

Lab 5-1: Configuring System Management

Complete this lab activity to practice what you learned in the related module.

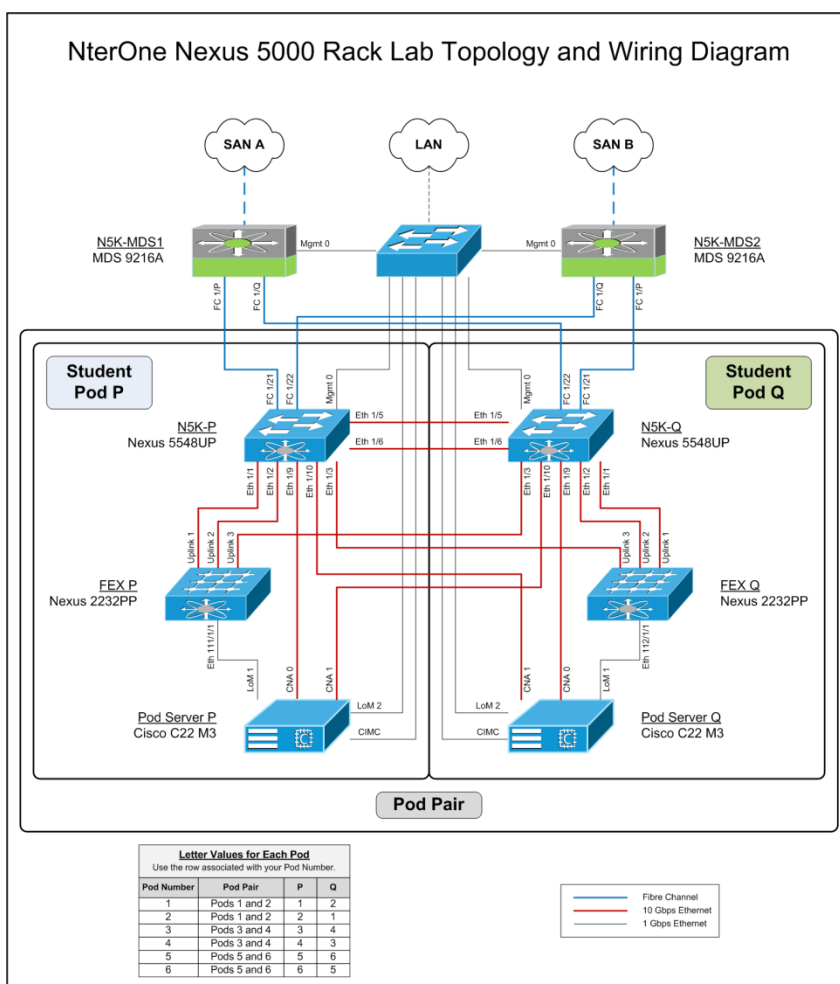
Activity Objectives

In this activity, you will configure system management features on the Cisco Nexus 5000 Series Switches. After completing this activity, you will be able to meet these objectives: Understand and navigate the file systems available on the Cisco Nexus 5000 Series Switch

- Configure the Cisco Nexus 5000 Series Switch to support both local and remote system message logging
- Configure the Cisco Nexus 5000 Series Switch to support Cisco Fabric Services
- Configure and run online diagnostic tests on the Cisco Nexus 5000 Series Switch
- Configure Smart Call Home on the Cisco Nexus 5000 Series Switch to send an email to the administrator

Visual Objective

The figure illustrates what you will accomplish in this activity.



Command List

The table describes the commands that are used in this activity.

Command	Description
dir	Provides a directory listing
mkdir	Creates a directory
cd	Changes the current directory
pwd	Displays the present working directory
show file	Displays the contents of the specified file
copy	Creates a copy of a file
del	Deletes a file
rmdir	Removes a directory
show cfs status	Displays the status of Cisco Fabric Services
show cfs application	Displays the applications supported by Cisco Fabric Services
cfs ipv4 distribute	Enables distribution of cisco Fabric Services applications over IPv4
cfs region <region-ed>	Defines a Cisco Fabric Services region
ntp	Enables an application in the Cisco Fabric Services region
show cfs region	Displays applications in the Cisco Fabric Services region
ntp distribute	Enables the distribution of NTP via CFSolP
show ntp peers	Displays the peers acquired by NTP
show clock [detail]	Displays the current clock setting
clock timezone	Sets the timezone and UTC offset of the local switch
ntp server <server address> use-vrf <vrf-name> [prefer]	Defines an NTP server
ntp commit	Enables the propagation of NTP changes in a Cisco Fabric Services region
show logging info	Displays the logging settings
logging console <n>	Sets the console logging level
ssh username@ip-address [vrf management]	Initiates an SSHY session with the username specified to the destination
terminal monitor	Enables logging messages to be displayed in a terminal session
show logging logfile	Displays the logfile
show logging last <n>	Displays the last <n> messages of the logfile
logging timestamp milliseconds	Provides millisecond granularity on log messages
show logging server	Displays configured syslog servers
interface ethernet 1/3	Selects an interface
shutdown	Administratively disables an interface
show diagnostic bootup level	Displays the last bootup diagnostic results
show diagnostic result all	Displays all the last bootup diagnostic results
show running-config callhome all	Displays the Call Home configuration including defaults
callhome	Enables the Call Home feature
email-contact <address>	Defines the Call Home email contact

Command	Description
phone-contact <number>	Defines the Call Home phone contact
streetaddress 123 main street, home town, country	Defines the Call Home street address
show callhome	Defines the Call Home configuration
destination-profile <name>	Defines a Call Home destination profile and related parameters
show callhome destination- profile <profile-name>	Displays the Call Home destination profiles
transport email	Defines the Call Home email address and related parameters
enable	Enables Call Home
callhome test	Sends a test Call Home message
show users	Displays users that are connected to the switch

Task 0: Load the Baseline Configuration

During this task, you will reset your pod's Cisco Nexus 5000 Series Switch (also referred to as your pod switch) to a baseline configuration to prepare for the remaining tasks of this lab.

Activity Procedure

Complete these steps:

Step 1 Connect to the Student Server assigned to you by your instructor for this lab Use the server information and account credentials that are listed in the *Lab Support Document*.

