

# Smart Call Home

## Deploying the Transport Gateway on Cisco Unified Computing System and Red Hat Linux

### Deployment Guide

For further information, questions and comments please contact [ask-smart-services@cisco.com](mailto:ask-smart-services@cisco.com)

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# Introduction

## Purpose and scope

This document demonstrates how to create a self-contained transport gateway, an optional proxy for Cisco® Smart Call Home messages.

The validation includes:

- Installation of Red Hat Linux, including all required packages
- Configuring Linux to support the transport gateway
- Obtaining and installing the transport gateway
- Registering the transport gateway

## When to use the transport gateway

While the embedded nature of Call Home is a great benefit, it can also pose a challenge when security policy or network configuration do not allow direct communication between Call Home on managed devices and the Smart Call Home servers at Cisco.com.

In those cases, an optional transport gateway is available to act as a proxy for Smart Call Home messages. The transport gateway is a software package obtained from Cisco.com that can be installed on supported versions of Microsoft Windows, Linux, or Solaris. It is typically installed on a physical server and placed in the network where it can receive messages from managed devices and relay those messages to the Smart Call Home servers at Cisco.com.

The transport gateway is not required when:

- All devices can send messages directly to Cisco.com using either SMTP or HTTPS
- The encryption capabilities of all managed devices meet the customer's security requirements

The transport gateway is required when:

- Managed devices do not have direct access to Cisco.com
- An HTTP proxy server is required to reach Cisco.com
- Encryption is required for devices that support SMTP communication only

The transport gateway is desirable when:

- The customer wishes to inspect unencrypted traffic on the LAN while securely communicating over the Internet
- The customer wishes all outbound traffic to be sourced from a single device
- The customer does not wish to install a certificate on every managed device
- The customer wishes to use SMTP on the LAN while communicating securely over the Internet

## Email and the transport gateway

Data center devices, including the Cisco Nexus® 5000 and Cisco Unified Computing System™ Manager, currently support SMTP transport only. The [Cisco Smart Call Home User Guide](#) recommends the use of a dedicated email

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infrastructure rather than a generic email inbox on the customer's existing corporate email servers. This has several benefits:

- Eliminates external dependencies in the Smart Call Home fault path
- Prevents load on the customer's existing email infrastructure due to Smart Call Home message processing
- Satisfies security policies restricting generic email accounts

Installing email on the same server as the transport gateway has additional benefits:

- Eliminates dependencies on DNS
- Reduces the impact of network congestion on the Smart Call Home fault path

## Transport gateway solution

In this solution, a transport gateway is installed on a Cisco UCS<sup>®</sup> C200 running Red Hat Enterprise Linux 6.1 i386. The transport gateway receives messages from test devices and uses a HTTP proxy server to communicate with Cisco.com. A Cisco Nexus 7000 is configured to send messages to the transport gateway using HTTP.

### Test environment

The test lab contains the following devices:

- Cisco Nexus 1000v, 2000, 5000, 7000
- Cisco UCSM managing UCS-B and UCS-C series
- Stand alone Cisco UCS-C series
- Cisco MDS 9100
- Cisco Integrated Services Router (ISR)
- Cisco ASA

All interfaces, including management and switch virtual interfaces (SVI), share a single subnet. On layer three devices, Smart Call Home is configured to communicate via the management interface. All outbound traffic passes through a Cisco ASA. An HTTP proxy is required to reach Cisco.com. All of the devices are covered under active Cisco SMARTnet<sup>®</sup> contracts and all supported devices are registered with Smart Call Home.

The Cisco.com account used to register and manage devices and the Transport gateway in Smart Call Home represents a standard direct customer. The user's profile contains all of the SMARTnet contracts covering lab devices.

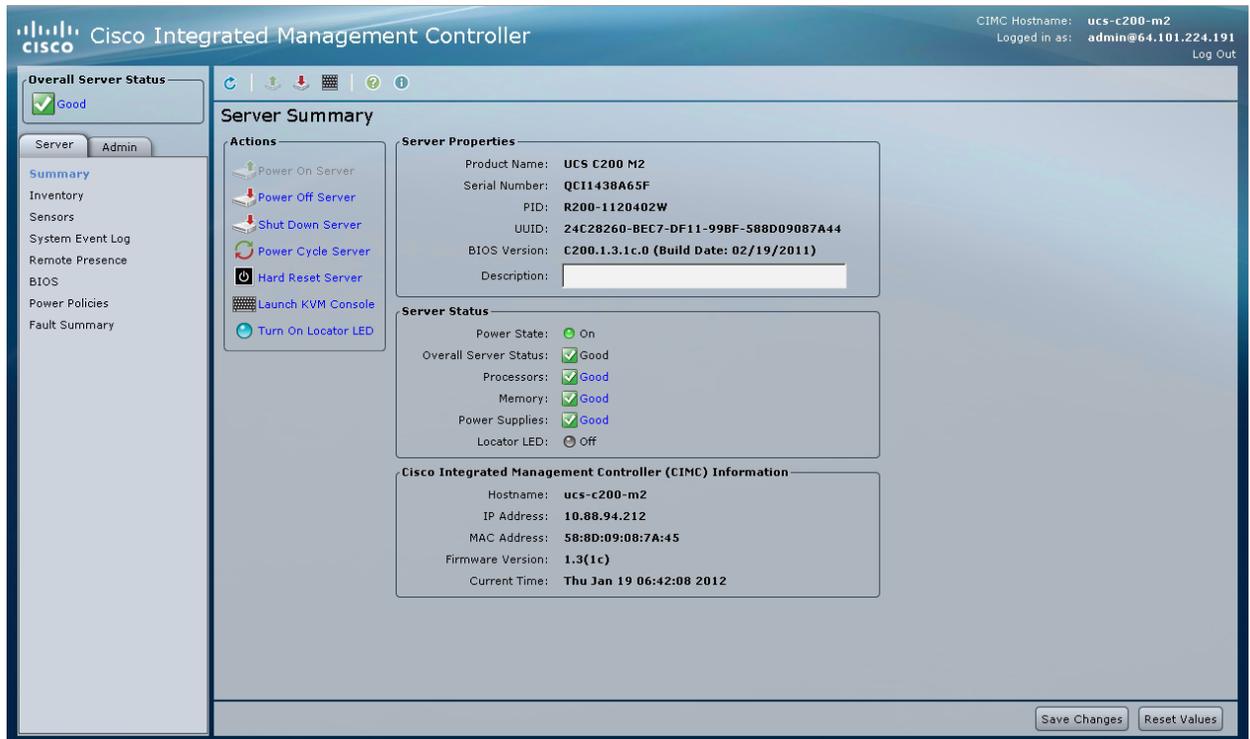
In this example, the Cisco Integrated Management Controller (CIMC) is used to mount the media and to provide keyboard, video, and mouse (KVM) for all GUI operations. Many server manufacturers provide a similar out-of-band management capability. Alternatively, physical media and a traditional console may be used.

### Operating System installation and configuration

To install and configure the Red Hat Linux operating system:

Step 1. Launch the CIMC in a browser and log in.

