

# **Configuring Communication Services**

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# **Enabling TLS Static Key Cipher**

Perform this procedure to enable TLS static key cipher for Cisco UCS servers. TLS static key cipher is disabled by default.



Note

You can enable this feature only through Cisco IMC CLI interface.

	Command or Action	Purpose
Step 1	Server# scope cimc	Enters the Cisco IMC command mode.
Step 2	Server /chassis # scope tls-config	Enters the TLS configuration mode.
Step 3	Server /chassis/tls-config # show detail	Displays the TLS Static Cipher Enabled status:
		TLS Configuration : TLS Static Cipher Enabled: no
Step 4	Server /chassis/tls-config # set static-cipher-enabled yes	Enables TLS cipher.

	Command or Action	Purpose
Step 5	Server /chassis/tls-config # commit	Following warning is displayed.  Warning: This will enable static ciphers in TLS. KVM, Webserver, XMLAPI and Redfish sessions will be disconnected. Do you wish to continue? [[Y]es/[N]o]
Step 6	Type <b>y</b> and press <b>Enter</b> .	Commits the transaction to the system configuration.

This example shows how to enable TLS static key cipher:

# **Configuring HTTP**

Beginning with release 4.1(2b), Cisco IMC supports separate HTTPS and HTTP communication services. You can disable only HTTP services using this functionality.

This functionality is supported only on the following servers:

- Cisco UCS C220 M5
- Cisco UCS C240 M5
- Cisco UCS C480 M5
- Cisco UCS C480 ML M5
- Cisco UCS C240 SD M5
- Cisco UCS C125 M5
- Cisco UCS S3260 M4/M5



Note

If **Redirect HTTP to HTTPS Enabled** was disabled in any release earlier than 4.1(2b), then after upgrading to release 4.1(2b) or later, **HTTP Enabled** value is set to **Disabled** by the system.

### Before you begin

You must log in as a user with admin privileges to configure HTTP.

#### **Procedure**

	Command or Action	Purpose
Step 1	Server# scope http	Enters the HTTP command mode.
Step 2	Server /http # set https-enabled {yes   no}	Enables the HTTPS services or disables both HTTPS and HTTP services on Cisco IMC.
Step 3	Server /http # set http-enabled {yes   no}	Enables or disables HTTP services on the Cisco IMC.
Step 4	Server /http # set http-port number	Sets the port to use for HTTP communication. The default is 80.
Step 5	Server /http # set https-port number	Sets the port to use for HTTPS communication. The default is 443.
Step 6	Server /http # set http-redirect {yes   no}	Note This option is applicable only when HTTP is enabled.
		Enables or disables the redirection of an HTTP request to HTTPS.
Step 7	Server /http # set timeout seconds	Sets the number of seconds to wait between HTTP requests before the Cisco IMC times out and terminates the session.
		Enter an integer between 60 and 10,800. The default is 1,800 seconds.
Step 8	Server /http # commit	Commits the transaction to the system configuration.

# **Example**

This example configures HTTP for the Cisco IMC:

```
Server# scope http
Server /http # set https-enabled yes
Server /http # set http-enabled yes
Server /http *# set http-port 80
Server /http *# set https-port 443
Server /http *# set http-redirect yes
Server /http *# set timeout 1800
```

```
Server /http *# commit
Server /http # show
HTTPP Port HTTPS Port Timeout Active Sessions HTTPS Enabled HTTP Redirected HT

TP Enabled
------
80 443 1800 0 yes yes yes
Server /http #
```

# **Configuring SSH**

### Before you begin

You must log in as a user with admin privileges to configure SSH.

