or CAT7 cable. The connections to the Cisco Nexus 7004 or 7710 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7710	Remote Device	Remote Port	Notes
Fabric Extender 2	1	Ethernet102/1/1	NetApp Storage 1	Controller2 Mgmt port 1	
	2	Ethernet102/1/2	NetApp Storage 2	Controller2 Mgmt port 1	
	3	Ethernet102/1/3	NetApp Storage 3	Controller2 Mgmt port 1	
	4	Ethernet102/1/4	NetApp Storage 4	Controller2 Mgmt port 1	
	5	Ethernet102/1/5	NetApp Storage 5	Controller2 Mgmt port 1	
	6	Ethernet102/1/6	NetApp Storage 6	Controller2 Mgmt port 1	
	9	Ethernet102/1/9	Management Server	port 2	
	10	Ethernet102/1/10	Fabric Interconnect	Management port	
	13	Ethernet102/1/13	NetApp Storage 1	Controller2 port 3	
	14	Ethernet102/1/14	NetApp Storage 2	Controller2 port 3	
	15	Ethernet102/1/15	NetApp Storage 3	Controller2 port 3	
	16	Ethernet102/1/16	NetApp Storage 4	Controller2 port 3	
	17	Ethernet102/1/17	NetApp Storage 5	Controller2 port 3	
	18	Ethernet102/1/18	NetApp Storage 6	Controller2 port 3	
	19	Ethernet102/1/19	NetApp Storage 1	Controller1 port 4	
	20	Ethernet102/1/20	NetApp Storage 2	Controller1 port 4	
	21	Ethernet102/1/21	NetApp Storage 3	Controller1 port 4	
	22	Ethernet102/1/22	NetApp Storage 4	Controller1 port 4	
	23	Ethernet102/1/23	NetApp Storage 5	Controller1 port 4	
	24	Ethernet102/1/24	NetApp Storage 6	Controller1 port 4	
	10Gb Uplink port 1		Nexus 7004 or 7710	Eth3/7 or Eth3/23	
	10Gb Uplink port 2		Nexus 7004 or 7710	Eth3/8 or Eth3/24	
	10Gb Uplink port 3		Nexus 7004 or 7710	Eth4/7 or Eth8/21	
	10Gb Uplink port 4		Nexus 7004 or 7710	Eth4/8 or Eth8/22	

Cisco UCS 6248 UP Fabric Interconnect 1 (FI-1) Cabling (VDS-TC-16B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-1	L1	FI-2	L1	
	L2	FI-2	L2	
	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/5	Chassis 1	Fabric port 1/5	
	Eth1/6	Chassis 1	Fabric port 1/6	
	Eth1/7	Chassis 1	Fabric port 1/7	
	Eth1/8	Chassis 1	Fabric port 1/8	
	Eth1/9	Chassis 2	Fabric port 1/1	
	Eth1/10	Chassis 2	Fabric port 1/2	
	Eth1/11	Chassis 2	Fabric port 1/3	
	Eth1/12	Chassis 2	Fabric port 1/4	
	Eth1/13	Chassis 2	Fabric port 1/5	
	Eth1/14	Chassis 2	Fabric port 1/6	
	Eth1/15	Chassis 2	Fabric port 1/7	
	Eth1/16	Chassis 2	Fabric port 1/8	
	Eth1/17	Nexus 7004 or 7710	Eth 3/13 or Eth1/17	
	Eth1/18	Nexus 7004 or 7710	Eth 3/14 or Eth1/18	
	Eth1/19	Nexus 7004 or 7710	Eth 3/15 or Eth1/19	
	Eth1/20	Nexus 7004 or 7710	Eth 3/16 or Eth1/20	
	Eth1/21	Nexus 7004 or 7710	Eth 3/17 or Eth1/21	
	Eth1/22	Nexus 7004 or 7710	Eth 3/18 or Eth1/22	
	Eth1/23	Nexus 7004 or 7710	Eth 3/19 or Eth1/23	
	Eth1/24	Nexus 7004 or 7710	Eth 3/20 or Eth1/24	
	Eth1/25	Nexus 7004 or 7710	Eth4/41 or Eth10/25	
	Eth1/26	Nexus 7004 or 7710	Eth4/42 or Eth10/26	
	Eth1/27	Nexus 7004 or 7710	Eth4/43 or Eth10/27	
	Eth1/28	Nexus 7004 or 7710	Eth4/44 or Eth10/28	
	Eth1/29	Nexus 7004 or 7710	Eth4/45 or Eth10/29	

Cisco UCS 6248 UP Fabric Interconnect 1 (FI-1) Cabling (VDS-TC-16B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-1	Eth1/30	Nexus 7004 or 7710	Eth4/46 or Eth10/30	
	Eth1/31	Nexus 7004 or 7710	Eth4/47 or Eth10/31	
	Eth1/32	Nexus 7004 or 7710	Eth4/48 or Eth10/32	

Cisco UCS 6248 UP Fabric Interconnect 2 (FI-2) Cabling (VDS-TC-16B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-2	L1	FI-1	L1	
	L2	FI-1	L2	
	Eth1/1	Chassis 1	Fabric port 2/1	
	Eth1/2	Chassis 1	Fabric port 2/2	
	Eth1/3	Chassis 1	Fabric port 2/3	
	Eth1/4	Chassis 1	Fabric port 2/4	
	Eth1/5	Chassis 1	Fabric port 2/5	
	Eth1/6	Chassis 1	Fabric port 2/6	
	Eth1/7	Chassis 1	Fabric port 2/7	
	Eth1/8	Chassis 1	Fabric port 2/8	
	Eth1/9	Chassis 2	Fabric port 2/1	
	Eth1/10	Chassis 2	Fabric port 2/2	
	Eth1/11	Chassis 2	Fabric port 2/3	
	Eth1/12	Chassis 2	Fabric port 2/4	
	Eth1/13	Chassis 2	Fabric port 2/5	
	Eth1/14	Chassis 2	Fabric port 2/6	
	Eth1/15	Chassis 2	Fabric port 2/7	
	Eth1/16	Chassis 2	Fabric port 2/8	
	Eth1/17	Nexus 7004 or 7710	Eth4/13 or Eth10/17	
	Eth1/18	Nexus 7004 or 7710	Eth4/14 or Eth10/18	
	Eth1/19	Nexus 7004 or 7710	Eth4/15 or Eth10/19	
	Eth1/20	Nexus 7004 or 7710	Eth4/16 or Eth10/20	
	Eth1/21	Nexus 7004 or 7710	Eth4/17 or Eth10/21	
	Eth1/22	Nexus 7004 or 7710	Eth4/18 or Eth10/22	
	Eth1/23	Nexus 7004 or 7710	Eth4/19 or Eth10/23	
	Eth1/24	Nexus 7004 or 7710	Eth4/20 or Eth10/24	
	Eth1/25	Nexus 7004 or 7710	Eth3/41 or Eth1/25	
	Eth1/26	Nexus 7004 or 7710	Eth3/42 or Eth1/26	
	Eth1/27	Nexus 7004 or 7710	Eth3/43 or Eth1/27	
	Eth1/28	Nexus 7004 or 7710	Eth3/44 or Eth1/28	
	Eth1/29	Nexus 7004 or 7710	Eth3/45 or Eth1/29	

Cisco UCS 6248 UP Fabric Interconnect 2 (FI-2) Cabling (VDS-TC-16B Redundant) (continued)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-2	Eth1/30	Nexus 7004 or 7710	Eth3/46 or Eth1/30	
	Eth1/31	Nexus 7004 or 7710	Eth3/47 or Eth1/31	
	Eth1/32	Nexus 7004 or 7710	Eth3/48 or Eth1/32	

Cisco VDS TC Blade Server Cabling Guides when Using IBM DS3524 Storage Enclosures

Revised: August 2015, OL-31422-03

This appendix provides cabling guidelines for cabling a VDS TC Cluster solution that uses Cisco Blade Servers and a Cisco Nexus 7004 or 7010 switch for the data and management switch.

There are six different configurations available for a VDS TC Blade Server Cluster installation that use the Cisco Nexus 7004 or 7010 switch for the data and management switch. This appendix provides a separate set of tables for each one of these configurations:

- VDS-TC-4B Non-Redundant Cabling Scheme
- VDS-TC-4B Redundant Cabling Scheme
- VDS-TC-8B Non-Redundant Cabling Scheme
- VDS-TC-8B Redundant Cabling Scheme
- VDS-TC-16B Non-Redundant Cabling Scheme
- VDS-TC-16B Redundant Cabling Scheme

VDS-TC-4B Non-Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-4B non-redundant solution.