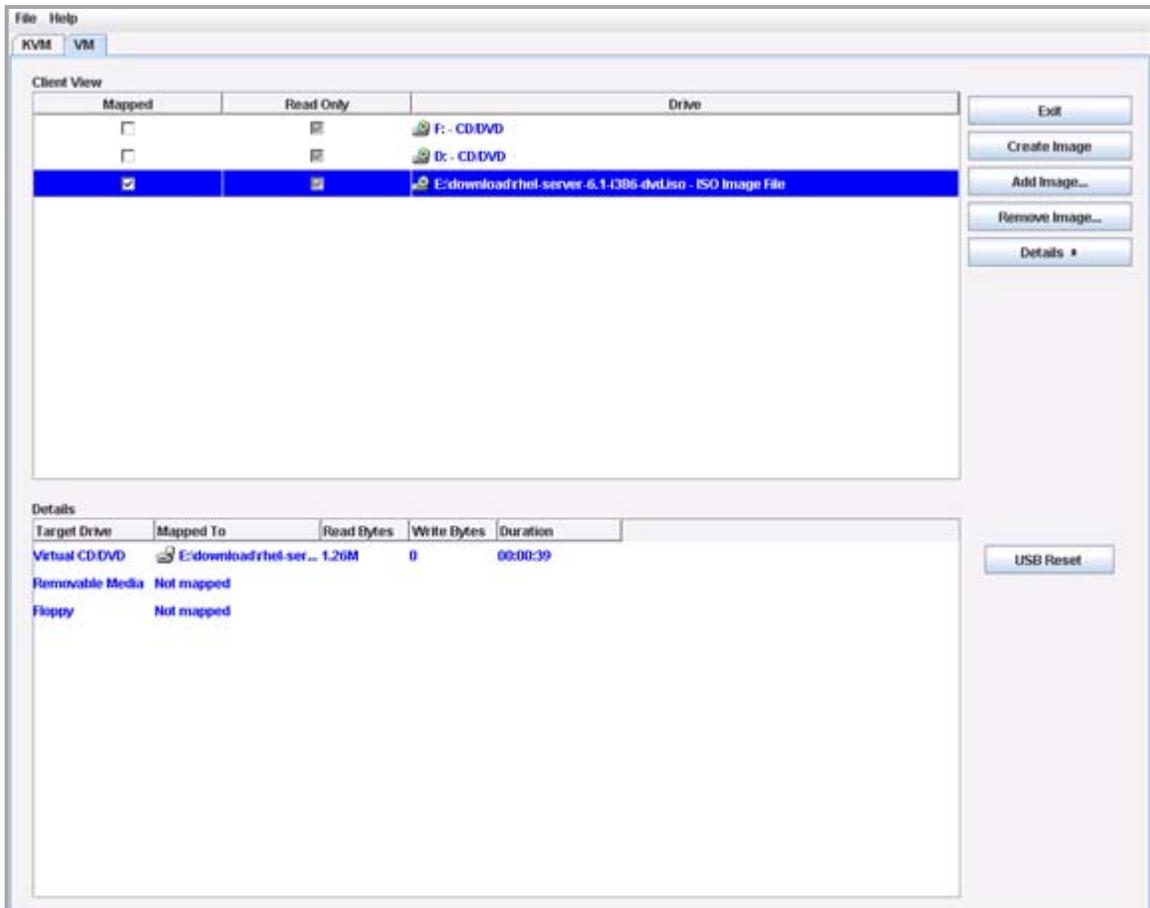
Figure 1. CIMC server summary screen



Step 2. Connect and mount the ISO for Red Hat Linux before booting the server.

Step 3. Launch the KVM console and power on the server. When prompted, choose to install Red Hat Linux. Retain the default values or change to follow your organization's standards (Figure 2).

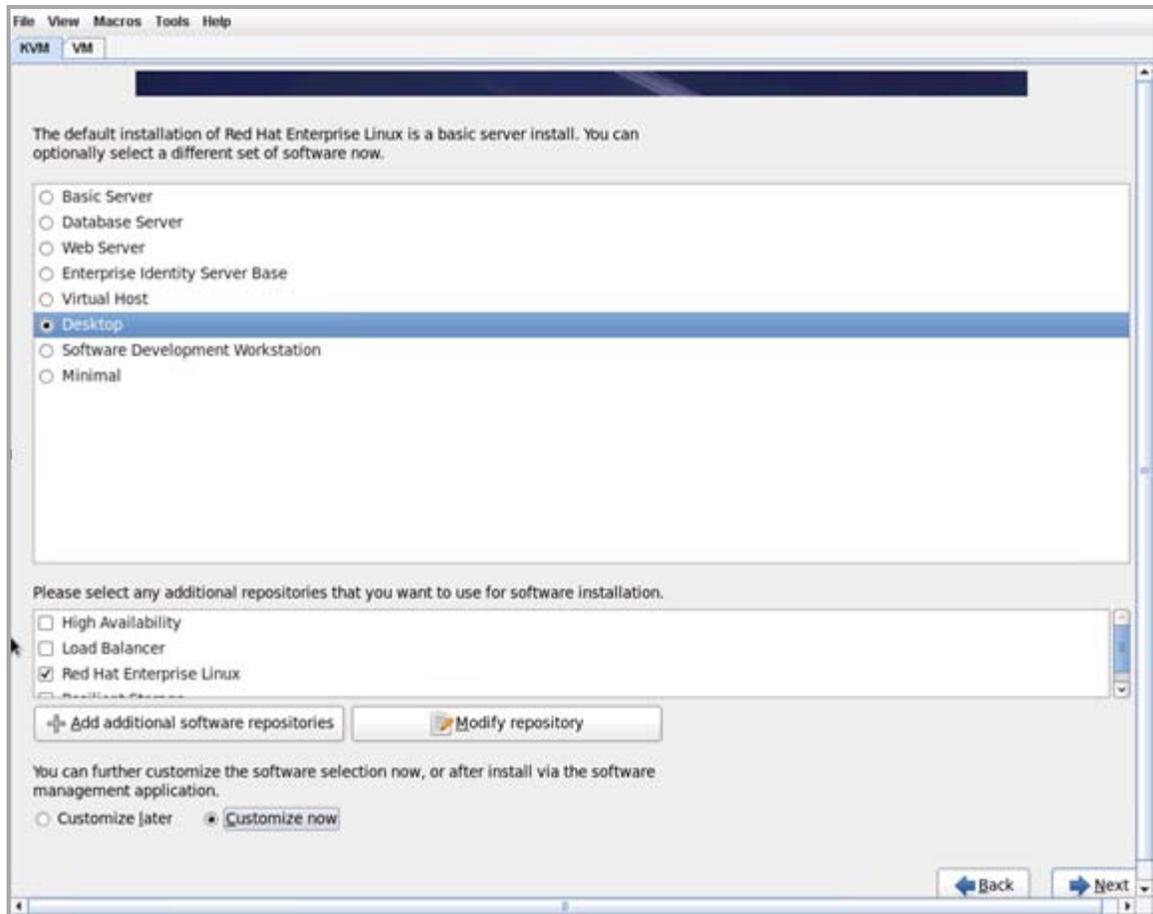
Figure 2. Default values for installation



Step 4. As shown in Figure 3, choose **Desktop** to satisfy most of the dependencies for the transport gateway.

Step 5. Choose **Customize Now** and click **Next**. A window with custom settings is displayed.