Note Refer to *Accessing the NterOne Lab Equipment* for detailed instructions regarding how to use Remote Desktop Connection (RDC) to connect to your Student Server.

Step 2 From your Student Server, connect to your pod switch using PuTTY. You can connect to the switch using either the console port or SSH.

Step 3 Login to the switch with the credentials below:

- Username: **admin**
- Password: **Nterone179**

Step 4 In this step you will be “cleaning up” the configuration of your pod switch in preparation for the other tasks in this lab. Copy the “cleanup” configuration from the saved file in the bootflash to the running configuration.

Note Replace “P” with your assigned pod number for this lab

```
N5K-P# copy bootflash:/configs/n5k-P-cleanup.txt running-config
< ... output omitted ... >
Copy complete, now saving to disk (please wait)...
```

Note You will see a number of what looks like error messages scroll by; this is normal behavior. The cleanup config is attempting to remove statements from the running configuration that may or may not exist.

Step 5 Copy the “cleaned up” running configuration to the startup configuration. This is useful if, while performing the following steps in this lab, you made a number of mistakes in the configuration and need to quickly put the switch back to a “clean” state by simply reloading the switch.

```
N5K-P# copy running-config startup-config
[#####] 100%
Copy complete, now saving to disk (please wait)...
```

Step 6 Copy the lab baseline configuration from the saved file in the bootflash into the running configuration using the command below.

Note Replace “P” with your assigned pod number for this lab

```
N5K-P# copy bootflash:/configs/dcnx5k/dcnx5k-lab-2-04-n5k-P.txt running-config
< ... output omitted ... >
Copy complete, now saving to disk (please wait)...
```

Note You will see a number of what looks like error messages scroll by; this is normal behavior.

Activity Verification

You have completed this task when you attain these results:

- You have reconfigured your pod switch with the baseline configuration for this lab.

Task 1: Navigating the Cisco Nexus Switch File Systems

During this task, you will learn to navigate and use the Cisco Nexus file systems.

Activity Procedure

Complete these steps:

Step 7 Determine the present working directory of the bootflash file system.

```
N5K-P# pwd
bootflash:
```

Step 8 Display the files on the bootflash of your switch.

```
N5K-P# dir
 0      May 12 21:16:25 2013 20130512_211625_poap_3360_init.log
2097248 May 13 20:39:17 2013 20130513_130102_poap_3362_1.log
1835967 May 13 20:39:39 2013 20130513_130102_poap_3362_2.log
1048596 May 13 13:17:51 2013 20130513_130102_poap_3362_init.log
 0      May 13 20:57:18 2013 20130513_205718_poap_3360_init.log
669996  May 14 05:50:04 2013 20130514_054753_poap_3358_1.log
1048686 May 14 05:48:47 2013 20130514_054753_poap_3358_init.log
 4096   May 12 21:57:41 2013 DCNX5K/
  987   Feb 22 19:31:02 2013 license_SSI164900R6_3.lic
 4096   May 06 11:15:21 2013 lost+found/
 1282   May 14 05:46:44 2013 mts.log
34357760 Feb 22 19:23:06 2013 n5000-uk9-kickstart.5.1.3.N2.1.bin
34365952 Mar 13 18:33:55 2013 n5000-uk9-kickstart.5.1.3.N2.1c.bin
172662417 Feb 22 19:24:04 2013 n5000-uk9.5.1.3.N2.1.bin
172724505 Mar 13 18:39:08 2013 n5000-uk9.5.1.3.N2.1c.bin
 4096   Jan 01 19:27:03 2009 vdc_2/
 4096   Jan 01 19:27:03 2009 vdc_3/
```

4096 Jan 01 19:27:03 2009 vdc_4/

```
Usage for bootflash://
 953368576 bytes used
 697536512 bytes free
1650905088 bytes total
```

Note The actual files on your switch bootflash will be different than the example above.

Step 9 Create a directory called Lab2-4X.

```
N5K-P# mkdir Lab2-4X
```

Step 10 Navigate to this directory.

```
N5K-P# cd Lab2-4X
```

Step 11 Verify the directory that you are now in.

```
N5K-P# pwd
bootflash:Lab2-4X
```

Step 12 Make a backup copy of your configuration to the bootflash.

```
N5K-P# copy running-config Test-cfg
Copy complete, now saving to disk (please wait)...
```

Step 13 Verify the file is present on the bootflash.

```
N5K-P# dir Test-cfg
 6312    May 14 05:58:43 2013  Lab2-4X/Test-cfg
```

```
Usage for bootflash://sup-local
 953380864 bytes used
 697524224 bytes free
1650905088 bytes total
```

Step 14 Display the contents of this file to the screen.

```
N5K-P# show file Test-cfg

!Command: show running-config
!Time: Fri Jul 13 02:12:57 2012

version 5.1(3)N2(1)
hostname N5K-P

feature telnet
no feature http-server
feature interface-vlan
feature lldp

-- output omitted --
```

Step 15 Display all files on the file system that have a file name beginning with the letter T.

```
N5K-P# dir T*
No such file or directory
```

```
N5K-P# dir | include T
6312      May 14 05:58:43 2013  Test-cfg
```

Note The switch does not support wildcards on a directory listing, but the dir command output may be piped to grep. Wildcards are supported when deleting files.

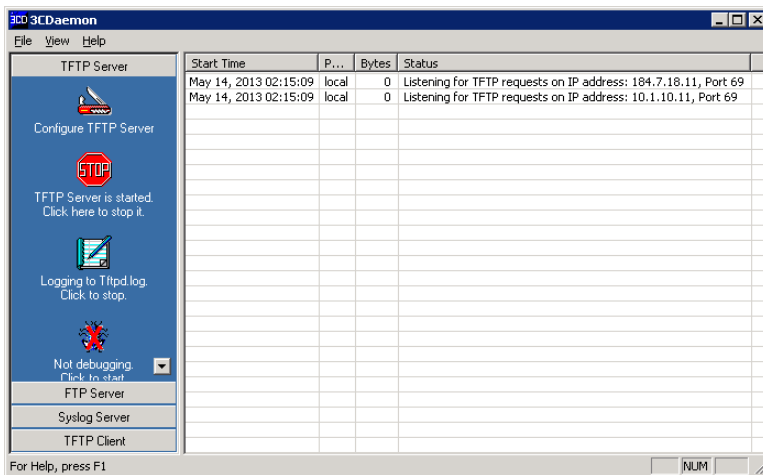
Step 16 Double-click the “Stop DCNM Servers” shortcut on your Student Server desktop This will stop the DCNM processes on your Student Server, which also stops the DCNM Syslog service. The process may take several seconds.