Cisco Nexus 7004 or 7010 Switch Cabling (VDS-TC-4B Non-Redundant)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7010 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eht3/5	FEX-1	Fex Fabric 10Gb Uplink port 1	
	Eth3/6	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink port 3	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	

Cisco 2248TP Fabric Extender Cabling (VDS-TC-4B Non-Redundant)

Note All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender	1	Ethernet101/1/1	IBM Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	IBM Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	IBM Storage 1	Controller2 Mgmt port 1	
	4	Ethernet101/1/4	IBM Storage 2	Controller2 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	port 1	
	10	Ethernet101/1/10	UCS-FI-6248UP (FI 1)	MGMT0	
	13	Ethernet101/1/13	IBM Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	IBM Storage 1	Controller1 port 4	
	15	Ethernet101/1/15	IBM Storage 1	Controller2 port 3	
	16	Ethernet101/1/16	IBM Storage 1	Controller2 port 4	
	17	Ethernet101/1/17	IBM Storage 2	Controller1 port 3	
	18	Ethernet101/1/18	IBM Storage 2	Controller1 port 4	
	19	Ethernet101/1/19	IBM Storage 2	Controller2 port 3	
	20	Ethernet101/1/20	IBM Storage 2	Controller2 port 4	
	21	Ethernet101/1/21	IBM Storage 1	Controller1 port 5	
	22	Ethernet101/1/22	IBM Storage 1	Controller1 port 6	
	23	Ethernet101/1/23	IBM Storage 1	Controller2 port 5	
	24	Ethernet101/1/24	IBM Storage 1	Controller2 port 6	
	25	Ethernet101/1/25	IBM Storage 2	Controller1 port 5	
	26	Ethernet101/1/26	IBM Storage 2	Controller1 port 6	
	27	Ethernet101/1/27	IBM Storage 2	Controller2 port 5	
	28	Ethernet101/1/28	IBM Storage 2	Controller2 port 6	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth3/5	
	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/6	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth3/7	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/8	

Cisco UCS 6248 UP Fabric Interconnect Cabling (VDS-TC-4B Non-Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Fabric Interconnect	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/29	Nexus 7004 or 7010	Eth3/13	
	Eth1/30	Nexus 7004 or 7010	Eth3/14	
	Eth1/31	Nexus 7004 or 7010	Eth3/15	
	Eth1/32	Nexus 7004 or 7010	Eth3/16	

VDS-TC-4B Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-4B redundant solution.

Cisco Nexus 7004 or 7010 Switch Cabling (VDS-TC-4B Redundant)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7010 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eth3/5	FEX-2	Fex Fabric 10Gb Uplink port 2	
	Eth3/6	FEX-2	Fex Fabric 10Gb Uplink port 4	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	

Cisco Nexus 7004 or 7010 Switch Cabling (VDS-TC-4B Redundant) (continued)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 with Line Card in Slot 4 or Nexus 7010 with Line Card in Slot 8	Eth4/5 or Eth8/5	FEX-2	Fex Fabric 10Gb Uplink port 1	
	Eth4/6 or Eth8/6	FEX-2	Fex Fabric 10Gb Uplink port 3	
	Eth4/7 or Eth8/7	FEX-1	Fex Fabric 10Gb Uplink port 1	
	Eth4/8 or Eth8/8	FEX-1	Fex Fabric 10Gb Uplink port 3	
	Eth4/13 or Eth8/13	UCS-FI-6248UP (FI 2)	Eth1/29	
	Eth4/14 or Eth8/14	UCS-FI-6248UP (FI 2)	Eth1/30	
	Eth4/15 or Eth8/15	UCS-FI-6248UP (FI 2)	Eth1/31	
	Eth4/16 or Eth8/16	UCS-FI-6248UP (FI 2)	Eth1/32	
	Eth4/29 or Eth8/29	PBR Router	To customer environment	
	Eth4/30 or Eth8/30	PBR Router	To customer environment	
	Eth4/31 or Eth8/31	PBR Router	To customer environment	
	Eth4/32 or Eth8/32	PBR Router	To customer environment	
	Eth4/37 or Eth8/37	PBR Router	To customer environment	
	Eth4/38 or Eth8/38	PBR Router	To customer environment	
	Eth4/39 or Eth8/39	PBR Router	To customer environment	
	Eth4/40 or Eth8/40	PBR Router	To customer environment	

Cisco 2248TP Fabric Extender 1 (FEX-1) Cabling (VDS-TC-4B Redundant)

Note All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender 1	1	Ethernet101/1/1	IBM Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	IBM Storage 2	Controller1 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	port 1	
	10	Ethernet101/1/10	UCS-FI-6248UP (FI 1)	MGMT0	
	13	Ethernet101/1/13	IBM Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	IBM Storage 1	Controller1 port 4	
	15	Ethernet101/1/15	IBM Storage 1	Controller2 port 3	
	16	Ethernet101/1/16	IBM Storage 1	Controller2 port 4	
	17	Ethernet101/1/17	IBM Storage 2	Controller1 port 3	
	18	Ethernet101/1/18	IBM Storage 2	Controller1 port 4	
	19	Ethernet101/1/19	IBM Storage 2	Controller2 port 3	
	20	Ethernet101/1/20	IBM Storage 2	Controller2 port 4	
	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/7	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/8	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth4/7 or Eth8/7	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth4/8 or Eth8/8	

Cisco 2248TP Fabric Extender 2 (FEX-2) Cabling (VDS-TC-4B Redundant)

Note All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender 2	1	Ethernet102/1/1	IBM Storage 1	Controller2 Mgmt port 1	
	2	Ethernet102/1/2	IBM Storage 2	Controller2 Mgmt port 1	
	9	Ethernet102/1/9	Management Server	port 2	
	10	Ethernet102/1/10	UCS-FI-6248UP (FI 2)	MGMT0	
	13	Ethernet102/1/13	IBM Storage 1	Controller1 port 5	
	14	Ethernet102/1/14	IBM Storage 1	Controller1 port 6	
	15	Ethernet102/1/15	IBM Storage 1	Controller2 port 5	
	16	Ethernet102/1/16	IBM Storage 1	Controller2 port 6	
	17	Ethernet102/1/17	IBM Storage 2	Controller1 port 5	
	18	Ethernet102/1/18	IBM Storage 2	Controller1 port 6	
	19	Ethernet102/1/19	IBM Storage 2	Controller2 port 5	
	20	Ethernet102/1/20	IBM Storage 2	Controller2 port 6	
	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/5	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/6	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth4/5 or Eth8/5	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth4/6 or Eth8/6	

Cisco UCS 6248 UP Fabric Interconnect 1 (FI-1) Cabling (VDS-TC-4B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-1	L1	FI-2	L1	
	L2	FI-2	L2	
	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/29	Nexus 7004 or 7010	Eth3/13	
	Eth1/30	Nexus 7004 or 7010	Eth3/14	
	Eth1/31	Nexus 7004 or 7010	Eth3/15	
	Eth1/32	Nexus 7004 or 7010	Eth3/16	

Cisco UCS 6248 UP Fabric Interconnect 2 (FI-2) Cabling (VDS-TC-4B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-2	L1	FI-1	L1	
	L2	FI-1	L2	
	Eth1/1	Chassis 1	Fabric port 2/1	
	Eth1/2	Chassis 1	Fabric port 2/2	
	Eth1/3	Chassis 1	Fabric port 2/3	
	Eth1/4	Chassis 1	Fabric port 2/4	
	Eth1/29	Nexus 7004 or 7010	Eth4/13 or Eth8/13	
	Eth1/30	Nexus 7004 or 7010	Eth4/14 or Eth8/14	
	Eth1/31	Nexus 7004 or 7010	Eth4/15 or Eth8/15	
	Eth1/32	Nexus 7004 or 7010	Eth4/16 or Eth8/16	

VDS-TC-8B Non-Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-8B non-redundant solution.

Cisco Nexus 7004 or 7010 Switch Cabling (VDS-TC-8B Non-Redundant)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7010 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eht3/5	FEX-1	Fex Fabric 10Gb Uplink port 1	
	Eth3/6	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink port 3	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/17	UCS-FI-6248UP (FI 1)	Eth1/25	
	Eth3/18	UCS-FI-6248UP (FI 1)	Eth1/26	
	Eth3/19	UCS-FI-6248UP (FI 1)	Eth1/27	
	Eth3/20	UCS-FI-6248UP (FI 1)	Eth1/28	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	

Cisco 2248TP Fabric Extender Cabling (VDS-TC-8B Non-Redundant)

All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender	1	Ethernet101/1/1	IBM Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	IBM Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	IBM Storage 3	Controller1 Mgmt port 1	
	4	Ethernet101/1/4	IBM Storage 1	Controller2 Mgmt port 1	
	5	Ethernet101/1/5	IBM Storage 2	Controller2 Mgmt port 1	
	6	Ethernet101/1/6	IBM Storage 3	Controller2 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	port 1	
	10	Ethernet101/1/10	UCS-FI-6248UP (FI 1)	MGMT0	
	13	Ethernet101/1/13	IBM Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	IBM Storage 1	Controller1 port 4	
	15	Ethernet101/1/15	IBM Storage 1	Controller2 port 3	
	16	Ethernet101/1/16	IBM Storage 1	Controller2 port 4	
	17	Ethernet101/1/17	IBM Storage 2	Controller1 port 3	
	18	Ethernet101/1/18	IBM Storage 2	Controller1 port 4	
	19	Ethernet101/1/19	IBM Storage 2	Controller2 port 3	
	20	Ethernet101/1/20	IBM Storage 2	Controller2 port 4	
	21	Ethernet101/1/21	IBM Storage 3	Controller1 port 3	
	22	Ethernet101/1/22	IBM Storage 3	Controller1 port 4	
	23	Ethernet101/1/23	IBM Storage 3	Controller2 port 3	
	24	Ethernet101/1/24	IBM Storage 3	Controller2 port 4	
	25	Ethernet101/1/25	IBM Storage 1	Controller1 port 5	
	26	Ethernet101/1/26	IBM Storage 1	Controller1 port 6	
	27	Ethernet101/1/27	IBM Storage 1	Controller2 port 5	
	28	Ethernet101/1/28	IBM Storage 1	Controller2 port 6	
	29	Ethernet101/1/29	IBM Storage 2	Controller1 port 5	
	30	Ethernet101/1/30	IBM Storage 2	Controller1 port 6	
	31	Ethernet101/1/31	IBM Storage 2	Controller2 port 5	
	32	Ethernet101/1/32	IBM Storage 2	Controller2 port 6	
	33	Ethernet101/1/33	IBM Storage 3	Controller1 port 5	
	34	Ethernet101/1/34	IBM Storage 3	Controller1 port 6	
	35	Ethernet101/1/35	IBM Storage 3	Controller2 port 5	