Figure 3. Installation parameters

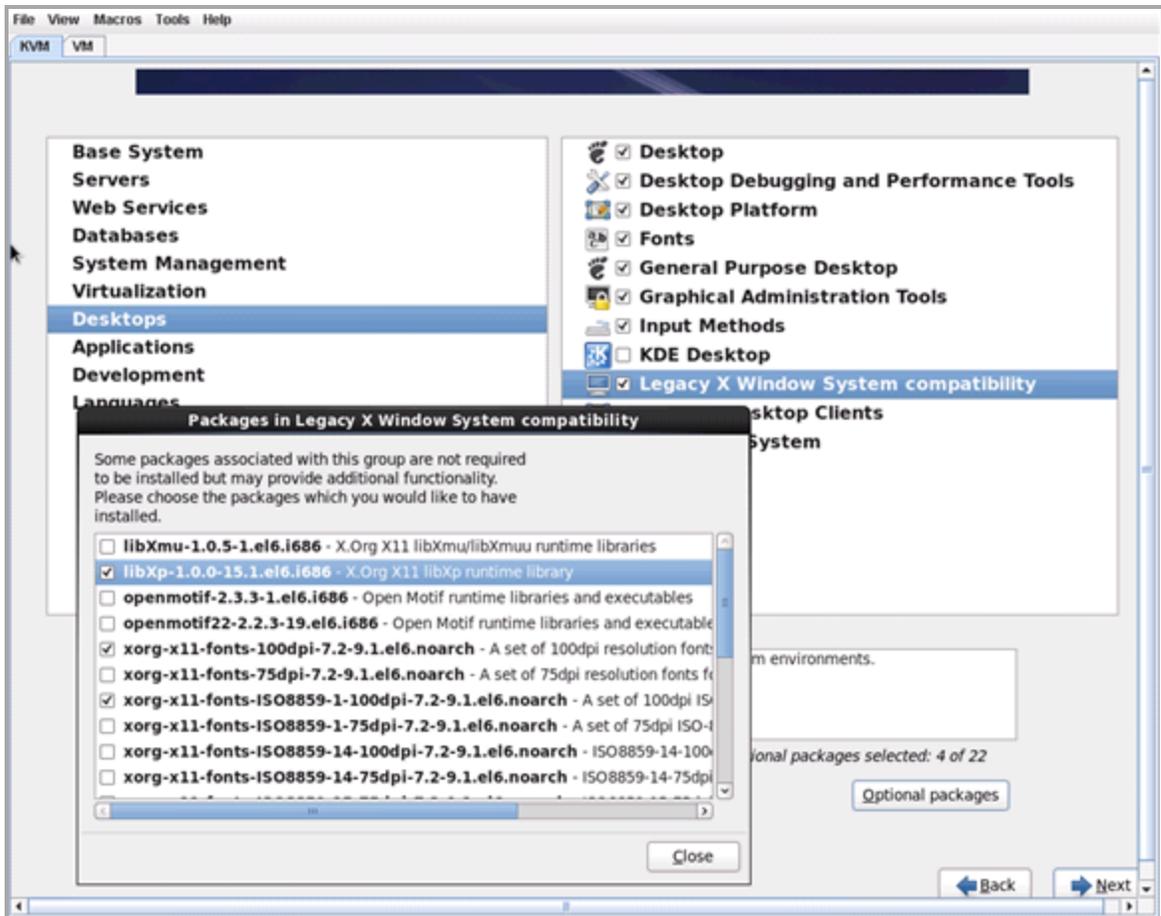


Step 6. The transport gateway installer and UI require the libXp libraries. To add this during installation, choose (Figure 4):

- **Desktops**
- **Legacy X Window System Compatibility**
- **Optional Packages**
- **libXp library**

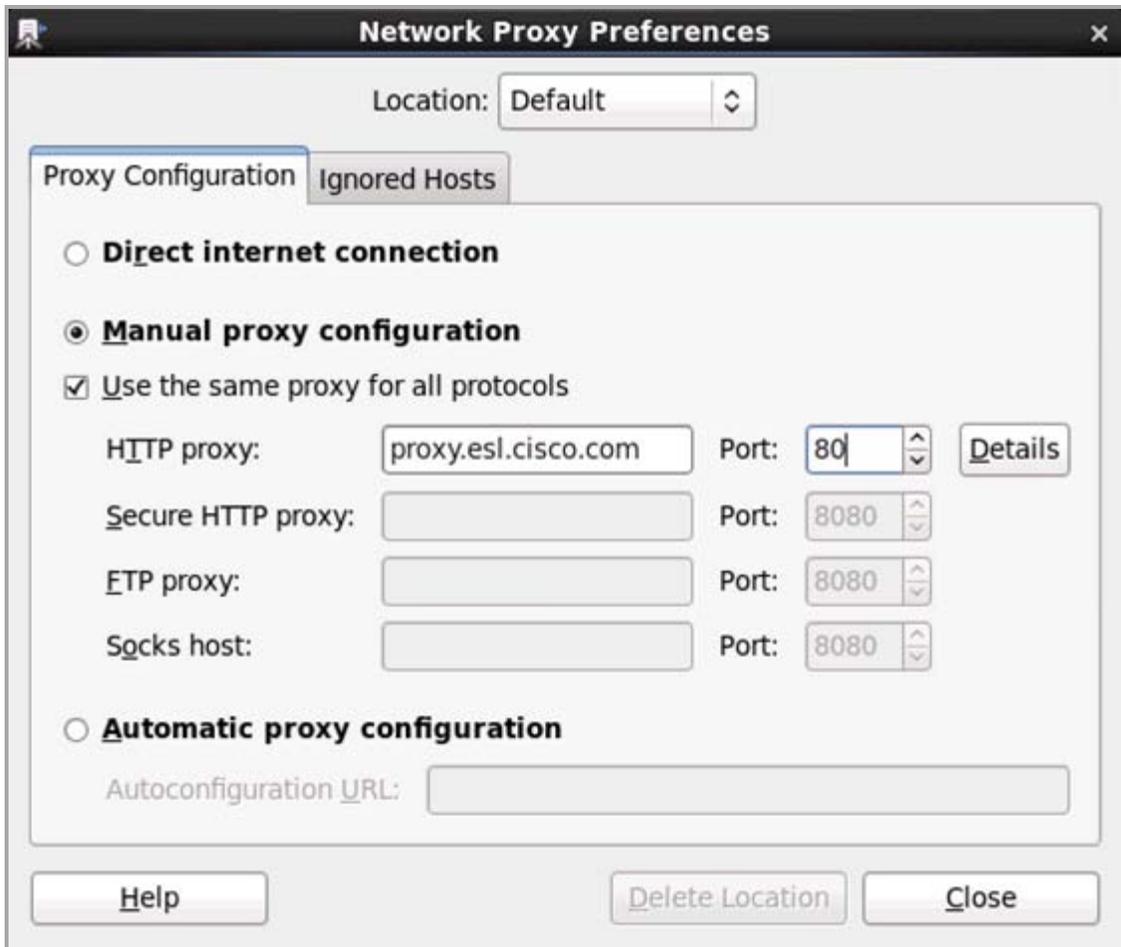
Step 7. Click **Close**.

Figure 4. Customized installation



- Step 8. Complete the installation of Linux, reboot, and perform an initial logon as root or another privileged user account in accordance with your security policies. In this example, the installation and configuration of the server and transport gateway is performed as root.
- Step 9. If a proxy server is required to reach Cisco.com, configure it now by selecting **System > Preferences > Network Proxy** as shown in Figure 5. Remember this setting for the configuration of the transport gateway later.

Figure 5. Network proxy configuration

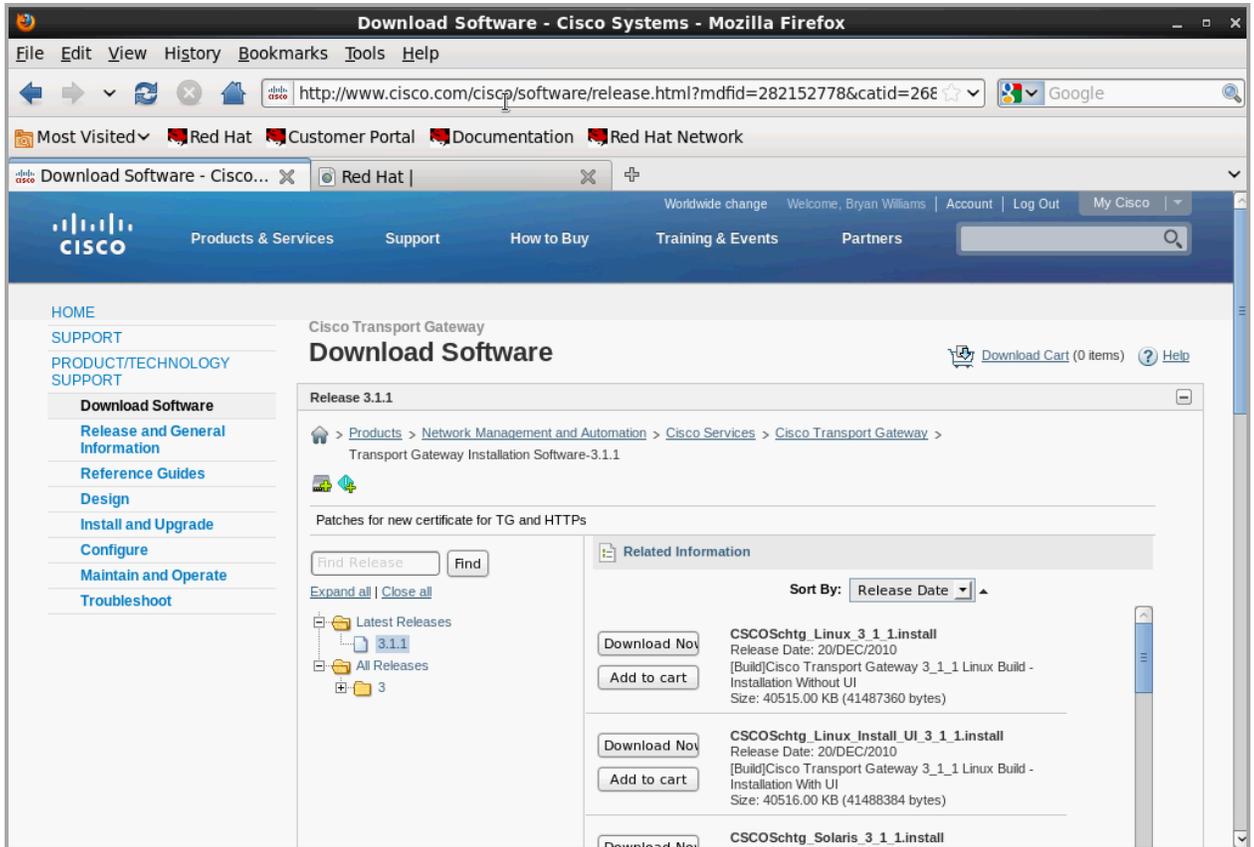


### Download, install, and configure the transport gateway

To download and install the transport gateway:

- Step 1. Download the latest transport gateway software. Browse to [support.cisco.com](http://support.cisco.com) and click the **Downloads** tab. Enter "Cisco Transport Gateway" in the search window and click **Find** (Figure 6).

Figure 6. Downloading the transport gateway



Step 2. Launch a terminal session and navigate to the directory where the installation file was saved.

Step 3. Execute the following commands before launching the installer or the configuration UI:

```
xhost +local:root
```

```
xhost + localhost
```

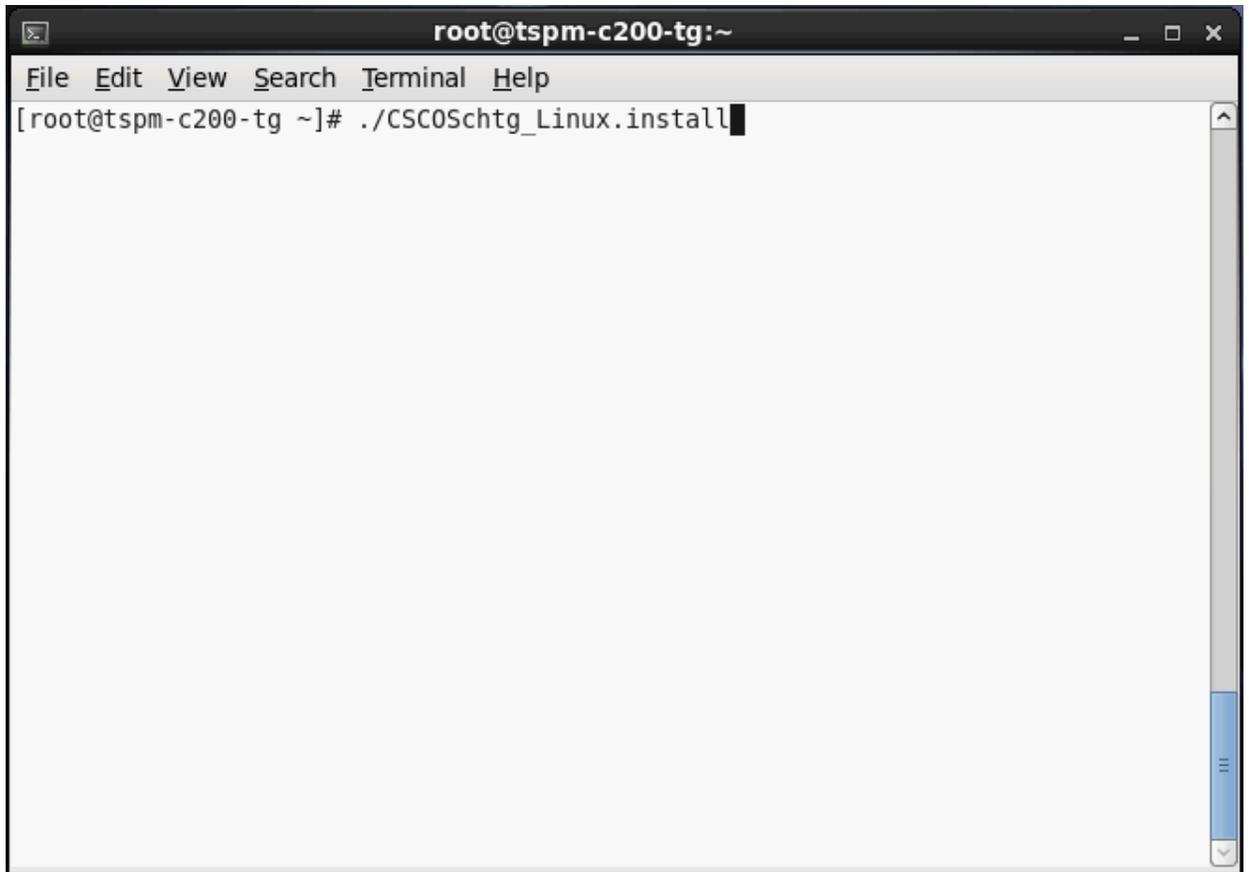
Step 4. Make the installer executable with the following commands:

```
chmod +x
```

```
./CSCOSchtg_Linux.install
```

Step 5. Launch the installer. Figures 7 through 9 show the sequence of screens as the transport gateway is installed.

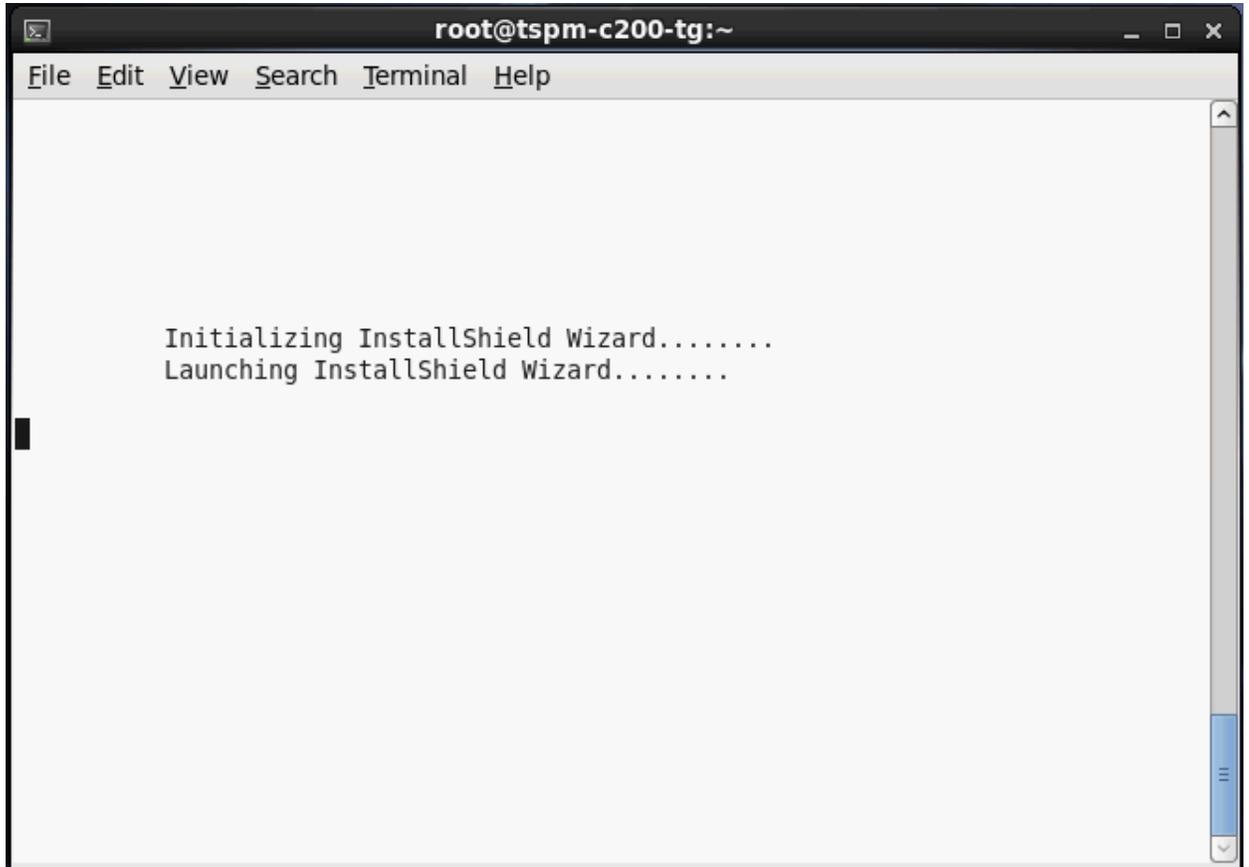
**Figure 7.** Command to launch the installer