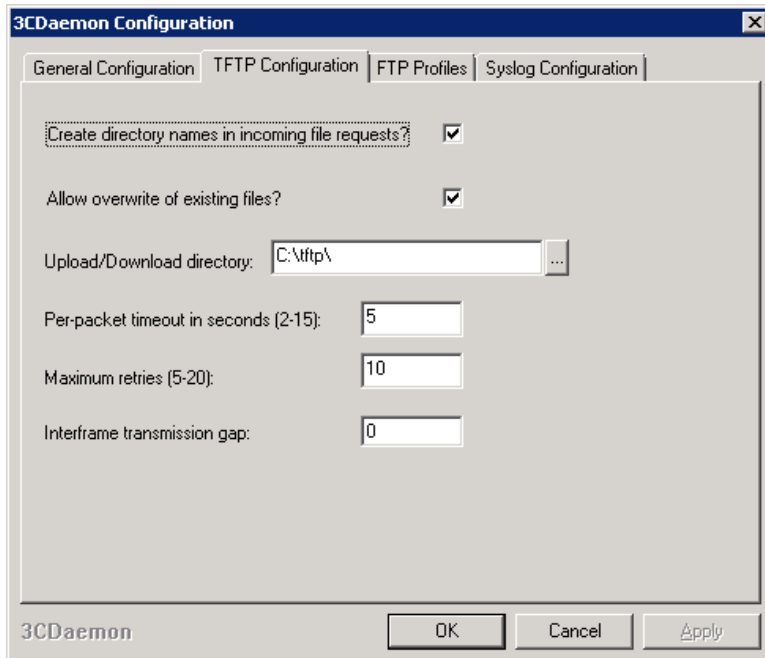
Step 17 Double-click the “3CDaemon” shortcut on your Student Server desktop. This will start the TFTP and Syslog servers on your Student Server. If an error message appears indicating that there is another FTP server running click “OK” to clear the error.



Step 18 Click the TFTP Server tab on the left side of the 3CDaemon window.



Step 19 Click **Configure TFTP Server**.



Step 20 Verify that the settings match the settings in the previous image and then click OK.

Step 21 Copy the file you created to the TFTP server. Replace P with your assigned pod number.

```
N5K-P# copy Test-cfg tftp://10.1.R0.1P/Test-cfg vrf management
Trying to connect to tftp server.....
Connection to Server Established.
TFTP put operation was successful
Copy complete, now saving to disk (please wait)...
```

Step 22 Ensure that you can open the file in the c:\tftp directory.

Step 23 Copy the file from the TFTP server back to the bootflash.

```
N5K-P# copy tftp://10.1.R0.1P/Test-cfg Test-cfg vrf management
Warning: There is already a file existing with this name. Do you want to overwrite
(y/n)?[n] y
Trying to connect to tftp server.....
Connection to Server Established.
TFTP get operation was successful
Copy complete, now saving to disk (please wait)...
```

Step 24 Delete the file that you created.

```
N5K-P# delete Test-cfg
```

Step 25 Return to the root directory.

```
N5K-P# cd ..
```

Step 26 Verify that you are back in the root directory.

```
N5K-P# pwd
bootflash:
```

Step 27 Remove the directory you created.

```
N5K-P# rmdir Lab2-4X
```

Step 28 Use the help key to determine the other supported file systems.

```
N5K-P# copy ?
bootflash:      Select source filesystem
core:           Select source filesystem
debug:          Select source filesystem
ftp:            Select source filesystem
licenses        Backup license files
log:            Select source filesystem
modflash:       Select source filesystem
nvram:          Select source filesystem
running-config Copy running configuration to destination
scp:            Select source filesystem
sftp:           Select source filesystem
startup-config Copy startup configuration to destination
system:         Select source filesystem
tftp:           Select source filesystem
usb1:           Select source filesystem
volatile:       Select source filesystem
```

Activity Verification

You have completed this task when you attain these results:

- You have navigated the bootflash file system and manipulated files within it.
- You have copied files to and from an external file system.
- You have determined the different file systems supported by the Cisco Nexus 5000 Series Switches.

Task 2: Configure System Message Logging

During this task, you will configure the Cisco Nexus 5000 Series Switch to support both local and remote system message logging.

Activity Procedure

Complete these steps:

Step 29 Verify that the current logging settings are being set to the default values.

```
N5K-P# show logging info | no-more
```

```
Logging console:          enabled (Severity: critical)
Logging monitor:          enabled (Severity: notifications)
Logging linecard:         enabled (Severity: notifications)
Logging fex:              enabled (Severity: notifications)
Logging timestamp:        Milliseconds
Logging loopback :        disabled
Logging server:           disabled
Logging logfile:          enabled
Name - messages: Severity - information Size - 4194304
```

Facility	Default Severity	Current Session Severity
-----	-----	-----
aaa	3	5
aclmgr	3	3
afm	3	3
auth	0	0

```

authpriv          3          3
bootvar          5          5
callhome         2          2
<... output omitted ...>

0(emergencies)   1(alerts)    2(critical)
3(errors)        4(warnings)  5(notifications)
6(information)   7(debugging)

```

Q1) Is logging to the console enabled by default?

Q2) What message severity level is logged to console by default?

Q3) Are console and terminal (monitor) logging set to the same level by default?

Step 30 Verify the default logging level for the console.

```

N5K-P# show logging console
Logging console:          enabled (Severity: critical)

```

Step 31 Enter configuration mode, then immediately exit without making any changes.

```

N5K-P# conf
Enter configuration commands, one per line. End with CNTL/Z.
N5K-P(config)# end

```

Q4) Why do you not see a console message when you exit configuration mode?