Cisco 2248TP Fabric Extender Cabling (VDS-TC-8B Non-Redundant) (continued)

All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender	36	Ethernet101/1/36	IBM Storage 3	Controller2 port 6	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth3/5	
	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/6	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth3/7	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/8	

Cisco UCS 6248 UP Fabric Interconnect Cabling (VDS-TC-8B Non-Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Fabric Interconnect	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/5	Chassis 1	Fabric port 1/5	
	Eth1/6	Chassis 1	Fabric port 1/6	
	Eth1/7	Chassis 1	Fabric port 1/7	
	Eth1/8	Chassis 1	Fabric port 1/8	
	Eth1/25	Nexus 7004 or 7010	Eth3/17	
	Eth1/26	Nexus 7004 or 7010	Eth3/18	
	Eth1/27	Nexus 7004 or 7010	Eth3/19	
	Eth1/28	Nexus 7004 or 7010	Eth3/20	
	Eth1/29	Nexus 7004 or 7010	Eth3/13	
	Eth1/30	Nexus 7004 or 7010	Eth3/14	
	Eth1/31	Nexus 7004 or 7010	Eth3/15	
	Eth1/32	Nexus 7004 or 7010	Eth3/16	

VDS-TC-8B Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-8B redundant solution.

Cisco Nexus 7004 Switch Cabling (VDS-TC-8B Redundant)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7010 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eth3/5	FEX-2	Fex Fabric 10Gb Uplink port 2	
	Eth3/6	FEX-2	Fex Fabric 10Gb Uplink port 4	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/17	UCS-FI-6248UP (FI 1)	Eth1/25	
	Eth3/18	UCS-FI-6248UP (FI 1)	Eth1/26	
	Eth3/19	UCS-FI-6248UP (FI 1)	Eth1/27	
	Eth3/20	UCS-FI-6248UP (FI 1)	Eth1/28	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	

Cisco Nexus 7004 Switch Cabling (VDS-TC-8B Redundant) (continued)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 with Line Card in Slot 4 or Nexus 7010 with Line Card in Slot 8	Eth4/5 or Eth8/5	FEX-2	Fex Fabric 10Gb Uplink port 1	
	Eth4/6 or Eth8/6	FEX-2	Fex Fabric 10Gb Uplink port 3	
	Eth4/7 or Eth8/7	FEX-1	Fex Fabric 10Gb Uplink port 1	
	Eth4/8 or Eth8/8	FEX-1	Fex Fabric 10Gb Uplink port 3	
	Eth4/13 or Eth8/13	UCS-FI-6248UP (FI 2)	Eth1/29	
	Eth4/14 or Eth8/14	UCS-FI-6248UP (FI 2)	Eth1/30	
	Eth4/15 or Eth8/15	UCS-FI-6248UP (FI 2)	Eth1/31	
	Eth4/16 or Eth8/16	UCS-FI-6248UP (FI 2)	Eth1/32	
	Eth4/17 or Eth8/17	UCS-FI-6248UP (FI 2)	Eth1/25	
	Eth4/18 or Eth8/18	UCS-FI-6248UP (FI 2)	Eth1/26	
	Eth4/19 or Eth8/19	UCS-FI-6248UP (FI 2)	Eth1/27	
	Eth4/20 or Eth8/20	UCS-FI-6248UP (FI 2)	Eth1/28	
	Eth4/29 or Eth8/29	PBR Router	To customer environment	
	Eth4/30 or Eth8/30	PBR Router	To customer environment	
	Eth4/31 or Eth8/31	PBR Router	To customer environment	
	Eth4/32 or Eth8/32	PBR Router	To customer environment	
	Eth4/37 or Eth8/37	PBR Router	To customer environment	
	Eth4/38 or Eth8/38	PBR Router	To customer environment	
	Eth4/39 or Eth8/39	PBR Router	To customer environment	
	Eth4/40 or Eth8/40	PBR Router	To customer environment	

Cisco 2248TP Fabric Extender 1 (FEX-1) Cabling (VDS-TC-8B Redundant)

Note All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender 1	1	Ethernet101/1/1	IBM Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	IBM Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	IBM Storage 3	Controller1 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	port 1	
	10	Ethernet101/1/10	UCS-FI-6248UP (FI 1)	MGMT0	
	13	Ethernet101/1/13	IBM Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	IBM Storage 1	Controller1 port 4	
	15	Ethernet101/1/15	IBM Storage 1	Controller2 port 3	
	16	Ethernet101/1/16	IBM Storage 1	Controller2 port 4	
	17	Ethernet101/1/17	IBM Storage 2	Controller1 port 3	
	18	Ethernet101/1/18	IBM Storage 2	Controller1 port 4	
	19	Ethernet101/1/19	IBM Storage 2	Controller2 port 3	
	20	Ethernet101/1/20	IBM Storage 2	Controller2 port 4	
	21	Ethernet101/1/21	IBM Storage 3	Controller1 port 3	
	22	Ethernet101/1/22	IBM Storage 3	Controller1 port 4	
	23	Ethernet101/1/23	IBM Storage 3	Controller2 port 3	
	24	Ethernet101/1/24	IBM Storage 3	Controller2 port 4	
	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/7	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/8	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth4/7 or Eth8/7	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth4/8 or Eth8/8	

Cisco 2248TP Fabric Extender 2 (FEX-2) Cabling (VDS-TC-8B Redundant)

Note All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender 2	1	Ethernet102/1/1	IBM Storage 1	Controller2 Mgmt port 1	
	2	Ethernet102/1/2	IBM Storage 2	Controller2 Mgmt port 1	
	3	Ethernet102/1/3	IBM Storage 3	Controller2 Mgmt port 1	
	9	Ethernet102/1/9	Management Server	port 2	
	10	Ethernet102/1/10	UCS-FI-6248UP (FI 2)	MGMT0	
	13	Ethernet102/1/13	IBM Storage 1	Controller1 port 5	
	14	Ethernet102/1/14	IBM Storage 1	Controller1 port 6	
	15	Ethernet102/1/15	IBM Storage 1	Controller2 port 5	
	16	Ethernet102/1/16	IBM Storage 1	Controller2 port 6	
	17	Ethernet102/1/17	IBM Storage 2	Controller1 port 5	
	18	Ethernet102/1/18	IBM Storage 2	Controller1 port 6	
	19	Ethernet102/1/19	IBM Storage 2	Controller2 port 5	
	20	Ethernet102/1/20	IBM Storage 2	Controller2 port 6	
	21	Ethernet102/1/21	IBM Storage 3	Controller1 port 5	
	22	Ethernet102/1/22	IBM Storage 3	Controller1 port 6	
	23	Ethernet102/1/23	IBM Storage 3	Controller2 port 5	
	24	Ethernet102/1/24	IBM Storage 3	Controller2 port 6	
	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/5	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/6	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth4/5 or Eth8/5	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth4/6 or Eth8/6	

Cisco UCS 6248 UP Fabric Interconnect 1 (FI-1) Cabling (VDS-TC-8B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-1	L1	FI-2	L1	
	L2	FI-2	L2	
	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/5	Chassis 1	Fabric port 1/5	
	Eth1/6	Chassis 1	Fabric port 1/6	
	Eth1/7	Chassis 1	Fabric port 1/7	
	Eth1/8	Chassis 1	Fabric port 1/8	
	Eth1/25	Nexus 7004 or 7010	Eth3/17	
	Eth1/26	Nexus 7004 or 7010	Eth3/18	
	Eth1/27	Nexus 7004 or 7010	Eth3/19	
	Eth1/28	Nexus 7004 or 7010	Eth3/20	
	Eth1/29	Nexus 7004 or 7010	Eth3/13	
	Eth1/30	Nexus 7004 or 7010	Eth3/14	
	Eth1/31	Nexus 7004 or 7010	Eth3/15	
	Eth1/32	Nexus 7004 or 7010	Eth3/16	

Cisco UCS 6248 UP Fabric Interconnect 2 (FI-2) Cabling (VDS-TC-8B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-2	L1	FI-1	L1	
	L2	FI-1	L2	
	Eth1/1	Chassis 1	Fabric port 2/1	
	Eth1/2	Chassis 1	Fabric port 2/2	
	Eth1/3	Chassis 1	Fabric port 2/3	
	Eth1/4	Chassis 1	Fabric port 2/4	
	Eth1/5	Chassis 1	Fabric port 2/5	
	Eth1/6	Chassis 1	Fabric port 2/6	
	Eth1/7	Chassis 1	Fabric port 2/7	
	Eth1/8	Chassis 1	Fabric port 2/8	
	Eth1/25	Nexus 7004 or 7010	Eth4/17 or Eth8/17	
	Eth1/26	Nexus 7004 or 7010	Eth4/18 or Eth8/18	
	Eth1/27	Nexus 7004 or 7010	Eth4/19 or Eth8/19	
	Eth1/28	Nexus 7004 or 7010	Eth4/20 or Eth8/20	
	Eth1/29	Nexus 7004 or 7010	Eth4/13 or Eth8/13	
	Eth1/30	Nexus 7004 or 7010	Eth4/14 or Eth8/14	
	Eth1/31	Nexus 7004 or 7010	Eth4/15 or Eth8/15	
	Eth1/32	Nexus 7004 or 7010	Eth4/16 or Eth8/16	

VDS-TC-16B Non-Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-16B non-redundant solution.