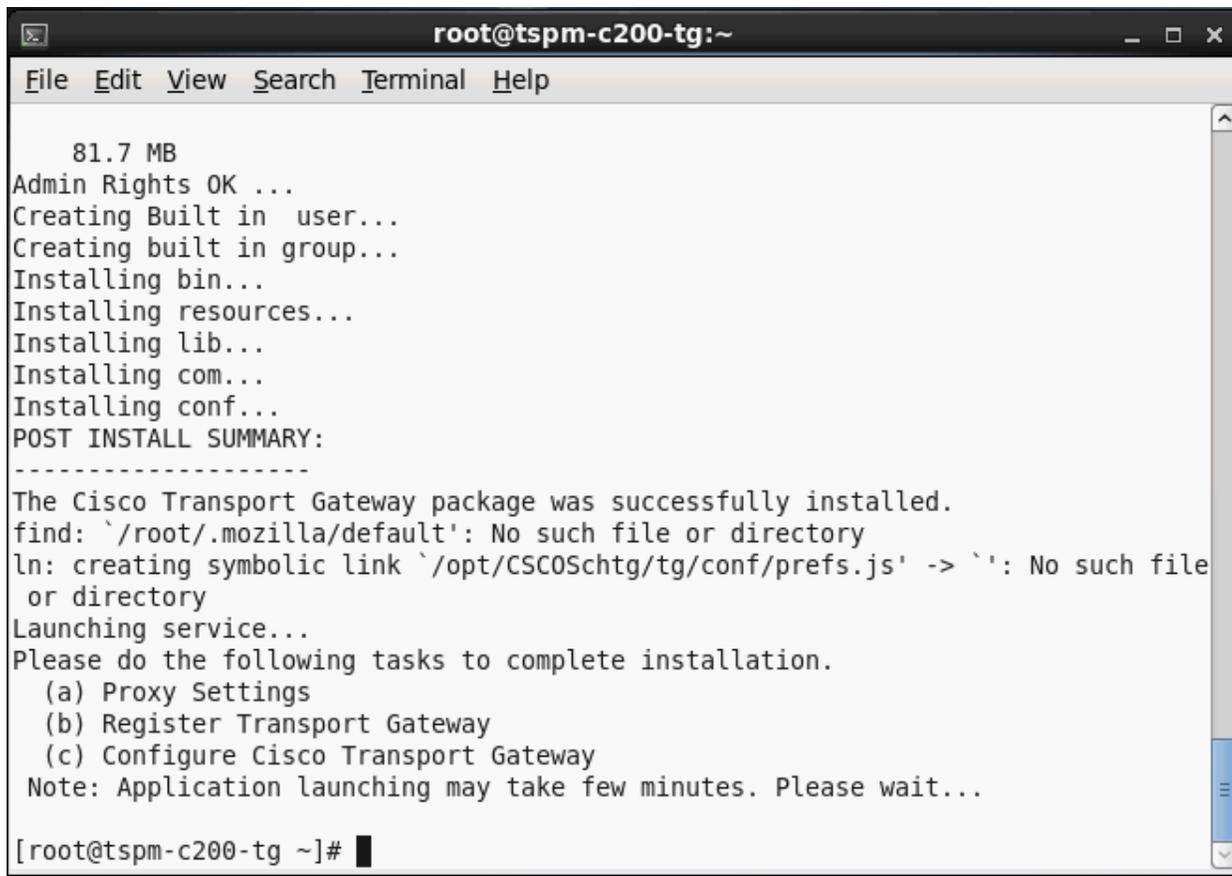
A terminal window titled "root@tspm-c200-tg:~" with a menu bar containing "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal prompt is "[root@tspm-c200-tg ~]# ./CSC0Schtg\_Linux.install" followed by a cursor. The window has standard window controls (minimize, maximize, close) in the top right corner and a vertical scrollbar on the right side.

```
root@tspm-c200-tg:~  
File Edit View Search Terminal Help  
[root@tspm-c200-tg ~]# ./CSC0Schtg_Linux.install
```

**Figure 8.** Initializing and launching InstallShield wizard



**Figure 9.** Installation and post install summary



```
root@tspm-c200-tg:~
File Edit View Search Terminal Help

81.7 MB
Admin Rights OK ...
Creating Built in user...
Creating built in group...
Installing bin...
Installing resources...
Installing lib...
Installing com...
Installing conf...
POST INSTALL SUMMARY:
-----
The Cisco Transport Gateway package was successfully installed.
find: `/root/.mozilla/default': No such file or directory
ln: creating symbolic link `/opt/CSCOSchtg/tg/conf/prefs.js' -> `': No such file
or directory
Launching service...
Please do the following tasks to complete installation.
(a) Proxy Settings
(b) Register Transport Gateway
(c) Configure Cisco Transport Gateway
Note: Application launching may take few minutes. Please wait...

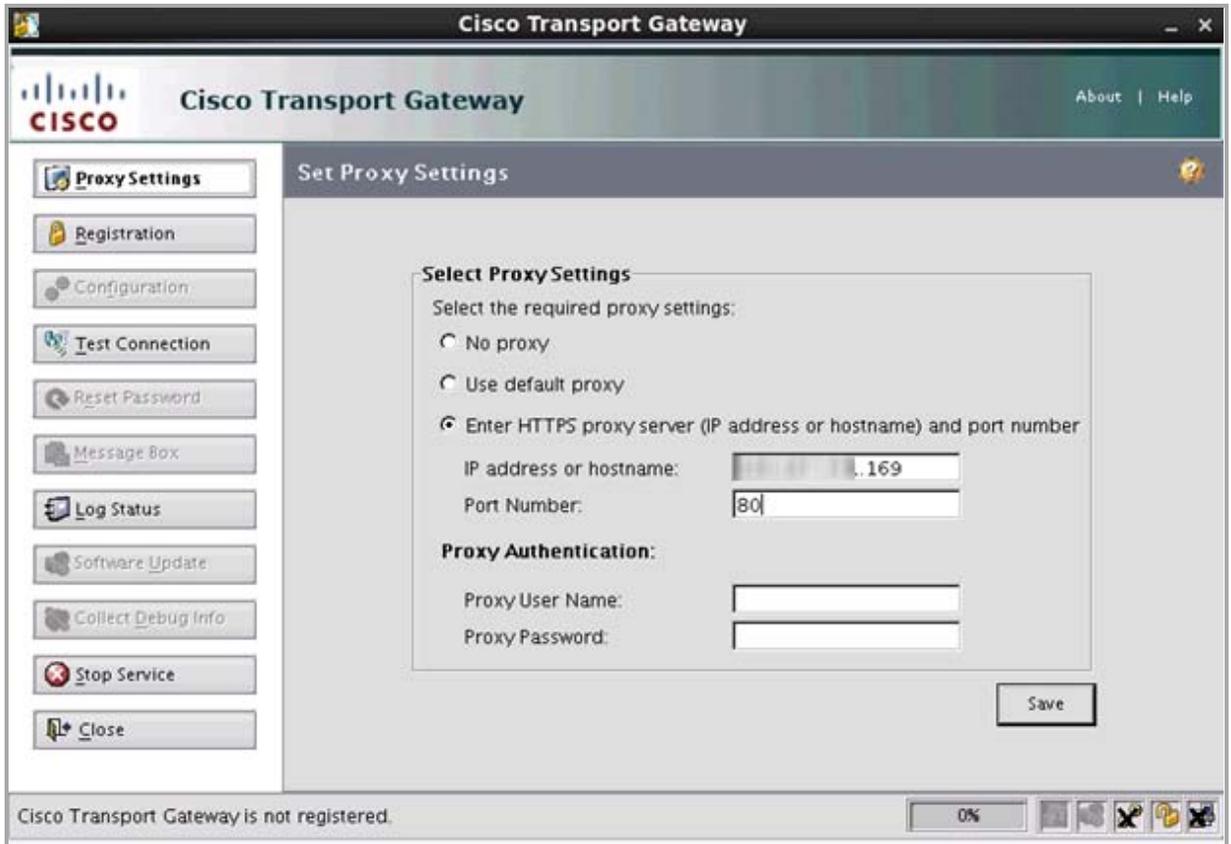
[root@tspm-c200-tg ~]#
```

When the installation is complete, the configuration UI launches automatically. This may take several minutes.