Step 32 Change the console logging level to notifications (5).

```

N5K-P# conf
Enter configuration commands, one per line. End with CNTL/Z.
N5K-P(config)# logging console ?
<CR>
<0-7> 0-emerg;1-alert;2-crit;3-err;4-warn;5-notif;6-inform;7-debug

```

```

N5K-P(config)# logging console 5
Baud rate of console should be at least 38400 to increase logging level

```

Step 33 Establish an SSH session to your switch (where P is your real pod number).

Note In the example below, the SSH session is from the switch to itself. The session could also have been established from the Windows server or another device in the network.

```

N5K-P# ssh admin@10.0.0.14P vrf management
The authenticity of host '10.0.0.14P (192.168.0. P8)' can't be established.
RSA key fingerprint is e7:72:ee:11:06:df:05:16:61:10:8c:98:47:fa:ec:21
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.0.0.14P' (RSA) to the list of known hosts. Nexus
5000 Switch
Password:
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2011, Cisco Systems, Inc. All rights reserved. The copyrights to
certain works contained in this software are owned by other third parties and used

```

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N5K-P#

Step 34 Verify the default logging level for a monitor session.

```
N5K-P# show logging monitor
Logging monitor:                enabled (Severity: notifications)
```

Step 35 From the SSH session, enter configuration mode then immediately exit without making any changes. Do not exit the SSH session.

Q5) Why do you not see a terminal message when you exit configuration mode?

Step 36 Enable message logging to the local terminal.

```
N5K-P# terminal monitor
```

Step 37 Enter and exit configuration mode. You should now see a message in your SSH session indicating that you were in configuration mode.

```
N5K-P# conf
Enter configuration commands, one per line.  End with CNTL/Z.
N5K-P(config)# end
N5K-1# 2013 May 14 06:32:30.632 N5K-1 %VSHD-5-VSHD_SYSLOG_CONFIG_I: Configured from
vty by admin on 10.0.0.14P@pts/0
```

Step 38 Exit the SSH session and return to the console.

Q6) Is logging to a log file enabled by default?

Step 39 Display the log file contents.

```
N5K-P# show logging logfile
2012 Jul 11 17:34:07 %USER-2-SYSTEM_MSG: CLIS: loading cmd files begin -
clis
2012 Jul 11 17:34:10 Jul 11 17:34:10 %KERN-0-SYSTEM_MSG: I2C - Mezz absent -
kernel
2012 Jul 11 17:34:10 Jul 11 17:34:10 %KERN-0-SYSTEM_MSG:
sprom_drv_init_platform: nuova_i2c_register_get_card_index - kernel
2012 Jul 11 17:34:10 Jul 11 17:34:10 %KERN-3-SYSTEM_MSG: sd 0:0:0:0: [sda]
Assuming drive cache: write through - kernel

<... output omitted ...>
```

Step 40 Display the last (most recent) 3 lines from the log file.

```
N5K-P# show logging logfile | last 3
2013 May 14 06:30:06 N5K-1 %DAEMON-3-SYSTEM_MSG: error: PAM: Authentication failure
for ad
min from 10.1.R0.10 - sshd[5557]
2013 May 14 06:32:00.853 N5K-1 %VSHD-5-VSHD_SYSLOG_CONFIG_I: Configured from vty by
admin
on 10.0.0.141@pts/0
2013 May 14 06:33:56.192 N5K-1 last message repeated 2 times
```

Q7) What will happen to the oldest entries in the log file when the log file reaches its maximum size?

Q8) What will happen to the entire log file if the switch is reloaded?

Step 41 Enable logging to an external syslog server. Your Student Server will function as the syslog server for your switch. Replace P with your real pod number.

```
N5K-P# conf
Enter configuration commands, one per line. End with CNTL/Z.
N5K-P(config)# logging server 10.1.R0.1P 5 use-vrf management
N5K-P(config)# logging timestamp milliseconds
N5K-P(config)# end
```

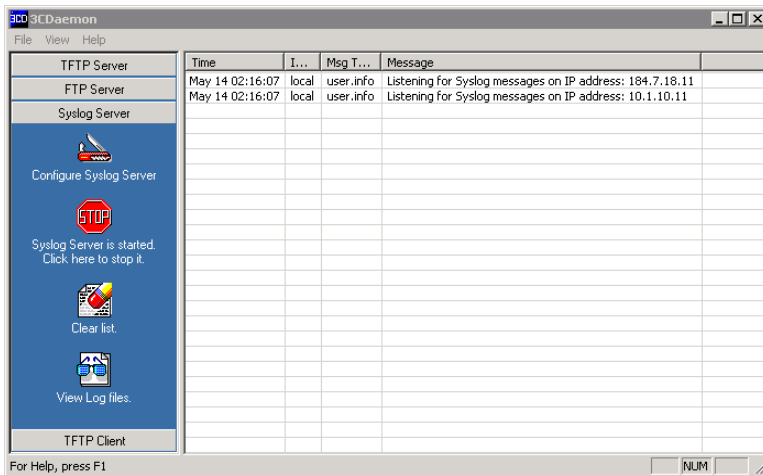
Step 42 Verify the syslog server configuration.

```
N5K-P# show logging server

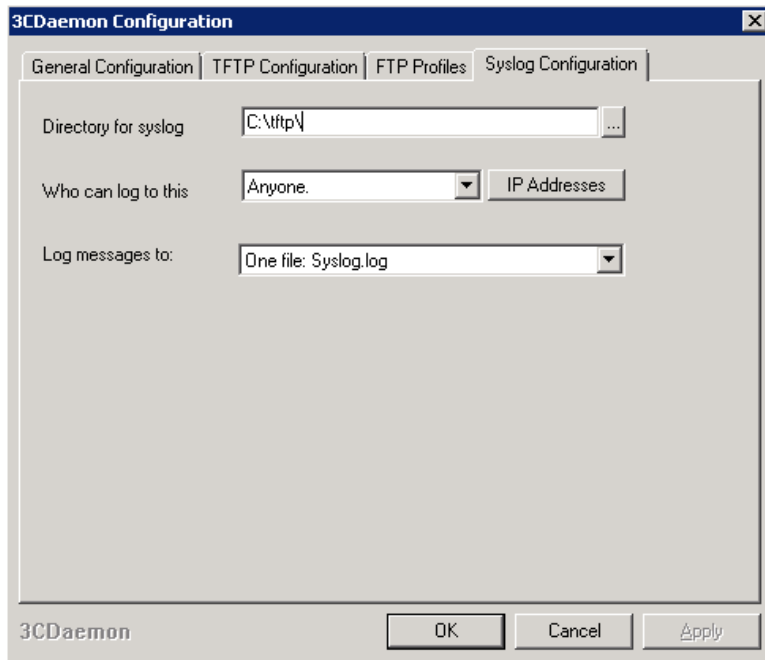
Logging server:                enabled
{10.1.R0.1P}
  server severity:            notifications
  server facility:            local7
  server VRF:                  management
```

Note The 3CDaemon application contains a syslog server component. The 3CDaemon should still be running, as it was used as a tftp server in the previous task.