Cisco Nexus 7004 or 7010 Switch Cabling (VDS-TC-16B Non-Redundant)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 7010 with Line Card in Slot 3	Eth 3/1	Mgmt Uplink	To customer environment	
	Eth3/5	FEX-2	Fex Fabric 10Gb Uplink 2	
	Eth3/6	FEX-2	Fex Fabric 10Gb Uplink 4	
	Eth3/7	FEX-1	Fex Fabric 10Gb Uplink 2	
	Eth3/8	FEX-1	Fex Fabric 10Gb Uplink 4	
	Eth3/9	FEX-2	Fex Fabric 10GB Uplink 1	
	Eth3/10	FEX-2	Fex Fabric 10GB Uplink 3	
	Eth3/11	FEX-1	Fex Fabric 10GB Uplink 1	
	Eth3/12	FEX-1	Fex Fabric 10GB Uplink 3	
	Eth3/13	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth3/14	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth3/15	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth3/16	UCS-FI-6248UP (FI 1)	Eth1/32	
	Eth3/17	UCS-FI-6248UP (FI 1)	Eth1/25	
	Eth3/18	UCS-FI-6248UP (FI 1)	Eth1/26	
	Eth3/19	UCS-FI-6248UP (FI 1)	Eth1/27	
	Eth3/20	UCS-FI-6248UP (FI 1)	Eth1/28	
	Eth3/29	PBR Router	To customer environment	
	Eth3/30	PBR Router	To customer environment	
	Eth3/31	PBR Router	To customer environment	
	Eth3/32	PBR Router	To customer environment	
	Eth3/37	PBR Router	To customer environment	
	Eth3/38	PBR Router	To customer environment	
	Eth3/39	PBR Router	To customer environment	
	Eth3/40	PBR Router	To customer environment	
	Eth3/41	UCS-FI-6248UP (FI 1)	Eth1/17	
	Eth3/42	UCS-FI-6248UP (FI 1)	Eth1/18	
	Eth3/43	UCS-FI-6248UP (FI 1)	Eth1/19	
	Eth3/44	UCS-FI-6248UP (FI 1)	Eth1/20	

Cisco Nexus 7004 or 7010 Switch Cabling (VDS-TC-16B Non-Redundant) (continued)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 or 70101 with Line Card in Slot 3	Eth3/45	UCS-FI-6248UP (FI 1)	Eth1/21	
	Eth3/46	UCS-FI-6248UP (FI 1)	Eth1/22	
	Eth3/47	UCS-FI-6248UP (FI 1)	Eth1/23	
	Eth3/48	UCS-FI-6248UP (FI 1)	Eth1/24	

Cisco 2248TP Fabric Extender 1 (FEX-1) Cabling (VDS-TC-16B Non-Redundant)

Note All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender 1	1	Ethernet101/1/1	IBM Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	IBM Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	IBM Storage 3	Controller1 Mgmt port 1	
	4	Ethernet101/1/4	IBM Storage 4	Controller1 Mgmt port 1	
	5	Ethernet101/1/5	IBM Storage 5	Controller1 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	port 1	
	10	Ethernet101/1/10	UCS-FI-6248UP (FI 1)	MGMT0	
	13	Ethernet101/1/13	IBM Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	IBM Storage 1	Controller1 port 4	
	15	Ethernet101/1/15	IBM Storage 1	Controller2 port 3	
	16	Ethernet101/1/16	IBM Storage 1	Controller2 port 4	
	17	Ethernet101/1/17	IBM Storage 2	Controller1 port 3	
	18	Ethernet101/1/18	IBM Storage 2	Controller1 port 4	
	19	Ethernet101/1/19	IBM Storage 2	Controller2 port 3	
	20	Ethernet101/1/20	IBM Storage 2	Controller2 port 4	
	21	Ethernet101/1/21	IBM Storage 3	Controller1 port 3	
	22	Ethernet101/1/22	IBM Storage 3	Controller1 port 4	
	23	Ethernet101/1/23	IBM Storage 3	Controller2 port 3	
	24	Ethernet101/1/24	IBM Storage 3	Controller2 port 4	
	25	Ethernet101/1/25	IBM Storage 4	Controller1 port 3	
	26	Ethernet101/1/26	IBM Storage 4	Controller1 port 4	
	27	Ethernet101/1/27	IBM Storage 4	Controller2 port 3	
	28	Ethernet101/1/28	IBM Storage 4	Controller2 port 4	
	29	Ethernet101/1/29	IBM Storage 5	Controller1 port 3	
	30	Ethernet101/1/30	IBM Storage 5	Controller1 port 4	
	31	Ethernet101/1/31	IBM Storage 5	Controller2 port 3	
	32	Ethernet101/1/32	IBM Storage 5	Controller2 port 4	
Fabric Extender 1	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/7	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/8	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth3/11	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth3/12	

Cisco 2248TP Fabric Extender 2 (FEX-2) Cabling (VDS-TC-16B Non-Redundant)

Note All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender 2	1	Ethernet102/1/1	IBM Storage 1	Controller2 Mgmt port 1	
	2	Ethernet102/1/2	IBM Storage 2	Controller2 Mgmt port 1	
	3	Ethernet102/1/3	IBM Storage 3	Controller2 Mgmt port 1	
	4	Ethernet102/1/4	IBM Storage 4	Controller2 Mgmt port 1	
	5	Ethernet102/1/5	IBM Storage 5	Controller2 Mgmt port 1	
	13	Ethernet102/1/13	IBM Storage 1	Controller1 port 5	
	14	Ethernet102/1/14	IBM Storage 1	Controller1 port 6	
	15	Ethernet102/1/15	IBM Storage 1	Controller2 port 5	
	16	Ethernet102/1/16	IBM Storage 1	Controller2 port 6	
	17	Ethernet102/1/17	IBM Storage 2	Controller1 port 5	
	18	Ethernet102/1/18	IBM Storage 2	Controller1 port 6	
	19	Ethernet102/1/19	IBM Storage 2	Controller2 port 5	
	20	Ethernet102/1/20	IBM Storage 2	Controller2 port 6	
	21	Ethernet102/1/21	IBM Storage 3	Controller1 port 5	
	22	Ethernet102/1/22	IBM Storage 3	Controller1 port 6	
	23	Ethernet102/1/23	IBM Storage 3	Controller2 port 5	
	24	Ethernet102/1/24	IBM Storage 3	Controller2 port 6	
	25	Ethernet102/1/25	IBM Storage 4	Controller1 port 5	
	26	Ethernet102/1/26	IBM Storage 4	Controller1 port 6	
	27	Ethernet102/1/27	IBM Storage 4	Controller2 port 5	
	28	Ethernet102/1/28	IBM Storage 4	Controller2 port 6	
	29	Ethernet102/1/29	IBM Storage 5	Controller1 port 5	
	30	Ethernet102/1/30	IBM Storage 5	Controller1 port 6	
	31	Ethernet102/1/31	IBM Storage 5	Controller2 port 5	
	32	Ethernet102/1/32	IBM Storage 5	Controller2 port 6	
	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/5	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/6	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth3/9	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth3/10	