#### **Procedure**

	Command or Action	Purpose
Step 1	Server# scope ssh	Enters the SSH command mode.
Step 2	Server /ssh # set enabled {yes   no}	Enables or disables SSH on the Cisco IMC.
Step 3	Server /ssh # set ssh-port number	Sets the port to use for secure shell access. The default is 22.
Step 4	Server /ssh # set timeout seconds	Sets the number of seconds to wait before the system considers an SSH request to have timed out.
		Enter an integer between 60 and 10,800. The default is 300 seconds.
Step 5	Server /ssh # commit	Commits the transaction to the system configuration.
Step 6	Server /ssh # show [detail]	(Optional) Displays the SSH configuration.

#### **Example**

This example configures SSH for the Cisco IMC:

# **Configuring XML API**

# **XML API for Cisco IMC**

The Cisco Cisco IMC XML application programming interface (API) is a programmatic interface to Cisco IMC for a C-Series Rack-Mount Server. The API accepts XML documents through HTTP or HTTPS.

For detailed information about the XML API, see *Cisco UCS Rack-Mount Servers Cisco IMC XML API Programmer's Guide*.

# **Enabling XML API**

## Before you begin

You must log in as a user with admin privileges to perform this task.

#### **Procedure**

	Command or Action	Purpose
Step 1	Server# scope xmlapi	Enters XML API command mode.
Step 2	Server /xmlapi # set enabled {yes   no}	Enables or disables XML API control of Cisco IMC.
Step 3	Server /xmlapi # commit	Commits the transaction to the system configuration.

#### **Example**

This example enables XML API control of Cisco IMC and commits the transaction:

```
Server# scope xmlapi
Server /xmlapi # set enabled yes
Server /xmlapi *# commit
Server /xmlapi # show detail
XMLAPI Settings:
    Enabled: yes
    Active Sessions: 0
    Max Sessions: 4

Server /xmlapi #
```

# **Enabling Redfish**

# Before you begin

You must log in as a user with admin privileges to perform this task.

#### **Procedure**

	Command or Action	Purpose
Step 1	Server# scope redfish	Enters redfish command mode.
Step 2	Server /redfish # set enabled {yes   no}	Enables or disables redfish control of Cisco IMC.
Step 3	Server /redfish* # commit	Commits the transaction to the system configuration.

### **Example**

This example enables redfish control of Cisco IMC and commits the transaction:

```
Server# scope redfish
Server /redfish # set enabled yes
Server /redfish *# commit
Server /redfish # show detail
REDFISH Settings:
    Enabled: yes
    Active Sessions: 0
    Max Sessions: 4

Server /redfish #
```

# **Configuring IPMI**

# **IPMI Over LAN**

Intelligent Platform Management Interface (IPMI) defines the protocols for interfacing with a service processor embedded in a server platform. This service processor is called a Baseboard Management Controller (BMC) and resides on the server motherboard. The BMC links to a main processor and other on-board elements using a simple serial bus.

During normal operations, IPMI lets a server operating system obtain information about system health and control system hardware. For example, IPMI enables the monitoring of sensors, such as temperature, fan speeds and voltages, for proactive problem detection. If server temperature rises above specified levels, the server operating system can direct the BMC to increase fan speed or reduce processor speed to address the problem.

# **Configuring IPMI over LAN for Cisco IMC**

Configure IPMI over LAN when you want to manage the Cisco IMC with IPMI messages.

#### Before you begin

You must log in with admin privileges to perform this task.