Step 43 Within 3CDaemon click the Syslog Server tab on the left side of the window and ensure that the syslog server is running.



Step 44 Click **Configure Syslog Server**.



Step 45 Verify that the settings match the settings in the previous image and then click OK.

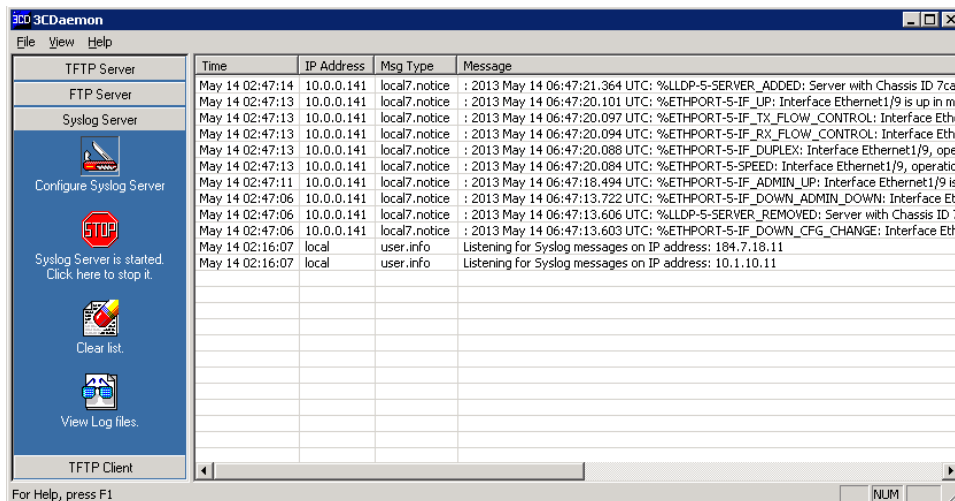
Step 46 From your switch console, enter configuration mode then immediately exit without making any changes.

N5K-P# **conf**

Enter configuration commands, one per line. End with CNTL/Z.

N5K-P(config)# **exit**

Step 47 Shut down interface Ethernet1/9 on your switch, and then re-enable the interface. Verify that the messages are received by the syslog server.



Q9) How many syslog messages were generated due to issuing a shutdown followed by a no shutdown on an operational interface?

Activity Verification

You have completed this task when you attain these results:

- You have understood the default logging levels of the Cisco Nexus 5000 Series Switches.
- You have verified that the system message log traffic is captured by the logging server.

Task 3: Configure Cisco Fabric Services and NTP

During this task, you will configure Cisco Fabric Services to distribute configuration information to the other switches in the network.

Activity Procedure

Complete these steps:

Note Steps in this task must be performed on both switches in the pod, unless otherwise noted.

Step 48 Verify the default Cisco Fabric Services settings of the Cisco Nexus 5000 Series Switches.

```
N5K-P# show cfs status
Distribution : Enabled
Distribution over IP : Disabled
IPv4 multicast address : 239.255.70.83
IPv6 multicast address : ff15::efff:4653
Distribution over Ethernet : Disabled
```

Q10) Is Cisco Fabric Services distribution enabled by default?

Note If a vPC is configured, Cisco Fabric Services Distribution over Ethernet is automatically enabled.

Q11) What is the default IPv4 multicast address for Cisco Fabric Services distribution over IP?

Step 49 Determine the Cisco NX-OS Software applications currently supported by Cisco Fabric Services.

```
N5K-P# show cfs application
```

```
-----
Application    Enabled    Scope
-----
fwm             Yes       Physical-eth
ntp            No        Physical-fc-ip
stp            Yes       Physical-eth
role           No        Physical-fc-ip
radius         No        Physical-fc-ip
syslogd        No        Physical-fc-ip
session-mgr    Yes       Physical-ip
```

```
Total number of entries = 7
```

Step 50 Enable Cisco Fabric Services over IPv4.

```
N5K-P# conf
Enter configuration commands, one per line. End with CNTL/Z.
```

```
N5K-P(config)# cfs ipv4 distribute
```

Step 51 Verify if any other switches in the fabric have CFS over IP enabled. If CFS over IP is enabled on both switches in your pod, they should both be listed below. Other switches in the fabric may also be visible.

Note In the lab, the fabric can contain up to 6 switches.

```
N5K-P(config)# show cfs peers
```

```
Physical Fabric
```

```
-----  
Switch WWN                IP Address  
-----  
20:00:00:2a:6a:09:fa:40  10.0.0.14P          [Local]  
                        N5K-1  
20:00:00:2a:6a:0e:fd:40  10.0.0.14Q  
                        N5K-2
```

```
Total number of entries = 2
```

Note Configuration information for applications that are defined under Cisco Fabric Services will be distributed to all peer switches in the same region.