Cisco UCS 6248 UP Fabric Interconnect Cabling (VDS-TC-16B Non-Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Fabric Interconnect	Eth1/1	Chassis 1	Fabric port 1/1	
	Eth1/2	Chassis 1	Fabric port 1/2	
	Eth1/3	Chassis 1	Fabric port 1/3	
	Eth1/4	Chassis 1	Fabric port 1/4	
	Eth1/5	Chassis 1	Fabric port 1/5	
	Eth1/6	Chassis 1	Fabric port 1/6	
	Eth1/7	Chassis 1	Fabric port 1/7	
	Eth1/8	Chassis 1	Fabric port 1/8	
	Eth1/9	Chassis 2	Fabric port 1/1	
	Eth1/10	Chassis 2	Fabric port 1/2	
	Eth1/11	Chassis 2	Fabric port 1/3	
	Eth1/12	Chassis 2	Fabric port 1/4	
	Eth1/13	Chassis 2	Fabric port 1/5	
	Eth1/14	Chassis 2	Fabric port 1/6	
	Eth1/15	Chassis 2	Fabric port 1/7	
	Eth1/16	Chassis 2	Fabric port 1/8	
	Eth1/17	Nexus 7004 or 7010	Eth3/41	
	Eth1/18	Nexus 7004 or 7010	Eth3/42	
	Eth1/19	Nexus 7004 or 7010	Eth3/43	
	Eth1/20	Nexus 7004 or 7010	Eth3/44	
	Eth1/21	Nexus 7004 or 7010	Eth3/45	
	Eth1/22	Nexus 7004 or 7010	Eth3/46	
	Eth1/23	Nexus 7004 or 7010	Eth3/47	
	Eth1/24	Nexus 7004 or 7010	Eth3/48	
	Eth1/25	Nexus 7004 or 7010	Eth3/17	
	Eth1/26	Nexus 7004 or 7010	Eth3/18	
	Eth1/27	Nexus 7004 or 7010	Eth3/19	
	Eth1/28	Nexus 7004 or 7010	Eth3/20	
	Eth1/29	Nexus 7004 or 7010	Eth3/13	
	Eth1/30	Nexus 7004 or 7010	Eth3/14	

Cisco UCS 6248 UP Fabric Interconnect Cabling (VDS-TC-16B Non-Redundant) (continued)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Fabric Interconnect	Eth1/31	Nexus 7004 or 7010	Eth3/15	
	Eth1/32	Nexus 7004 or 7010	Eth3/16	

VDS-TC-16B Redundant Cabling Scheme

This section provides the cabling scheme for the VDS-TC-16B redundant solution.

Cisco Nexus 7004 Switch Cabling (VDS-TC-16B Redundant)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 with Line Card in Slot 3 or 7010 with Line Cards in Slot 1, 2, and 3	Eth 3/1 or Eth2/30	MGMT uplink	To customer environment	
	Eth3/5 or Eth3/21	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth3/6 or Eth3/22	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth3/7 or Eth3/23	FEX-2	Fex Fabric 10Gb Uplink port 2	
	Eth3/8 or Eth3/24	FEX-2	Fex Fabric 10Gb Uplink port 4	
	Eth3/13 or Eth1/17	UCS-FI-6248UP (FI 1)	Eth1/17	
	Eth3/14 or Eth1/18	UCS-FI-6248UP (FI 1)	Eth1/18	
	Eth3/15 or Eth1/19	UCS-FI-6248UP (FI 1)	Eth1/19	
	Eth3/16 or Eth1/20	UCS-FI-6248UP (FI 1)	Eth1/20	
	Eth3/17 or Eth1/21	UCS-FI-6248UP (FI 1)	Eth1/21	
	Eth3/18 or Eth1/22	UCS-FI-6248UP (FI 1)	Eth1/22	
	Eth3/19 or Eth1/23	UCS-FI-6248UP (FI 1)	Eth1/23	
	Eth3/20 or Eth1/24	UCS-FI-6248UP (FI 1)	Eth1/24	
	Eth3/29 or Eth1/33	PBR Router 1-2	To customer environment	Port channel
	Eth3/30 or Eth1/34	PBR Router 1-2	To customer environment	Port channel
	Eth3/31 or Eth1/35	PBR Router 1-2	To customer environment	Port channel
	Eth3/32 or Eth1/36	PBR Router 1-2	To customer environment	Port channel
	Eth3/37 or Eth1/37	PBR Router 1-2	To customer environment	Port channel
	Eth3/38 or Eth1/38	PBR Router 1-2	To customer environment	Port channel
	Eth3/39 or Eth1/39	PBR Router 1-2	To customer environment	Port channel
	Eth3/40 or Eth1/40	PBR Router 1-2	To customer environment	Port channel
	Eth3/41 or Eth1/25	UCS-FI-6248UP (FI 2)	Eth1/25	
	Eth3/42 or Eth1/26	UCS-FI-6248UP (FI 2)	Eth1/26	
	Eth3/43 or Eth1/27	UCS-FI-6248UP (FI 2)	Eth1/27	
	Eth3/44 or Eth1/28	UCS-FI-6248UP (FI 2)	Eth1/28	
	Eth3/45 or Eth1/29	UCS-FI-6248UP (FI 2)	Eth1/29	
	Eth3/46 or Eth1/30	UCS-FI-6248UP (FI 2)	Eth1/30	
	Eth3/47 or Eth1/31	UCS-FI-6248UP (FI 2)	Eth1/31	
	Eth3/48 or Eth1/32	UCS-FI-6248UP (FI 2)	Eth1/32	

Cisco Nexus 7004 Switch Cabling (VDS-TC-16B Redundant) (continued)

Note All connections from the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
Nexus 7004 with Line Card in Slot 4 or Nexus 7010 with Line Card in Slot 8, 9, and 10	Eth4/1 or Eth9/30	MGMT uplink	To customer environment	
	Eth4/5 or Eth8/23	FEX-2	Fex Fabric 10Gb Uplink port 2	
	Eth4/6 or Eth8/24	FEX-2	Fex Fabric 10Gb Uplink port 4	
	Eth4/7 or Eth8/21	FEX-1	Fex Fabric 10Gb Uplink port 2	
	Eth4/8 or Eth8/22	FEX-1	Fex Fabric 10Gb Uplink port 4	
	Eth4/13 or Eth10/13	UCS-FI-6248UP (FI 2)	Eth1/17	
	Eth4/14 or Eth10/14	UCS-FI-6248UP (FI 2)	Eth1/18	
	Eth4/15 or Eth10/15	UCS-FI-6248UP (FI 2)	Eth1/19	
	Eth4/16 or Eth10/16	UCS-FI-6248UP (FI 2)	Eth1/20	
	Eth4/17 or Eth10/17	UCS-FI-6248UP (FI 2)	Eth1/21	
	Eth4/18 or Eth10/18	UCS-FI-6248UP (FI 2)	Eth1/22	
	Eth4/19 or Eth10/19	UCS-FI-6248UP (FI 2)	Eth1/23	
	Eth4/20 or Eth10/20	UCS-FI-6248UP (FI 2)	Eth1/24	
	Eth4/29 or Eth10/33	PBR Router 3-4	To customer environment	Port channel
	Eth4/30 or Eth10/34	PBR Router 3-4	To customer environment	Port channel
	Eth4/31 or Eth10/35	PBR Router 3-4	To customer environment	Port channel
	Eth4/32 or Eth10/36	PBR Router 3-4	To customer environment	Port channel
	Eth4/37 or Eth10/37	PBR Router 3-4	To customer environment	Port channel
	Eth4/38 or Eth10/38	PBR Router 3-4	To customer environment	Port channel
	Eth4/39 or Eth10/39	PBR Router 3-4	To customer environment	Port channel
	Eth4/40 or Eth10/40	PBR Router 3-4	To customer environment	Port channel
	Eth4/41 or Eth10/25	UCS-FI-6248UP (FI 1)	Eth1/25	
	Eth4/42 or Eth10/26	UCS-FI-6248UP (FI 1)	Eth1/26	
	Eth4/43 or Eth10/27	UCS-FI-6248UP (FI 1)	Eth1/27	
	Eth4/44 or Eth10/28	UCS-FI-6248UP (FI 1)	Eth1/28	
	Eth4/45 or Eth10/29	UCS-FI-6248UP (FI 1)	Eth1/29	
	Eth4/46 or Eth10/30	UCS-FI-6248UP (FI 1)	Eth1/30	
	Eth4/47 or Eth10/31	UCS-FI-6248UP (FI 1)	Eth1/31	
	Eth4/48 or Eth10/32	UCS-FI-6248UP (FI 1)	Eth1/32	

Cisco 2248TP Fabric Extender 1 (FEX-1) Cabling (VDS-TC-16B Redundant)

Note All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender 1	1	Ethernet101/1/1	IBM Storage 1	Controller1 Mgmt port 1	
	2	Ethernet101/1/2	IBM Storage 2	Controller1 Mgmt port 1	
	3	Ethernet101/1/3	IBM Storage 3	Controller1 Mgmt port 1	
	4	Ethernet101/1/4	IBM Storage 4	Controller1 Mgmt port 1	
	5	Ethernet101/1/5	IBM Storage 5	Controller1 Mgmt port 1	
	9	Ethernet101/1/9	Management Server	port 1	
	10	Ethernet101/1/10	UCS-FI-6248UP (FI 1)	MGMT0	
	13	Ethernet101/1/13	IBM Storage 1	Controller1 port 3	
	14	Ethernet101/1/14	IBM Storage 1	Controller1 port 4	
	15	Ethernet101/1/15	IBM Storage 1	Controller2 port 3	
	16	Ethernet101/1/16	IBM Storage 1	Controller2 port 4	
	17	Ethernet101/1/17	IBM Storage 2	Controller1 port 3	
	18	Ethernet101/1/18	IBM Storage 2	Controller1 port 4	
	19	Ethernet101/1/19	IBM Storage 2	Controller2 port 3	
	20	Ethernet101/1/20	IBM Storage 2	Controller2 port 4	
	21	Ethernet101/1/21	IBM Storage 3	Controller1 port 3	
	22	Ethernet101/1/22	IBM Storage 3	Controller1 port 4	
	23	Ethernet101/1/23	IBM Storage 3	Controller2 port 3	
	24	Ethernet101/1/24	IBM Storage 3	Controller2 port 4	
	25	Ethernet101/1/25	IBM Storage 4	Controller1 port 3	
	26	Ethernet101/1/26	IBM Storage 4	Controller1 port 4	
	27	Ethernet101/1/27	IBM Storage 4	Controller2 port 3	
	28	Ethernet101/1/28	IBM Storage 4	Controller2 port 4	
	29	Ethernet101/1/29	IBM Storage 5	Controller1 port 3	
	30	Ethernet101/1/30	IBM Storage 5	Controller1 port 4	
	31	Ethernet101/1/31	IBM Storage 5	Controller2 port 3	
	32	Ethernet101/1/32	IBM Storage 5	Controller2 port 4	
	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/7 or Eth3/23	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/8 or Eth3/24	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth4/7 or Eth8/21	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth4/8 or Eth8/22	