To configure the transport gateway:

- Step 1. The first configuration screen for the Cisco transport gateway allows you to specify an HTTP proxy for communication with the Smart Call Home servers at Cisco.com (Figure 10). Typically, the settings entered during the Linux installation are replicated here. Once configured, click **Save**.

Figure 10. Configure HTTP proxy

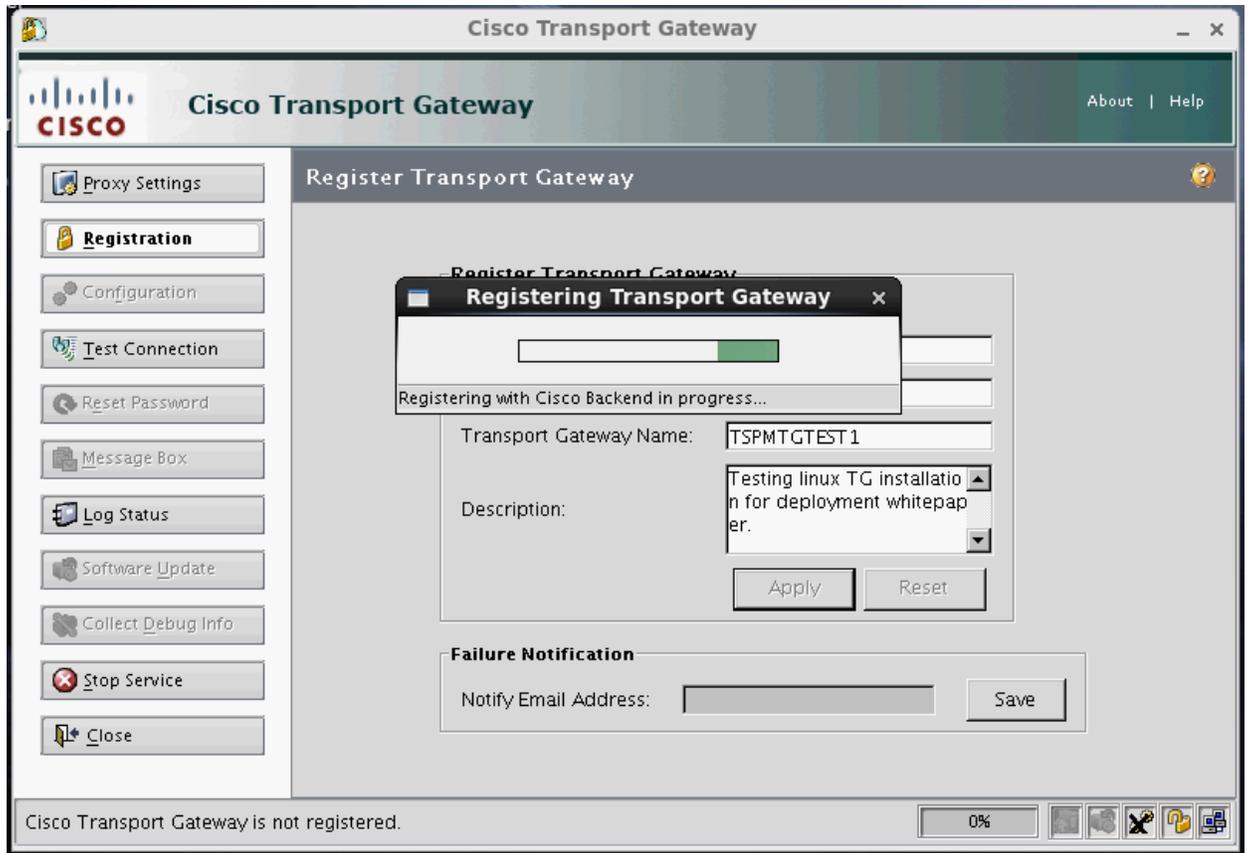


Step 2. After the Proxy server is configured, click **Test Connection** to test the connection to Cisco.com.

Step 3. Click **Registration** to register the transport gateway with the Smart Call Home servers.

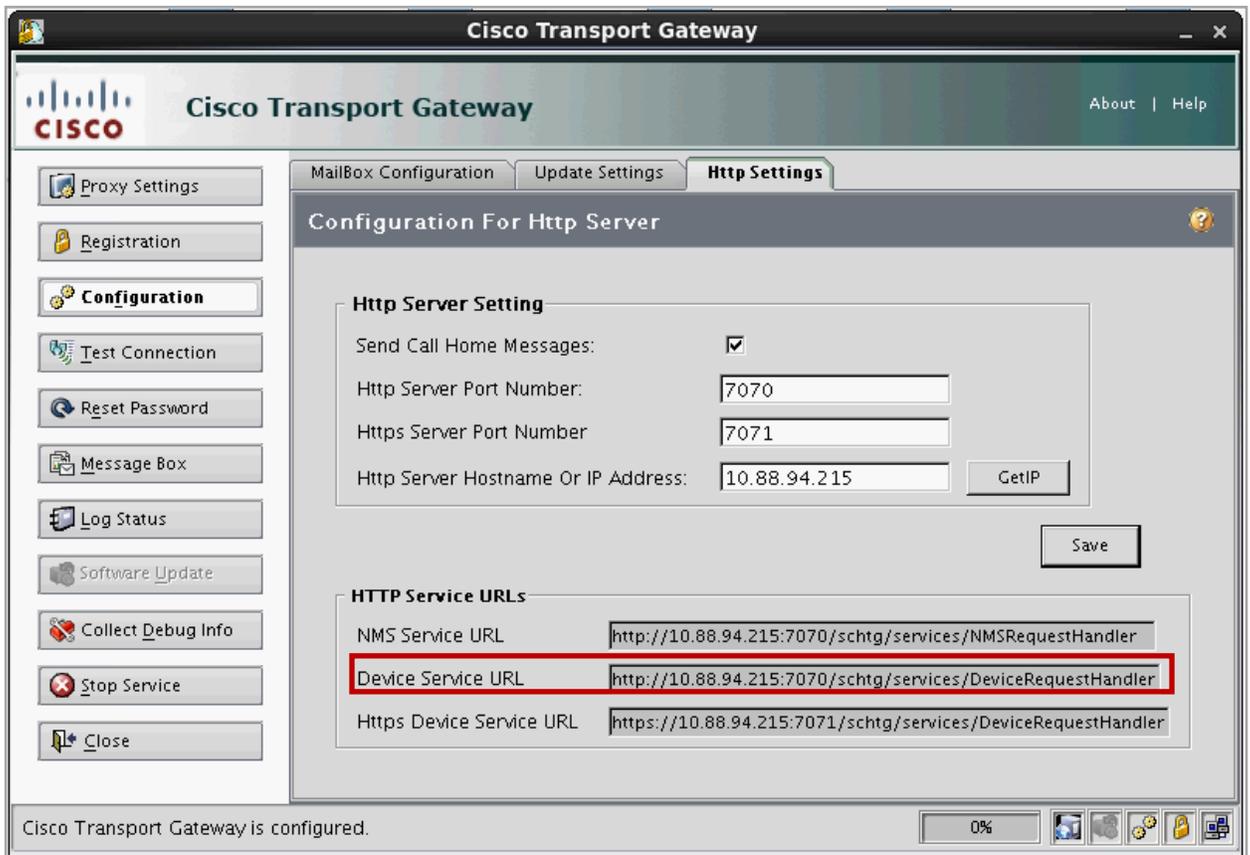
Step 4. Enter a name and description for the transport gateway and click **Apply** (Figure 11).