Step 52 A Cisco Fabric Services region allows scoping of Cisco Fabric Services messages for an application across the fabric. Create a Cisco Fabric Services region. Regions are defined by a number. The region ID must be the same on both switches. Use region XY, which is the combination of the pod numbers (lowest to highest) in your pod pair (e.g. 12, 34, or 56).

```
N5K-P(config)# cfs region ?  
<1-200> Region Id
```

```
N5K-P(config)# cfs region XY
```

Step 53 Enable the NTP application in the Cisco Fabric Services region.

```
N5K-P(config-cfs-region)# ntp  
WARNING: If an Application is moved/assigned to a new region,  
its scope is restricted to that region and it ignores all other regions  
for distribution or merge.  
Are you sure? (y/n) [n] y
```

Step 54 Enable the distribution of NTP via Cisco Fabric Services over IPv4.

```
N5K-P(config-cfs-region)# ntp distribute  
N5K-P(config)# end
```

Step 55 View the switches in the Cisco Fabric Services region. Only switches that are enabled with the same region number should appear.

```
N5K-P# show cfs region
```

```
Region-ID : 12  
Application: ntp  
Scope : Physical-fc-ip
```

```
-----  
Switch WWN                IP Address  
-----
```

```
20:00:00:2a:6a:09:fa:40 10.0.0.14P [Local]
                          N5K-1
20:00:00:2a:6a:0e:fd:40 10.0.0.14Q
                          N5K-2
```

Total number of entries = 2

Step 56 Verify the status of the NTP protocol.

```
N5K-P# show ntp peers
```

Step 57 Verify the current time and date that is known to the switches.

```
N5K-P# show clock
06:57:23.704 UTC Tue May 14 2013
```

Step 58 Set the correct time zone, UTC offset, and DST (if applicable) based on your location. This must be done on both switches; this is not distributed by CFS.

```
N5K-P# conf
N5K-P(config)# clock timezone EST -5 0
N5K-P(config)# clock summer-time EDT 2 Sunday March 02:00 1 Sunday November 02:00
60
N5K-P(config)# clock format 24-hours
```

Step 59 Verify the current time and date that is known to the switches.

```
N5K-P(config)# show clock detail
02:59:12.130 EDT Tue May 14 2013
summer-time configuration:
-----
timezone name: EDT
starts       : 2 Sunday March at 02:00 hours
Ends        : 1 Sunday November at 02:00 hours
Minute offset: 60
```

Note The clock settings of the switch now reflect your configuration settings, but the actual time will not be correct until clock synchronization is provided by an NTP server.

Step 60 On the lower (odd) numbered switch only, define the NTP server. The NTP server function is provided in the lab as a service running on your Windows server.

```
N5K-P(config)# ntp server 10.0.99.24 use-vrf management prefer
```

Step 61 Determine if the NTP server is known to either of the pod switches.

```
N5K-P(config)# show ntp peers
N5K-Q(config)# show ntp peers
```

Step 62 On the lower (odd) numbered switch only, commit the NTP configuration change. The NTP configuration will be distributed by Cisco Fabric Services to the other switch in the same region running NTP once it has been committed.

```
N5K-P(config)# ntp commit
```

Step 63 Determine if the NTP server is now known to either of the pod switches.

```
N5K-P(config)# show ntp peers
-----
Peer IP Address          Serv/Peer
-----
10.0.99.24              Server (configured)
```

```
N5K-Q(config)# show ntp peers
-----
Peer IP Address          Serv/Peer
-----
10.0.99.24              Server (configured)
```

Step 64 Use the show ntp peer-status command to verify that your switch is using the configured NTP server. Repeat the command until the NTP server is selected for sync.

```
N5K-1(config)# sh ntp peer-status
Total peers : 1
* - selected for sync, + - peer mode(active),
- - peer mode(passive), = - polled in client mode
  remote          local          st    poll    reach delay
-----
*10.0.99.24      0.0.0.0          4    32     377  0.00108
```

Activity Verification

You have completed this task when you attain these results:

- You have configured and verified the distribution of the NTP application configuration using Cisco Fabric Services configuration.
- Your switches now have an accurate time and date setting that is updated from an NTP server running on your pod Windows server.

Task 4: Verify Online Diagnostics

During this task, you will verify the status of the online diagnostic tests of the Cisco Nexus 5000 Series Switch.

Activity Procedure

Complete these steps:

Step 65 Verify the default online diagnostic settings of the Cisco Nexus 5000 Series Switch.

```
N5K-P# show diagnostic bootup level

Current bootup diagnostic level: complete
```

Step 66 Verify that the bootup diagnostic level can be modified.

```
N5K-P# conf
Enter configuration commands, one per line. End with CNTL/Z.
N5K-1(config)# diagnostic bootup level ?
  bypass    Skip all bootup test
  complete  Complete level
  extra     Extra level
N5K-P(config)# end
```

Note It is not recommended to bypass the bootup diagnostic tests.

Step 67 Many of the bootup diagnostic messages are displayed on the console during the boot cycle. View the onboard log or review the contents of syslog to ensure that all messages indicated normal conditions.

```
N5K-P# show logging logfile start-time 2013 Jan 1 00:00:00
2013 May 14 05:46:45 %USER-2-SYSTEM_MSG: CLIS: loading cmd files begin - clis
2013 May 14 05:46:48 May 14 05:46:48 %KERN-0-SYSTEM_MSG: I2C - Mezz absent -
kernel
2013 May 14 05:46:48 May 14 05:46:48 %KERN-0-SYSTEM_MSG: sprom_drv_init_platform:
nuova_i
2c_register_get_card_index - kernel
2013 May 14 05:46:48 May 14 05:46:48 %KERN-3-SYSTEM_MSG: sd 0:0:0:0: [sda]
Assuming drive
cache: write through - kernel
2013 May 14 05:46:48 May 14 05:46:48 %KERN-3-SYSTEM_MSG: sd 0:0:0:0: [sda]
Assuming drive
cache: write through - kernel
<... output omitted ...>
```

Step 68 The Onboard Failure Log (OBFL) also stores diagnostic events.

```
N5K-P# show logging onboard boot-uptime | last 20
Tue May 14 00:57:26 2013: Card Uptime Record
-----
Uptime: 28951, 0 days 8 hour(s) 2 minute(s) 31 second(s)
Reset Reason: Unknown (0)
Reset Reason SW: Reset Requested by CLI command reload (9)
Reset Reason HW: Unknown (0)
Card Mode.....: Runtime
```

```
Tue May 14 02:47:04 2013: Card Uptime Record
-----
Uptime: 3694, 0 days 1 hour(s) 1 minute(s) 34 second(s)
Reset Reason: Unknown (0)
Reset Reason SW: Reset Requested by CLI command reload (9)
Reset Reason HW: Unknown (0)
Card Mode.....: Runtime
```