Cisco 2248TP Fabric Extender 2 (FEX-2) Cabling (VDS-TC-16B Redundant)

Note All connections from the Cisco 2248TP Fabric Extender use a 1000Base-T CAT5 or CAT6 cable *except* for the connections to the Cisco Nexus 7004 or 7010 switch. The connections from the Cisco 2248TP Fabric Extender to the Cisco Nexus 7004 or 7010 switch use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender 2	1	Ethernet102/1/1	IBM Storage 1	Controller1 Mgmt port 2	
	2	Ethernet102/1/2	IBM Storage 2	Controller1 Mgmt port 2	
	3	Ethernet102/1/3	IBM Storage 3	Controller1 Mgmt port 2	
	4	Ethernet102/1/4	IBM Storage 4	Controller1 Mgmt port 2	
	5	Ethernet102/1/5	IBM Storage 5	Controller1 Mgmt port 2	
	9	Ethernet102/1/9	Management Server	port 2	
	10	Ethernet102/1/10	UCS-FI-6248UP (FI 2)	MGMT0	
	13	Ethernet102/1/13	IBM Storage 1	Controller1 port 5	
	14	Ethernet102/1/14	IBM Storage 1	Controller1 port 6	
	15	Ethernet102/1/15	IBM Storage 1	Controller2 port 5	
	16	Ethernet102/1/16	IBM Storage 1	Controller2 port 6	
	17	Ethernet102/1/17	IBM Storage 2	Controller1 port 5	
	18	Ethernet102/1/18	IBM Storage 2	Controller1 port 6	
	19	Ethernet102/1/19	IBM Storage 2	Controller2 port 5	
	20	Ethernet102/1/20	IBM Storage 2	Controller2 port 6	
	21	Ethernet102/1/21	IBM Storage 3	Controller1 port 5	
	22	Ethernet102/1/22	IBM Storage 3	Controller1 port 6	
	23	Ethernet102/1/23	IBM Storage 3	Controller2 port 5	
	24	Ethernet102/1/24	IBM Storage 3	Controller2 port 6	
	25	Ethernet102/1/25	IBM Storage 4	Controller1 port 5	
	26	Ethernet102/1/26	IBM Storage 4	Controller1 port 6	
	27	Ethernet102/1/27	IBM Storage 4	Controller2 port 5	
	28	Ethernet102/1/28	IBM Storage 4	Controller2 port 6	
	29	Ethernet102/1/29	IBM Storage 5	Controller1 port 5	
	30	Ethernet102/1/30	IBM Storage 5	Controller1 port 6	
	31	Ethernet102/1/31	IBM Storage 5	Controller2 port 5	
	32	Ethernet102/1/32	IBM Storage 5	Controller2 port 6	

Local Device	Local Port	Reference on Nexus 7004/7010	Remote Device	Remote Port	Notes
Fabric Extender 2	10Gb Uplink port 2		Nexus 7004 or 7010	Eth3/5 or Eth3/21	
	10Gb Uplink port 4		Nexus 7004 or 7010	Eth3/6 or Eth3/22	
	10Gb Uplink port 1		Nexus 7004 or 7010	Eth4/5 or Eth8/23	
	10Gb Uplink port 3		Nexus 7004 or 7010	Eth4/6 or Eth8/24	

Cisco UCS 6248 UP Fabric Interconnect 1 (FI-1) Cabling (VDS-TC-16B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-1	L1	FI-2	L1	
	L2	FI-2	L2	
	Eth port 1/1	Chassis 1	Fabric port 1/1	
	Eth port 1/2	Chassis 1	Fabric port 1/2	
	Eth port 1/3	Chassis 1	Fabric port 1/3	
	Eth port 1/4	Chassis 1	Fabric port 1/4	
	Eth port 1/5	Chassis 1	Fabric port 1/5	
	Eth port 1/6	Chassis 1	Fabric port 1/6	
	Eth port 1/7	Chassis 1	Fabric port 1/7	
	Eth port 1/8	Chassis 1	Fabric port 1/8	
	Eth port 1/9	Chassis 2	Fabric port 1/1	
	Eth port 1/10	Chassis 2	Fabric port 1/2	
	Eth port 1/11	Chassis 2	Fabric port 1/3	
	Eth port 1/12	Chassis 2	Fabric port 1/4	
	Eth port 1/13	Chassis 2	Fabric port 1/5	
	Eth port 1/14	Chassis 2	Fabric port 1/6	
	Eth port 1/15	Chassis 2	Fabric port 1/7	
	Eth port 1/16	Chassis 2	Fabric port 1/8	
	Eth1/17	Nexus 7004 or 7010	Eth 3/13 or Eth1/17	
	Eth1/18	Nexus 7004 or 7010	Eth 3/14 or Eth1/18	
	Eth1/19	Nexus 7004 or 7010	Eth 3/15 or Eth1/19	
	Eth1/20	Nexus 7004 or 7010	Eth 3/16 or Eth1/20	
	Eth1/21	Nexus 7004 or 7010	Eth 3/17 or Eth1/21	
	Eth1/22	Nexus 7004 or 7010	Eth 3/18 or Eth1/22	
	Eth1/23	Nexus 7004 or 7010	Eth 3/19 or Eth1/23	
	Eth1/24	Nexus 7004 or 7010	Eth 3/20 or Eth1/24	
	Eth1/25	Nexus 7004 or 7010	Eth4/41 or Eth10/25	
	Eth1/26	Nexus 7004 or 7010	Eth4/42 or Eth10/26	
	Eth1/27	Nexus 7004 or 7010	Eth4/43 or Eth10/27	
	Eth1/28	Nexus 7004 or 7010	Eth4/44 or Eth10/28	
	Eth1/29	Nexus 7004 or 7010	Eth4/45 or Eth10/29	

Cisco UCS 6248 UP Fabric Interconnect 1 (FI-1) Cabling (VDS-TC-16B Redundant) (continued)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-1	Eth1/30	Nexus 7004 or 7010	Eth4/46 or Eth10/30	
	Eth1/31	Nexus 7004 or 7010	Eth4/47 or Eth10/31	
	Eth1/32	Nexus 7004 or 7010	Eth4/48 or Eth10/32	

Cisco UCS 6248 UP Fabric Interconnect 2 (FI-2) Cabling (VDS-TC-16B Redundant)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-2	L1	FI-1	L1	
	L2	FI-1	L2	
	Eth port 1/1	Chassis 1	Fabric port 2/1	
	Eth port 1/2	Chassis 1	Fabric port 2/2	
	Eth port 1/3	Chassis 1	Fabric port 2/3	
	Eth port 1/4	Chassis 1	Fabric port 2/4	
	Eth port 1/5	Chassis 1	Fabric port 2/5	
	Eth port 1/6	Chassis 1	Fabric port 2/6	
	Eth port 1/7	Chassis 1	Fabric port 2/7	
	Eth port 1/8	Chassis 1	Fabric port 2/8	
	Eth port 1/9	Chassis 2	Fabric port 2/1	
	Eth port 1/10	Chassis 2	Fabric port 2/2	
	Eth port 1/11	Chassis 2	Fabric port 2/3	
	Eth port 1/12	Chassis 2	Fabric port 2/4	
	Eth port 1/13	Chassis 2	Fabric port 2/5	
	Eth port 1/14	Chassis 2	Fabric port 2/6	
	Eth port 1/15	Chassis 2	Fabric port 2/7	
	Eth port 1/16	Chassis 2	Fabric port 2/8	
	Eth1/17	Nexus 7004 or 7010	Eth4/13 or Eth10/17	
	Eth1/18	Nexus 7004 or 7010	Eth4/14 or Eth10/18	
	Eth1/19	Nexus 7004 or 7010	Eth4/15 or Eth10/19	
	Eth1/20	Nexus 7004 or 7010	Eth4/16 or Eth10/20	
	Eth1/21	Nexus 7004 or 7010	Eth4/17 or Eth10/21	
	Eth1/22	Nexus 7004 or 7010	Eth4/18 or Eth10/22	
	Eth1/23	Nexus 7004 or 7010	Eth4/19 or Eth10/23	
	Eth1/24	Nexus 7004 or 7010	Eth4/20 or Eth10/24	
	Eth1/25	Nexus 7004 or 7010	Eth3/41 or Eth1/25	
	Eth1/26	Nexus 7004 or 7010	Eth3/42 or Eth1/26	
	Eth1/27	Nexus 7004 or 7010	Eth3/43 or Eth1/27	
	Eth1/28	Nexus 7004 or 7010	Eth3/44 or Eth1/28	
	Eth1/29	Nexus 7004 or 7010	Eth3/45 or Eth1/29	

Cisco UCS 6248 UP Fabric Interconnect 2 (FI-2) Cabling (VDS-TC-16B Redundant) (continued)

Note All connections from the Cisco UCS 6248 UP Fabric Interconnect use a 10GBASE-CU SFP+ 3 meter twinax cable. If a cable longer than 3 meters is required, please refer to the specific product documentation to verify which longer cables are supported.