	Command or Action	Purpose
Step 1	Server # scope server {1   2}	Enters server command mode of server 1 or 2.
Step 2	Server /server # scope ipmi	Enters the IPMI command mode.
Step 3	Server/server/ipmi # set enabled {yes   no}	Enables or disables IPMI access on this server.
Step 4	Server/server/ipmi # set privilege-level {readonly   user   admin}	Specifies the highest privilege level that can be assigned to an IPMI session on this server. This can be:
		• readonly — IPMI users can view information but cannot make any changes. If you select this option, IPMI users with the "Administrator", "Operator", or "User" user roles can only create read-only IPMI sessions, regardless of their other IPMI privileges.
		• user — IPMI users can perform some functions but cannot perform administrative tasks. If you select this option, IPMI users with the "Administrator" or "Operator" user role can create user and read-only sessions on this server.
		• admin — IPMI users can perform all available actions. If you select this option, IPMI users with the "Administrator" user role can create admin, user, and read-only sessions on this server.
Step 5	Server/server/ipmi # set encryption-key key	Sets the IPMI encryption key to use for IPMI communications. The key value must be 40 hexadecimal numbers.
Step 6	Server/server/ipmi # commit	Commits the transaction to the system configuration.
Step 7	Server/server/ipmi # randomise-key	Sets the IPMI encryption key to a random value.
		Note You can perform the Step 6 action instead of Steps 4 and 5.
Step 8	At the prompt, enter <b>y</b> to randomize the encryption key.	Sets the IPMI encryption key to a random value.

This example configures IPMI over LAN for the Cisco IMC:

```
Server # scope server 1
Server /server # scope ipmi
Server /server/ipmi # set enabled yes
Server /server/ipmi *# set privilege-level admin
Server /server/ipmi *# set encryption-key abcdef01234567890abcdef01234567890abcdef
Server /server/ipmi *# commit
Server /server/ipmi *# show
Enabled Encryption Key
                                                Privilege Level Limit
      ABCDEF01234567890ABCDEF01234567890ABCDEF admin
Server /server/ipmi # randomise-key
This operation will change the IPMI Encryption Key to a random value
Continue?[y|N]y
Setting IPMI Encryption Key to a random value...
Server /server/ipmi # show
Enabled Encryption Key
                                                Privilege Level Limit
      abcdef01234567890abcdef01234567890abcdef admin
Server /server/ipmi #
```

# **Configuring IPMI over LAN for CMCs**

Configure IPMI over LAN when you want to manage the CMC with IPMI messages.

#### Before you begin

You must log in with admin privileges to perform this task.

	Command or Action	Purpose
Step 1	Server # scope chassis	Enters server command mode of server 1 or 2.
Step 2	Server /chassis # scope cmc {1   2}	Enters CMC command mode.
Step 3	Server /server # scope ipmi	Enters the IPMI command mode.
Step 4	Server /chassis/cmc/ipmi # set enabled {yes   no}	Enables or disables IPMI access on this server.
Step 5	Server/chassis/cmc/ipmi # set privilege-level {readonly   user   admin}	Specifies the highest privilege level that can be assigned to an IPMI session on this server. This can be:
		• readonly — IPMI users can view information but cannot make any changes. If you select this option, IPMI users with the "Administrator", "Operator", or "User"

	Command or Action	Purpose
		user roles can only create read-only IPMI sessions, regardless of their other IPMI privileges.
		• user — IPMI users can perform some functions but cannot perform administrative tasks. If you select this option, IPMI users with the "Administrator" or "Operator" user role can create user and read-only sessions on this server.
		• admin — IPMI users can perform all available actions. If you select this option, IPMI users with the "Administrator" user role can create admin, user, and read-only sessions on this server.
Step 6	Server/chassis/cmc/ipmi# set encryption-key key	Sets the IPMI encryption key to use for IPMI communications. The key value must be 40 hexadecimal numbers.
Step 7	Server /chassis/cmc/ipmi # commit	Commits the transaction to the system configuration.
Step 8	Server /chassis/cmc/ipmi # randomise-key	Sets the IPMI encryption key to a random value.  Note You can perform the Step 6 action instead of Steps 4 and 5.
Step 9	At the prompt, enter <b>y</b> to randomize the encryption key.	Sets the IPMI encryption key to a random value.