Step 69 Verify the results of the last diagnostic run on module 1.

```
N5K-P# show diagnostic result module 1

Current bootup diagnostic level: complete

Module 1: O2 32X10GE/Modular Universal Platform Supervisor SerialNo : FOC17034CBW

Overall Diagnostic Result for Module 1 : PASS
Diagnostic level at card bootup: complete

Test results: (. = Pass, F = Fail, I = Incomplete,
               U = Untested, A = Abort)

1) TestUSBFlash -----> .
2) TestSPROM -----> .
3) TestPCIE -----> .
4) TestLED -----> .
5) TestOBFL -----> .
6) TestNVRAM -----> .
7) TestPowerSupply -----> .
```

```
8) TestTemperatureSensor -----> .
9) TestFan -----> .
```

<... output omitted ...>

Step 70 The complete results of the last set of diagnostics that is run on the switch can be viewed with the following command.

```
N5K-P# show diagnostic result all | no-more
```

Note The full outputs of diagnostic related show commands are typically very lengthy. Some have been omitted here to save space. It is recommended to review the complete output of these commands and all logs to ensure that any abnormal conditions are detected.

Activity Verification

You have completed this task when you attain these results:

- Viewed the diagnostic test results of the Cisco Nexus 5000 Series Switch and verified that there are no problems reported in the diagnostics and logs.

Task 5: Configure Smart Call Home

During this exercise, you will configure Smart Call Home on the Cisco Nexus 5000 Series Switch to send an email to the administrator's email address when a problem is detected.

Activity Procedure

Complete these steps:

Step 71 View the default Call Home settings of the Cisco Nexus 5000 Series Switch.

```
N5K-1# show running-config callhome all
```

```
!Command: show running-config callhome all
!Time: Tue May 14 03:15:14 2013
```

```
version 5.1(3)N2(1)
callhome
  switch-priority 7
  destination-profile CiscoTAC-1
  destination-profile CiscoTAC-1 format XML
  destination-profile CiscoTAC-1 transport-method email
  no destination-profile CiscoTAC-1 transport-method http
  destination-profile CiscoTAC-1 message-size 5000000
  destination-profile CiscoTAC-1 message-level 0
  destination-profile full_txt
  destination-profile full_txt format full-txt
  destination-profile full_txt transport-method email
  no destination-profile full_txt transport-method http
  destination-profile full_txt message-size 2500000
  destination-profile full_txt message-level 0
  destination-profile short_txt
  destination-profile short_txt format short-txt
  destination-profile short_txt transport-method email
  no destination-profile short_txt transport-method http
  destination-profile short_txt message-size 4000
  destination-profile short_txt message-level 0
  destination-profile CiscoTAC-1 alert-group cisco-tac
  destination-profile full_txt alert-group all
```

```
destination-profile short_txt alert-group all
transport http use-vrf default
no enable
duplicate-message throttle
periodic-inventory notification
periodic-inventory notification interval 7
periodic-inventory notification timeofday 08:00
```

Step 72 Configure the SNMP system contact on your Nexus 7000 VDC as studentP@nterone.com, where P is your Pod number.

```
N5K-P (config) # snmp-server contact studentP@nterone.com
```

Note In addition to the Call Home parameters, the Call Home feature also requires the SNMP sysContact variable to be set.

Step 73 Enter the Call Home configuration context and specify customer and contact information as indicated below.

Note Replace "P" with your pod number for this lab

```
N5K-P (config) # callhome
N5K-P (config-callhome) # customer-id NterOne Inc
N5K-P (config-callhome) # email-contact studentP@nterone.com
N5K-P (config-callhome) # phone-contact +1-800-555-1212
N5K-P (config-callhome) # streetaddress 1900 Campus Commons Dr. Ste 100 Reston VA
20191
```

Step 74 Verify the Call Home parameters.

```
N5K-P (config-callhome) # show callhome
callhome disabled
Callhome Information:
contact person name(sysContact):studentP@nterone.com
contact person's email:studentP@nterone.com
contact person's phone number:+1-800-555-1212
street addr:1900 Campus Commons Dr. Ste 100 Reston VA 20191
site id:
customer id:NterOne Inc
contract id:
switch priority:7
duplicate message throttling : enabled
periodic inventory : enabled
periodic inventory time-period : 7 days
periodic inventory timeofday : 08:00 (HH:MM)
Distribution : Disabled
```

Step 75 Create a Call Home destination profile named N5K.

```
N5K-P (config-callhome) # destination-profile N5K
N5K-P (config-callhome) # destination-profile N5K format full-txt
```

Step 76 Configure two more profiles for short messages and the NOC.

```
N5K-P (config-callhome) # destination-profile SMS
N5K-P (config-callhome) # destination-profile SMS format short-txt
N5K-P (config-callhome) # destination-profile NOC
N5K-P (config-callhome) # destination-profile NOC format XML
```

Step 77 Enable those profiles for all messages.

```
N5K-P(config-callhome) # destination-profile N5K alert-group ?  
All This alert group consists of all of the callhome messages  
Cisco-TAC Events which are meant for Cisco TAC only  
Configuration Events related to Configuration  
Diagnostic Events related to Diagnostic  
EEM EEM events  
Environmental Power, fan, temperature related events  
Inventory Inventory status events  
License Events related to licensing  
Linecard-Hardware Linecard related events  
Supervisor-Hardware Supervisor related events  
Syslog-group-port Events related to syslog messages filed by port manager  
System Software related events  
Test User generated test events
```

```
N5K-P(config-callhome) # destination-profile N5K alert-group all  
N5K-P(config-callhome) # destination-profile SMS alert-group all  
N5K-P(config-callhome) # destination-profile NOC alert-group all
```

Step 78 Configure the following:

- NOC to receive all messages but debug messages
- N5K to receive all notifications
- SMS profile (which would be routed through an email2SMS gateway) to receive critical messages
- SMS messages will be 160 characters maximum

```
N5K-P(config-callhome) # destination-profile N5K message-level 2  
N5K-P(config-callhome) # destination-profile SMS message-level 6  
N5K-P(config-callhome) # destination-profile NOC message-level 1  
N5K-P(config-callhome) # destination-profile SMS message-size 160
```