Figure 11. Registering the transport gateway



- Step 5. Once registration is complete, click **Save**.
- Step 6. Click **Configuration** and then click the **HTTP Settings** tab. Configure the ports on which the transport gateway will listen for messages from devices. Change the default values for HTTP and HTTPS server port numbers to 7070 and 7071 as shown in Figure 12. This avoids the reserved port range and potential conflicts with other software running on the server.
- Step 7. In the “Http Server Hostname Or IP Address” field, enter the external IP address of the server.
- Step 8. Click **Save**. Copy the “Device Service URL” from the transport gateway screen for use when configuring devices.
- Step 9. Launch the firewall configuration utility by going to **System > Administration > Firewall**.

Figure 12. Cisco transport gateway configuration settings



Step 10. Adjust the Linux firewall to accept connections on ports 7070 and 7071 (Figures 13 and 14).

Step 11. Click **Stop Service** to stop the transport gateway services and close the configuration utility. Return to the terminal session and launch the configuration utility by running **/opt/CSCOSchtg/tg/bin/configure.bin**.

Figure 13. Firewall configuration for port 7070

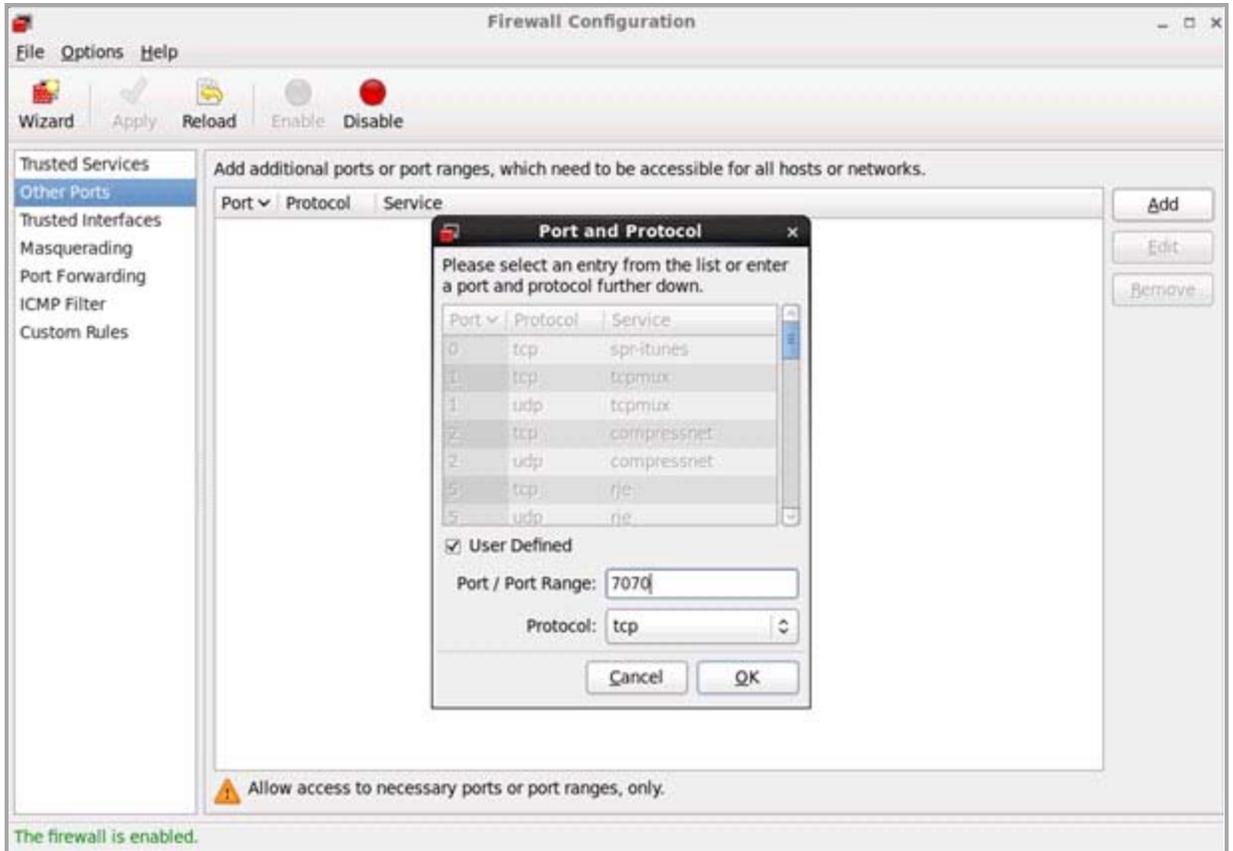
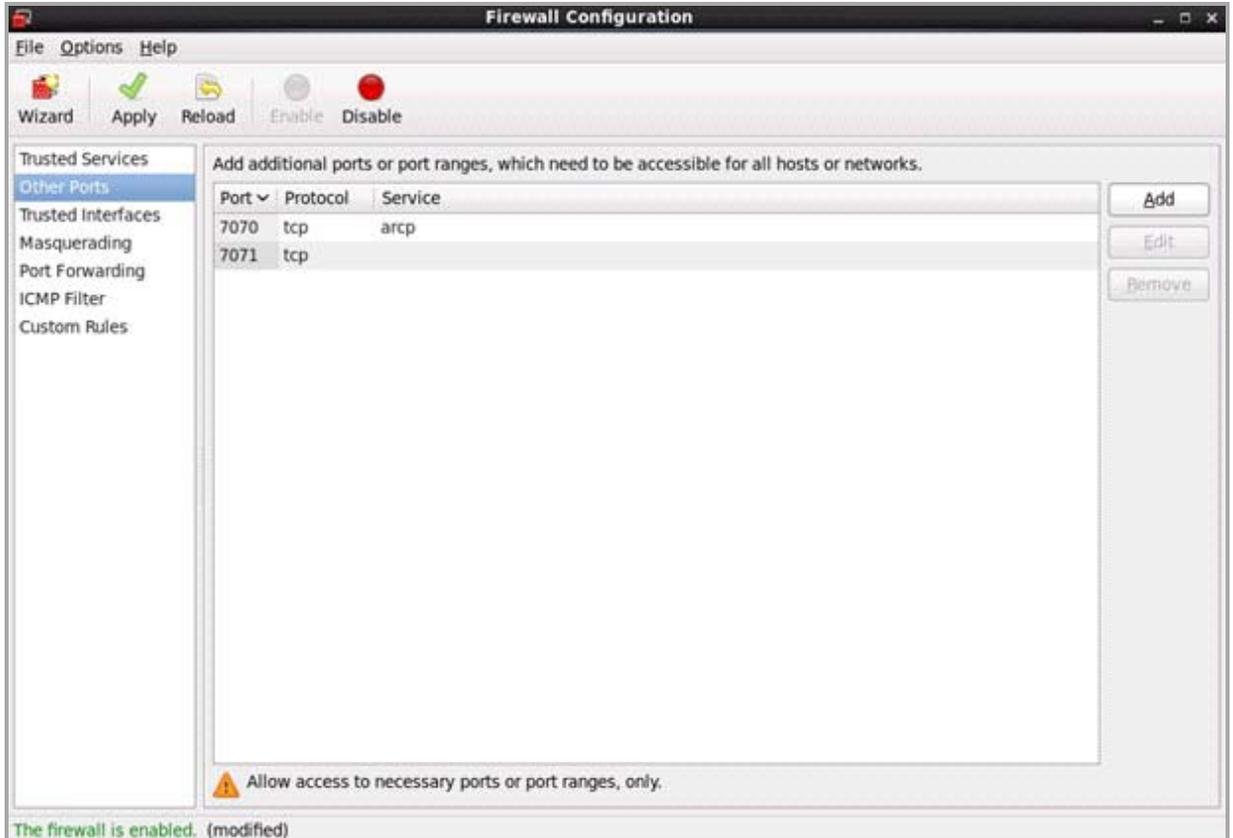


Figure 14. Completed firewall configuration



## Configuring a Nexus 7000 using the HTTP transport

Configure a device to send messages through the transport gateway using the HTTP protocol. If possible, choose a device that is already registered with Smart Call Home and verify that the device can send an inventory message to the Smart Call Home servers before modifying the configuration. Remove any existing destination-profile http targets and enter a new command with the URL copied from the transport gateway in Step 8. on page 15. In the example we use:

```
destination profile CiscoTAC-1 http http://10.88.94.215:7070/schtg/services/DeviceRequestHandler
```

Figure 15 is an example of this configuration.