This example configures IPMI over LAN for the CMC 1:

Server /chassis/cmc/ipmi # show

Enabled Encryption Key Privilege Level Limit

yes abcdef01234567890abcdef01234567890abcdef admin

Server /chassis/cmc/ipmi #

# **Configuring SNMP**

# **SNMP**

The Cisco UCS C-Series Rack-Mount Servers support the Simple Network Management Protocol (SNMP) for viewing server configuration and status and for sending fault and alert information by SNMP traps. For information on Management Information Base (MIB) files supported by Cisco IMC, see the *MIB Quick Reference for Cisco UCS* at this URL: <a href="http://www.cisco.com/c/en/us/td/docs/unified\_computing/ucs/sw/mib/b-series/b\_UCS\_MIBRef.html">http://www.cisco.com/c/en/us/td/docs/unified\_computing/ucs/sw/mib/b-series/b\_UCS\_MIBRef.html</a>.

Beginning with release 4.1(3b), Cisco IMC introduces enhanced authentication protocol for SNMP v3 version. SNMP v3 users cannot be added with **DES** security protocol.

Cisco IMC GUI displays a warning when you select an existing v3 version with unsupported security level, authentication type, or privacy type. You may select and modify the user details.

# **Configuring SNMP Properties**

## Before you begin

You must log in as a user with admin privileges to perform this task.

	Command or Action	Purpose
Step 1	Server# scope snmp	Enters SNMP command mode.
Step 2	Server /snmp # set enabled {yes   no}	Enables or disables SNMP.
		Note SNMP must be enabled and saved before additional SNMP configuration commands are accepted.
Step 3	Server /snmp # commit	Commits the transaction to the system configuration.
Step 4	Server /snmp # set enable-serial-num {yes   no}	Prefixes the traps with the serial number of the server.
Step 5	Server /snmp # set snmp-port port number	Sets the port number on which the SNMP agent runs. You can choose a number within

	Command or Action	Purpose
		the range 1 to 65535. The default port number is 161.
		Note The port numbers that are reserved for system calls, such as 22,23,80,123,443,623,389,636,3268,3 and 2068, cannot be used as an SNM port.
Step 6	Server/snmp# set community-str community	Specifies the default SNMP v1 or v2c community name that Cisco IMC includes on any trap messages it sends to the SNMP host. The name can be up to 18 characters.
Step 7	Server /snmp # set community-access	This can be one of the following: Disabled, Limited, or Full.
Step 8	Server /snmp # set trap-community-str	Specifies the SNMP community group to which trap information should be sent. The name can be up to 18 characters
Step 9	Server /snmp # set sys-contact contact	Specifies the system contact person responsible for the SNMP implementation. The contact information can be up to 254 characters, such as an email address or a name and telephone number. To enter a value that contains spaces, you must enclose the entry with quotation marks.
Step 10	Server /snmp # set sys-location location	Specifies the location of the host on which the SNMP agent (server) runs. The location information can be up to 254 characters. To enter a value that contains spaces, you must enclose the entry with quotation marks.
Step 11	Server /snmp # commit	Commits the transaction to the system configuration.

This example configures the SNMP properties and commits the transaction:

```
Server /snmp # show detail
SNMP Settings:
    SNMP Port: 20000
    System Contact: User Name <username@example.com> +1-408-555-1212
    System Location: San Jose, California
    SNMP Community: cimcpublic
    SNMP Trap Community: public
    SNMP Community access: Full
    Enabled: yes
    Serial Number Enabled: yes
Server /snmp #
```

#### What to do next

Configure SNMP trap settings as described in Configuring SNMP Trap Settings, on page 12.

# **Configuring SNMP Trap Settings**

## Before you begin

- You must log in with admin privileges to perform this task.
- SNMP must be enabled and saved before trap settings can be configured.