Step 79 Configure all profiles to use email address studentP@nterone.com (where P is your Pod number) as the receiver.

```
N5K-P(config-callhome) # destination-profile NOC email-addr studentP@nterone.com  
N5K-P(config-callhome) # destination-profile SMS email-addr studentP@nterone.com  
N5K-P(config-callhome) # destination-profile N5K email-addr studentP@nterone.com
```

Step 80 Configure global Cisco Call Home email parameters.

```
N5K-P(config-callhome) # transport email smtp-server 10.1.R0.10 use-vrf management  
N5K-P(config-callhome) # transport email from nexuslab@nterone.com  
N5K-P(config-callhome) # transport email reply-to noc@nterone.com
```

Step 81 Verify global Cisco Call Home email parameters.

```
N5K-P(config-callhome) # show callhome transport  
from email addr:nexuslab@nterone.com  
reply to email addr:noc@nterone.com  
smtp server:10.1.R0.10  
smtp server port:25
```

Step 82 Configure the Cisco Call Home periodic inventory notification to send one inventory message every day.

```
N5K-P(config-callhome) # periodic-inventory notification interval 1
```

Step 83 Enable Cisco Call Home.

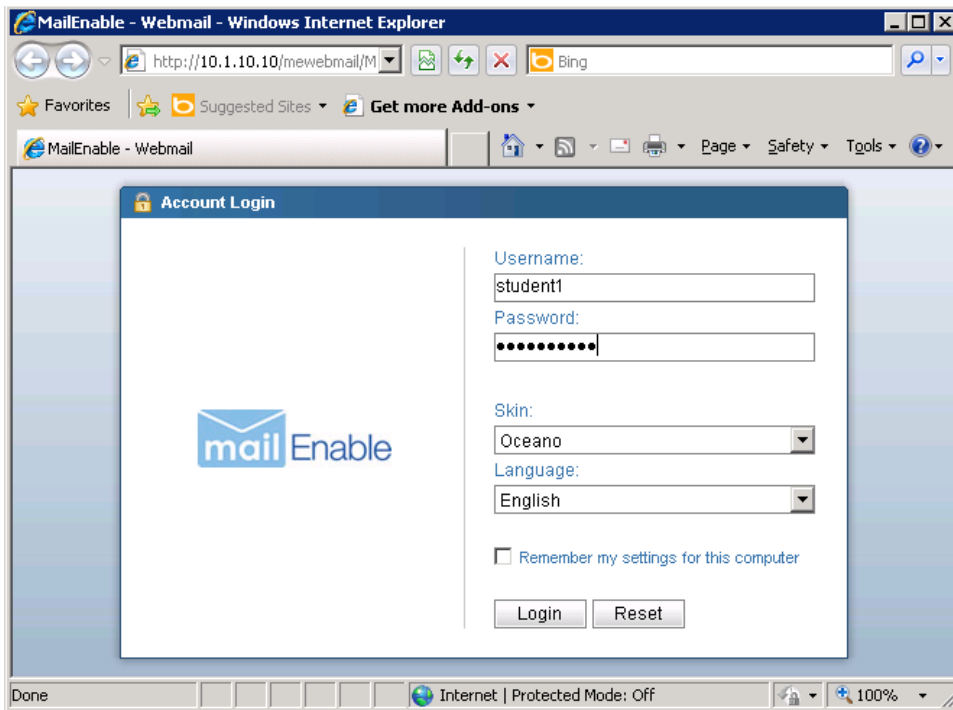
```
N5K-P(config-callhome) # enable
```

Step 84 Test your configuration.

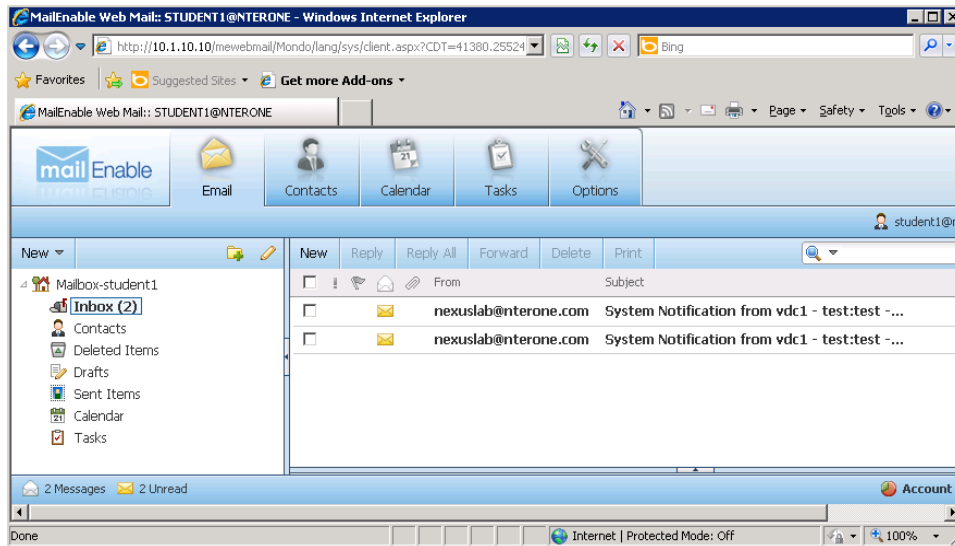
```
N5K-P(config-callhome) # callhome test
trying to send test callhome message
successfully sent test callhome message
```

Step 85 On your student server start Internet Explorer and browse to the email server at <http://10.1.R0.10/mewebmail/>. Log in with the username “studentP” (where P is your Pod number) and password “Nterone179”.

Note The MailEnable Webmail client may take several seconds to load.



Step 86 Open the Inbox to verify that you received the test messages.



Step 87 Open each email and examine the mail header information and the body of the email.

Step 88 Please delete all of your emails and then log out of the application.

Activity Verification

You have completed this task when you attain these results:

- You have configured Smart Callhome for event notification via email and SMS.
- You have logged on to the email server and verified that the Call Home notification alert email was received based on a Call Home event occurring on the switch.