Figure 15. Smart Call Home configuration example for sending messages through the transport gateway using HTTP

```
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such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
tspm-7010-1# sh run callhome

!Command: show running-config callhome
!Time: Thu Jan 19 05:05:35 2012

version 5.1(2)
callhome
  no periodic-inventory notification
  periodic-inventory notification interval 30

tspm-7010-1# conf t
Enter configuration commands, one per line. End with CNTL/Z.
tspm-7010-1(config)# callhome
email-contact @gmail.com
phone-contact +1-512-340-3000
streetaddress 9500 Amberglen
tspm-7010-1(config-callhome)# email-contact @gmail.com
destination-profile CiscoTAC-1 http http://10.88.94.215:7070/schtg/services/DeviceRequestHandler
transport email smtp-server .93.161 port 25 use-vrf default
enable
tspm-7010-1(config-callhome)# phone-contact +1-512-340-3000
tspm-7010-1(config-callhome)# streetaddress 9500 Amberglen
tspm-7010-1(config-callhome)# destination-profile CiscoTAC-1 transport-method http
tspm-7010-1(config-callhome)# destination-profile CiscoTAC-1 http http://10.88.94.215:7070/schtg/services/DeviceRequestHandler
tspm-7010-1(config-callhome)# transport email smtp-server .93.161 port 25 use-vrf default
tspm-7010-1(config-callhome)# enable
tspm-7010-1(config-callhome)# periodic-inventory notification interval 30
tspm-7010-1(config-callhome)# end
tspm-7010-1# copy running-config startup-config
[*****] 100%
Copy complete, now saving to disk (please wait)...
tspm-7010-1#
```

### Validating the HTTP transport

To test the path, send an inventory message from the device through the transport gateway. To do this, issue the command **callhome test inventory** (Figure 16) on the device.

Figure 16. Testing the path through the transport gateway

```
tspm-7010-1#
tspm-7010-1#
tspm-7010-1# callhome test inventory
trying to send test callhome inventory message
successfully sent test callhome inventory message
warning:
email configuration incomplete for destination profile:full_txt
email configuration incomplete for destination profile:short_txt
tspm-7010-1#
```

To verify that an inventory message was received from the test device, browse to the [Smart Call Home portal](#). Click the **Reports** link, and then click the **Call Home History Report** link. Fill in the appropriate parameters and click **Run Report** to verify that an inventory message was received from the test device.

Figure 17. Call Home history report results

Products & Services  
Smart Call Home

Reporting | Registration Management | Reports

Device Report | Call Home History Report | Registration Summary Report | Network Summary Report

**Call Home History Report Results** [Help](#)

Report Criteria:

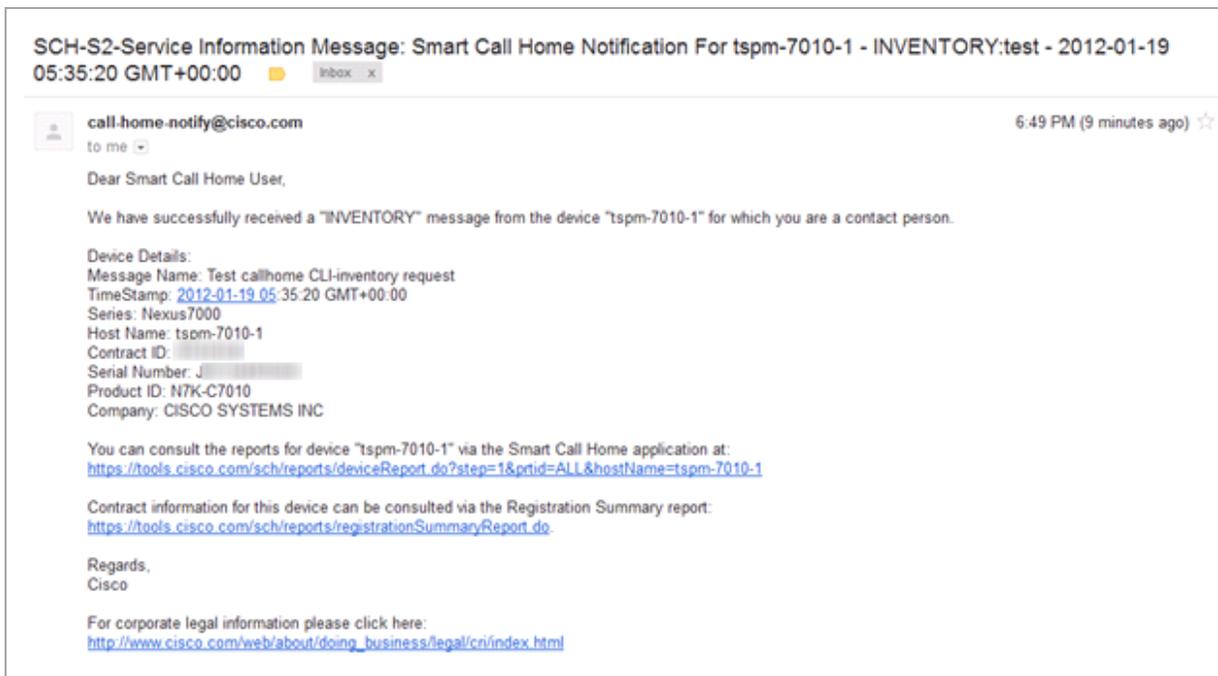
Company: CISCO SYSTEMS INC  
 Host Name: tspm-7010-1  
 Message Type: ALL  
 Message Processed:  
 From: 15-Jan-2012 12:00:00 AM  
 To: 15-Jan-2012 04:52:25 PM  
 Contract Numbers: ALL

Serial Number	Host Name	Time Message Processed (PST)	Product ID	Contract Number	Company Name	Serial Number Zoned	SR Contact	Message Severity Level	Message Type/Results	SR Based/Updated	Indication Set
	tspm-7010-1	15-Jan-2012 00:00:00 PST	N7K-C7010		CISCO SYSTEMS INC	Yes	Smart Service	2	Inventory	Not Applicable	No
	tspm-7010-1	15-Jan-2012 00:00:00 PST	N7K-C7010		CISCO SYSTEMS INC	Yes	Smart Service	2	Inventory	Not Applicable	No
	tspm-7010-1	15-Jan-2012 00:00:00 PST	N7K-C7010		CISCO SYSTEMS INC	Yes	Smart Service	2	Inventory	Not Applicable	No

Export Call Home Report: [Excel](#) | [PDF](#)

All admin contacts for the test device receive an email indicating that an inventory message was received. By default this email is delivered to the user that initially registers the test device (Figure 18).

Figure 18. Example inventory email



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## Conclusion

The transport gateway is an optional component of Smart Call Home that is used to securely proxy messages when direct connectivity from a managed device to Cisco.com is not possible.

In this white paper, we

- explored the need for the transport gateway in varying environments
- validated the installation and configuration of the transport gateway on Cisco UCS and Red Hat Linux

## For More Information

The Cisco [Smart Call Home website](#) offers a full range of online resources to help you use Smart Call Home. Please be sure to visit the award-winning [support website](#) and [support community](#). Join the [Cisco Support Community for Smart Call Home](#) to learn more about the capability by interacting with networking peers and experts worldwide.

For more information about Cisco Smart Call Home, visit [www.cisco.com/go/smartcall](http://www.cisco.com/go/smartcall).

For more information about Cisco SMARTnet Service, visit [www.cisco.com/go/smartnet](http://www.cisco.com/go/smartnet) or contact your local account representative.



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