	Command or Action	Purpose	
Step 1	Server# scope snmp	Enters the SNMP command mode.	
Step 2	Server/snmp#scope trap-destinations number	Enters the SNMP trap destination command mode for the specified destination. Four SNMP trap destinations are available. The destination <i>number</i> is an integer between 1 and 15.	
Step 3	Server /snmp/trap-destinations # set enabled {yes   no}	Enables or disables the SNMP trap destination.	
Step 4	Server /snmp/trap-destinations # set version $\{  2 3 \}$	Specify the desired SNMP version of the trap message.	
		Note SNMPv3 traps will be delivered only to locations where the SNMPv3 user and key values are configured correctly.	
Step 5	Server/snmp/trap-destinations # set type {trap   inform}	Specifies whether SNMP notification messages are sent as simple traps or as inform requests requiring acknowledgment by the receiver.	
		Note The inform option can be chosen only for V2 users.	

	Command or Action	Purpose
Step 6	Server /snmp/trap-destinations # set user user	Note While Configuring SNMP v3 version, you cannot use SNMP users with Encryption Method set as <b>DES</b> .
Step 7	Server /snmp/trap-destination # set trap-addr trap destination address	Specifies the trap destination address to which the trap information is sent. You can set an IPv4 or IPv6 address or a domain name as the trap destination.
		When IPv6 is enabled, the SNMP Trap destination source address can either be the SLAAC IPv6 address (if available) or a user assigned IPv6 address. Both these are valid SNMP IPv6 destination addresses that uniquely identify the server.
Step 8	Server/snmp/trap-destinations # set trap-port trap destination port	Sets the port number the server uses to communicate with the trap destination. You can choose a number within the range 1 to 65535.
Step 9	Server /snmp/trap-destination # commit	Commits the transaction to the system configuration.

This example configures general SNMP trap settings and trap destination number 1 and commits the transaction:

```
Server# scope snmp
Server /snmp # Scope trap-destinations 1
Server /snmp/trap-destination *# set enabled yes
Server /snmp/trap-destination *# set version 2
Server /snmp/trap-destination *# set type inform
Server /snmp/trap-destination *# set user user1
Server /snmp/trap-destination *# set trap-addr www.cisco.com
Server /snmp/trap-destination *# set trap-port 10000
Server /snmp/trap-destination *# commit
Server /snmp/trap-destination # show detail
Trap Destination 1:
   Enabled: yes
   SNMP version: 2
   Trap type: inform
   SNMP user: user1
   Trap Address: www.cisco.com
   Trap Port: 10000
   Delete Trap: no
Server /snmp/trap-destination #
```

# **Sending a Test SNMP Trap Message**

## Before you begin

You must log in with admin privileges to perform this task.

### **Procedure**

	Command or Action	Purpose	
Step 1	Server# scope snmp	Enters tl	ne SNMP command mode.
Step 2	Server/snmp# send-test-trap		rap destination that are enabled.  The trap must be configured and enabled in order to send a test message.

#### **Example**

This example sends a test message to all the enabled SNMP trap destinations:

```
Server# scope snmp
Server /snmp # send-test-trap
SNMP Test Trap sent to the destination.
Server /snmp #
```

# **Configuring SNMPv3 Users**

### Before you begin

- You must log in as a user with admin privileges to perform this task.
- SNMP must be enabled and saved before these configuration commands are accepted.

	Command or Action	Purpose
Step 1	Server# scope snmp	Enters the SNMP command mode.
Step 2	Server /snmp # scope v3users number	Enters the SNMPv3 users command mode for the specified user number.
Step 3	Server /snmp/v3users # set v3add {yes   no}	Adds or deletes an SNMPv3 user. This can be one of the following:
		• yes—This user is enabled as an SNMPv3 user and is allowed to access the SNMP OID tree.