Local Device	Local Port	Remote Device	Remote Port	Notes
FI-2	Eth1/30	Nexus 7004 or 7010	Eth3/46 or Eth1/30	
	Eth1/31	Nexus 7004 or 7010	Eth3/47 or Eth1/31	
	Eth1/32	Nexus 7004 or 7010	Eth3/48 or Eth1/32	

Cisco VDS TC Specific UCS Blade Server Values

Revised: August 2015, OL-31422-03

This appendix provides information on the Cisco UCS Blade Server values that are specific for a Cisco VDS TC Blade Server installation.

Note Make sure to click **Save Changes** if you make any changes to the Blade Server BIOS settings.

Note All Cache Engine servers will require to go through a reboot at the end of the configuration to apply all of the changes.

Values for the Equipment Tab

Path	Parameter	Value
Policies Tab > Global Policies Tab	Chassis/FEX Discovery Policy Section > Link Group Preference	Port Channel
	Rack Server Discovery Policy Section > Scrub Policy	default

Values for the LAN Tab

Path	Parameter	Value
LAN Cloud > Fabric A > Port Channels > Port-Channel 1	Port Channel Name	To-N7K-PO1
	Admin Speed	10 Gbps
	Ports	• **VDS-TC-16B:** 1/17 – 1/32 • **VDS-TC-8B:** 1/17 – 1/24 • **VDS-TC-4B:** 1/29 – 1/32

Values for the LAN Tab (continued)

Path	Parameter	Value
LAN Cloud > Fabric B > Port Channels > Port-Channel 1	Port Channel Name	To-N7K-PO1
	Admin Speed	10 Gbps
	Ports	• **VDS-TC-16B:** 1/17 – 1/32 • **VDS-TC-8B:** 1/17 – 1/24 • **VDS-TC-4B:** 1/29 – 1/32
LAN Cloud > QoS System Class > Platinum	Enabled	Checked
	CoS	5
	Packet Drop	Checked
	Weight	10
	MTU	9120
	Multicast Optimized	Checked
LAN Cloud > QoS System Class > Gold	Enabled	Checked
	CoS	4
	Packet Drop	Unchecked
	Weight	9
	MTU	9120
	Multicast Optimized	Unchecked
LAN Cloud > QoS System Class > Silver	Enabled	Unchecked
	CoS	2
	Packet Drop	Checked
	Weight	8
	MTU	9120
	Multicast Optimized	Unchecked
LAN Cloud > QoS System Class > Bronze	Enabled	Unchecked
	CoS	1
	Packet Drop	Checked
	Weight	7
	MTU	9120
	Multicast Optimized	Unchecked
LAN Cloud > QoS System Class > Best Effort	Enabled	Checked
	CoS	Any
	Packet Drop	Checked
	Weight	5
	MTU	9120
	Multicast Optimized	Unchecked

Values for the LAN Tab (continued)

Path	Parameter	Value
LAN Cloud > QoS System Class > Fibre Channel	Enabled	Checked
	CoS	3
	Packet Drop	Unchecked
	Weight	5
	MTU	fc
	Multicast Optimized	N/A
Policies > root > QoS Policies	Name	DATA
Policies > root > QoS Policies > QoS Policy DATA	Priority	Gold
	Burst(Bytes)	10240
	Rate(Kbps)	line-rate
	Host Control	None
Policies > root > QoS Policies	Name	Mgmt
Policies > root > QoS Policies > QOS Policy Mgmt	Priority	Platinum
	Burst(Bytes)	20480
	Rate(Kbps)	line-rate
	Host Control	None
Policies > root > QoS Policies	Name	iSCSI
Policies > root > QoS Policies > QOS Policy iSCSI	Priority	Platinum
	Burst(Bytes)	10240
	Rate(Kbps)	line-rate
	Host Control	Full
Policies > Appliances > Network Control Policies > default	CDP	Disabled
	MAC Register Mode	Only Native VLAN
	Action on Uplink Fail	Link Down
	MAC Security	Allow
Policies > root > Network Control Policies > default	CDP	Enabled
	MAC Register Mode	Only Native VLAN
	Action on Uplink Fail	Link Down
	MAC Security	Allow
Policies > root > Flow Control Policies > default	Priority	Auto
	Receive	Off
	Send	Off

Values for the LAN Tab (continued)

Path	Parameter	Value
LAN Cloud > VLANs > VLAN default (1)	VLAN ID	1
	Native VLAN	Yes
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None
LAN Cloud > VLANs > VLAN Mgmt (50)	VLAN ID	50
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None
LAN Cloud > VLANs > VLAN iSCSI_DATA (70)	VLAN ID	70
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None
LAN Cloud > VLANs > VLAN DATA_201 (201)	VLAN ID	201
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None

Values for the LAN Tab (continued)

Path	Parameter	Value
LAN Cloud > VLANs > VLAN DATA_202 (202)	VLAN ID	202
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None
LAN Cloud > VLANs > VLAN DATA_203 (203)	VLAN ID	203
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None
LAN Cloud > VLANs > VLAN DATA_204 (204)	VLAN ID	204
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None
LAN Cloud > VLANs > VLAN DATA_301 (301)	VLAN ID	301
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None

Values for the LAN Tab (continued)

Path	Parameter	Value
LAN Cloud > VLANs > VLAN DATA_302 (302)	VLAN ID	302
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None
LAN Cloud > VLANs > VLAN DATA_303 (303)	VLAN ID	303
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None
LAN Cloud > VLANs > VLAN DATA_304 (304)	VLAN ID	304
	Native VLAN	No
	Multicast Policy Name	<not set>
	Fabric ID	DUAL
	If Type	Virtual
	Transport Type	Ether
	Locale	External
	Sharing Type	None
Pools > root > IP Pools > IP Pool ext-mgmt	Size	150
	IP Addresses	10.11.80.100 – 10.11.80.249
Pools > root > MAC Pools > MAC Pool Eth0	First MAC	00:25:B5:00:01:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth1	First MAC	00:25:B5:00:02:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth2	First MAC	00:25:B5:00:03:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth3	First MAC	00:25:B5:00:04:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth4	First MAC	00:25:B5:00:05:00
	Size	256

Values for the LAN Tab (continued)

Path	Parameter	Value
Pools > root > MAC Pools > MAC Pool Eth5	First MAC	00:25:B5:00:06:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth6	First MAC	00:25:B5:00:07:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth7	First MAC	00:25:B5:00:08:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth8	First MAC	00:25:B5:00:09:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth9	First MAC	00:25:B5:00:0A:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth10	First MAC	00:25:B5:00:0B:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth11	First MAC	00:25:B5:00:0C:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth12	First MAC	00:25:B5:00:0D:00
	Size	256
Pools > root > MAC Pools > MAC Pool Eth13	First MAC	00:25:B5:00:0E:00
	Size	256
Policies > root > vNIC Templates > CE_ETH0	Fabric ID	Fabric A
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN/Native VLAN	Mgmt/No
	VLAN/Native VLAN	default/No
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth0
	QoS Policy	Mgmt
	Network Control Policy	default
	Connection Policies	Dynamic vNIC

Values for the LAN Tab (continued)

Path	Parameter	Value
Policies > root > vNIC Templates > CE_ETH1	Fabric ID	Fabric B
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN/Native VLAN	Mgmt/No
	VLAN/Native VLAN	default/No
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth1
	QoS Policy	Mgmt
	Network Control Policy	default
	Connection Policies	Dynamic vNIC
Policies > root > vNIC Templates > CE_ETH2	Fabric ID	A
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLANs	DATA_301, DATA_302, DATA_303, DATA_304
	Native VLAN	No
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth2
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC

Values for the LAN Tab (continued)

Path	Parameter	Value
Policies > root > vNIC Templates > CE_ETH3	Fabric ID	Fabric B
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	DATA_301, DATA_302, DATA_303, DATA_304
	Native VLAN	No
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth3
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC
Policies > root > vNIC Templates > CE_ETH4	Fabric ID	Fabric A
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	iSCSI_DATA
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth4
	QoS Policy	iSCSI
	Network Control Policy	default
	Connection Policies	Dynamic vNIC

Values for the LAN Tab (continued)