	Command or Action	Purpose
		Note  The security name and security level must also be configured at this time or the user addition will fail.
		• no—This user configuration is deleted.
Step 4	Server /snmp/v3users # set v3security-name security-name	Enter an SNMP username for this user.
Step 5	Server /snmp/v3users # set v3security-level {noauthnopriv   authnopriv   authpriv}	Select a security level for this user. This can be one of the following:
		<ul> <li>noauthnopriv—The user does not require an authorization or privacy password.</li> <li>authnopriv—The user requires an authorization password but not a privacy password. If you select this option, you must configure an authentication key.</li> <li>authpriv—The user requires both an authorization password and a privacy password. If you select this option, you must configure an authentication key and a private encryption key.</li> </ul>
		Note For a v3 version, only authnopriv and authpriv security levels are available.
Step 6	Server /snmp/v3users # set v3proto {MD5   SHA}	Note For a v3 version, only SHA authentication methods are available.
		Select an authentication protocol for this user.
Step 7	Server /snmp/v3users # <b>set v3auth-key</b> <i>auth-key</i>	Enter an authorization password for this user.
Step 8	Server /snmp/v3users # set v3priv-proto {DES   AES}	Note For a v3 version, only AES option is available.
		Select an encryption protocol for this user.
Step 9	Server /snmp/v3users # <b>set v3priv-auth-key</b> <i>priv-auth-key</i>	Enter a private encryption key (privacy password) for this user.
Step 10	Server /snmp/v3users # commit	Commits the transaction to the system configuration.

This example configures SNMPv3 user number 2 and commits the transaction:

```
Server# scope snmp
Server /snmp # scope v3users 2
Server /snmp/v3users # set v3add yes
Server /snmp/v3users *# set v3security-name ucsSNMPV3user
Server /snmp/v3users *# set v3security-level authpriv
Server /snmp/v3users *# set v3proto SHA
Server /snmp/v3users *# set v3auth-key
Please enter v3auth-key:ex4mp1ek3y
Please confirm v3auth-key:ex4mplek3y
Server /snmp/v3users *# set v3priv-proto AES
Server /snmp/v3users *# set v3priv-auth-key
Please enter v3priv-auth-key:!1@2#3$4%5^6&7*8
Please confirm v3priv-auth-key: !1@2#3$4%5^6&7*8
Server /snmp/v3users *# commit
Settings are being applied ... allow a few minutes for the process to complete
Server /snmp/v3users # show detail
User 2:
   Add User: yes
   Security Name: ucsSNMPV3user
   Security Level: authpriv
   Auth Type: SHA
   Auth Key: *****
   Encryption: AES
   Private Key: *****
Server /snmp/v3users #
```

# **Configuring a Server to Send Email Alerts Using SMTP**

The Cisco IMC supports email-based notification of server faults to recipients without relying on the SNMP. The system uses the Simple Mail Transfer Protocol (SMTP) to send server faults as email alerts to the configured SMTP server.

A maximum of four recipients is supported.

# Configuring SMTP Servers for Receiving E-Mail Alerts

#### Before you begin

You must log in as a user with admin privileges to perform this task.

	Command or Action	Purpose
Step 1	Server# scope smtp	Enters the SMTP command mode.
Step 2	Server /smtp # set enabled {yes   no}	Enables or disables the SMTP feature.
Step 3	Server /smtp * # set server-addr IP_Address	Assigns the SMTP server IP address.

	Command or Action	Purpose
Step 4	Server /smtp * # set port port_number	Sets the port number for the SMTP server.
Step 5	Server /smtp # set-mail-addr email_address recipient_minimum_severity informational   warning   minor   major   critical	Sets recipient email address with minimum severity level.
Step 6	Server /smtp * # commit	Commits the transaction to the system configuration.
Step 7	Server /smtp # send-test-mail recipient1	Sends a test mail alert to the email address assigned to the chosen recipient.

This example shows how to configure SMTP for receiving mail alerts:

```
Server # scope smtp
Server /smtp # set enabled yes
Server /smtp *# set server-addr 10.10.10.10
Server /smtp *# set port 25
Server /smtp *# set-mail-addr recipient4 user@cisco.com critical
This operation will add the recipient4
Continue?[y|N]y
Server /smtp *#
Server /smtp *#
Server /smtp *# commit
Server /smtp #
```

**Configuring SMTP Servers for Receiving E-Mail Alerts**