Path	Parameter	Value
Policies > root > vNIC Templates > CE_ETH5	Fabric ID	Fabric A
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	DATA_201
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth5
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC
Policies > root > vNIC Templates > CE_ETH6	Fabric ID	Fabric A
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	DATA_202
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth6
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC
Policies > root > vNIC Templates > CE_ETH7	Fabric ID	Fabric A
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	DATA_203
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth7
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC

Values for the LAN Tab (continued)

Path	Parameter	Value
Policies > root > vNIC Templates > CE_ETH8	Fabric ID	Fabric A
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	DATA_204
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth8
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC
Policies > root > vNIC Templates > CE_ETH9	Fabric ID	Fabric B
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	DATA_201
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth9
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC
Policies > root > vNIC Templates > CE_ETH10	Fabric ID	Fabric B
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	DATA_202
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth10
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC

Values for the LAN Tab (continued)

Path	Parameter	Value
Policies > root > vNIC Templates > CE_ETH11	Fabric ID	Fabric B
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	DATA_203
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth11
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC
Policies > root > vNIC Templates > CE_ETH12	Fabric ID	Fabric B
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	DATA_204
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth12
	QoS Policy	DATA
	Network Control Policy	default
	Connection Policies	Dynamic vNIC
Policies > root > vNIC Templates > CE_ETH13	Fabric ID	Fabric B
	Enable Failover	Unchecked
	Adapter	Checked
	VM	Unchecked
	VLAN	iSCSI_DATA
	Native VLAN	Yes
	Template Type	Updating Template
	MTU	9000
	MAC Pool	Eth13
	QoS Policy	iSCSI
	Network Control Policy	default
	Connection Policies	Dynamic vNIC

Values for the Servers Tab

Path	Parameter	Value
Policies > root > BIOS Policies > VDS-TC_CE	Main Tab > Reboot on BIOS settings change	Checked
	Advanced Tab > Processor Tab > Turbo Boost	Enabled
	Advanced Tab > Processor Tab > Enhanced Intel Speedstep	Disabled
	Advanced Tab > Processor Tab > Hyper Threading	Enabled
	Advanced Tab > Processor Tab > Core Multi Processing	All
	Advanced Tab > Processor Tab > Execute Disabled Bit	Platform Default
	Advanced Tab > Processor Tab > Virtualization Technology (VT)	Disabled
	Advanced Tab > Processor Tab > Direct Cache Access	Platform Default
	Advanced Tab > Processor Tab > Processor C State	Disabled
	Advanced Tab > Processor Tab > Processor C 1E	Disabled
	Advanced Tab > Processor Tab > Processor C3 Report	Disabled
	Advanced Tab > Processor Tab > Processor C6 Report	Disabled
	Advanced Tab > Processor Tab > Processor C7 Report	Disabled
	Advanced Tab > Processor Tab > CPU Performance	high-throughput
	Advanced Tab > Processor Tab > Max Variable MTRR Setting	Platform Default
	Advanced Tab > Processor Tab > Local X2 APIC	Platform Default
	Advanced Tab > Intel Directed IO Tab > VT for Directed IO	Disabled

Values for the Servers Tab (continued)

Path	Parameter	Value
Policies > root > BIOS Policies > VDS-TC_CE	Advanced Tab > Intel Directed IO Tab > Interrupt Remap	Platform Default
	Advanced Tab > Intel Directed IO Tab > Coherency Support	Platform Default
	Advanced Tab > Intel Directed IO Tab > ATS Support	Platform Default
	Advanced Tab > Intel Directed IO Tab > Pass Through DMA Support	Platform Default
	Advanced Tab > RAS Memory Tab > Memory RAS Config	maximum-performance
	Advanced Tab > RAS Memory Tab > NUMA	Platform Default
	Advanced Tab > RAS Memory Tab > LV DDR Mode	performance-mode
	Advanced Tab > RAS Memory Tab > DRAM Refresh Rate	Auto
	Advanced Tab > Serial Port Tab > Serial Port A	Platform Default
	Advanced Tab > USB Tab > Make Device Non Bootable	Platform Default
	Advanced Tab > USB Tab > Legacy USB Support	Platform Default
	Advanced Tab > USB Tab > USB System Idle Power Optimizing Setting	Platform Default
	Advanced Tab > USB Tab > USB Front Panel Access Lock	Platform Default
	Advanced Tab > PCI Tab > Max Memory Below 4G	Platform Default
	Advanced Tab > PCI Tab > Memory Mapped IO Above 4Gb Config	Platform Default
	Advanced Tab > PCI Tab > VGA Priority	Platform Default

Values for the Servers Tab (continued)

Path	Parameter	Value
Policies > root > BIOS Policies > VDS-TC_CE	Boot Options Tab > Boot Option Retry	Platform Default
	Boot Options Tab > Intel Entry SAS RAID	Platform Default
	Boot Options Tab > Intel Entry SAS RAID Module	Platform Default
	Boot Options Tab > Onboard SCU Storage Support	Platform Default
	Server Management Tab > Assert Nmi on Serr	Platform Default
	Server Management Tab > Assert Nmi on Perr	Platform Default
	Server Management Tab > OS Boot Watchdog Timer	Platform Default
	Server Management Tab > FRB-2 Timer	Platform Default
	Server Management Tab > Console Redirection	Platform Default
	Server Management Tab > Flow Control	Platform Default
	Server Management Tab > BAUD Rate	Platform Default
	Server Management Tab > Terminal Type	Platform Default
	Server Management Tab > Legacy OS Redirect	Platform Default
	Server Management Tab > Putty KeyPad	Platform Default

Values for the Servers Tab (continued)

Path	Parameter	Value
Service Profile Templates > root > Service Template CE_Unit > vNICs	vNIC	ETH0, ETH1, ETH2, ETH3, ETH4, ETH5, ETH6, ETH7, ETH8, ETH9, ETH10, ETH11, ETH12, ETH13
	Fabric ID for vNICs ETH0, ETH2, ETH4, ETH5, ETH6, ETH7, ETH8	A
	Fabric ID for vNICs ETH1, ETH3, ETH9, ETH10, ETH11, ETH12, ETH13	B
	Desired Placement	Any for all vNICs
Service Profile Templates > root > Service Template CE_Unit > vNICS > vNIC#	Adapter Policy	VDS_TC_CE
Service Profile Templates > root > Service Template CE_Unit	Boot Order Tab	• CD/DVD • Local Disk • LAN ETH0
	Policies Tab > BIOS Policy	VDS-TC_CE
	Policies Tab > Firmware Policies > Host Firmware	b200-2.1
	Policies Tab > IPMI Access Profile Policy	admin
Service Profiles > root > CE1	Associated Server	sys/chassis-1/blade-1
	Service Profile Template	CE_Unit
Service Profiles > root > CE2	Associated Server	sys/chassis-1/blade-2
	Service Profile Template	CE_Unit
Service Profiles > root > CE3	Associated Server	sys/chassis-1/blade-3
	Service Profile Template	CE_Unit
Service Profiles > root > CE4	Associated Server	sys/chassis-1/blade-4
	Service Profile Template	CE_Unit
Service Profiles > root > CE5 (In VDS-TC-8B and VDS-TC-16B)	Associated Server	sys/chassis-1/blade-5
	Service Profile Template	CE_Unit
Service Profiles > root > CE6 (In VDS-TC-8B and VDS-TC-16B)	Associated Server	sys/chassis-1/blade-6
	Service Profile Template	CE_Unit

Values for the Servers Tab (continued)

Path	Parameter	Value
Service Profiles > root > CE7 (In VDS-TC-8B and VDS-TC-16B)	Associated Server	sys/chassis-1/blade-7
	Service Profile Template	CE_Unit
Service Profiles > root > CE8 (In VDS-TC-8B and VDS-TC-16B)	Associated Server	sys/chassis-1/blade-8
	Service Profile Template	CE_Unit
Service Profiles > root > CE9 (In VDS-TC-16B)	Associated Server	sys/chassis-2/blade-1
	Service Profile Template	CE_Unit
Service Profiles > root > CE10 (In VDS-TC-16B)	Associated Server	sys/chassis-2/blade-2
	Service Profile Template	CE_Unit
Service Profiles > root > CE11 (In VDS-TC-16B)	Associated Server	sys/chassis-2/blade-3
	Service Profile Template	CE_Unit
Service Profiles > root > CE12 (In VDS-TC-16B)	Associated Server	sys/chassis-2/blade-4
	Service Profile Template	CE_Unit
Service Profiles > root > CE13 (In VDS-TC-16B)	Associated Server	sys/chassis-2/blade-5
	Service Profile Template	CE_Unit
Service Profiles > root > CE14 (In VDS-TC-16B)	Associated Server	sys/chassis-2/blade-6
	Service Profile Template	CE_Unit
Service Profiles > root > CE15 (In VDS-TC-16B)	Associated Server	sys/chassis-2/blade-7
	Service Profile Template	CE_Unit
Service Profiles > root > CE16 (In VDS-TC-16B)	Associated Server	sys/chassis-2/blade-8
	Service Profile Template	CE_Unit
Pools > root > UUID Suffix Pools > Pool default	Prefix	CB984AB8-23FA-11E2
	Size	512
	Assignment order	Default