

# Moxa Managed Switch TSN-G5000 Series Command Line Interface

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**Models covered by this manual:**

TSN-G5000 Series Managed Ethernet Switches



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# Moxa Managed Switch TSN-G5000 Series Command Line Interface

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# 1. About This Manual

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This chapter describes how to use the command line to configure Moxa's managed Ethernet switches. Besides the web interface configuration, the command line interface helps system administrators easily and quickly manage, monitor, and configure Moxa's managed Ethernet switch.

## 2. Understanding the Command Line Interface

This chapter helps users understand the command line interface, and demonstrates a general ideal on the command line operation.

### Accessing the Switch

Users can connect to the switch using one of two methods: by console or by Telnet.

### Logging in using the RS-232 Console

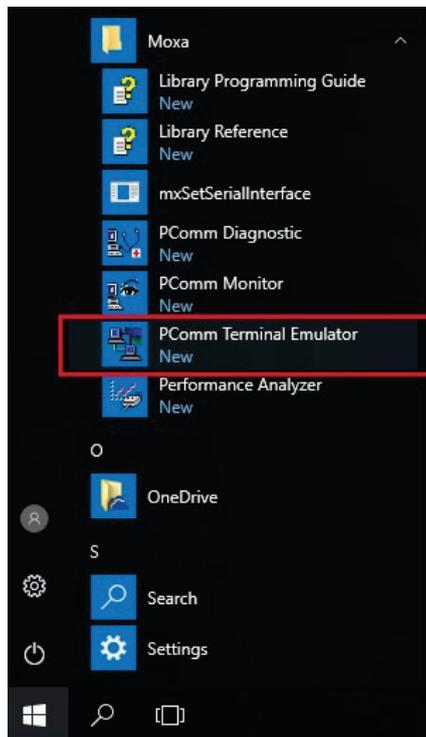
The Moxa managed switch features an RJ45 serial console port to allow users to connect to the switch and configure settings.



#### NOTE

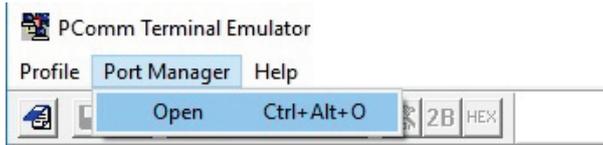
Moxa recommends using PComm Terminal Emulator for serial communication. This software is available for free on the Moxa website. You can use other serial communication software, but the following instructions may be different.

1. Prepare the included RS-232 serial cable with RJ45 interface.
2. Connect the RJ45 interface end to the console port on the switch, and the other end to the computer.
3. Download the **PComm Terminal Emulator** from the Moxa website and install the software.
4. In Windows, click **Start > Moxa > PComm Terminal Emulator**.

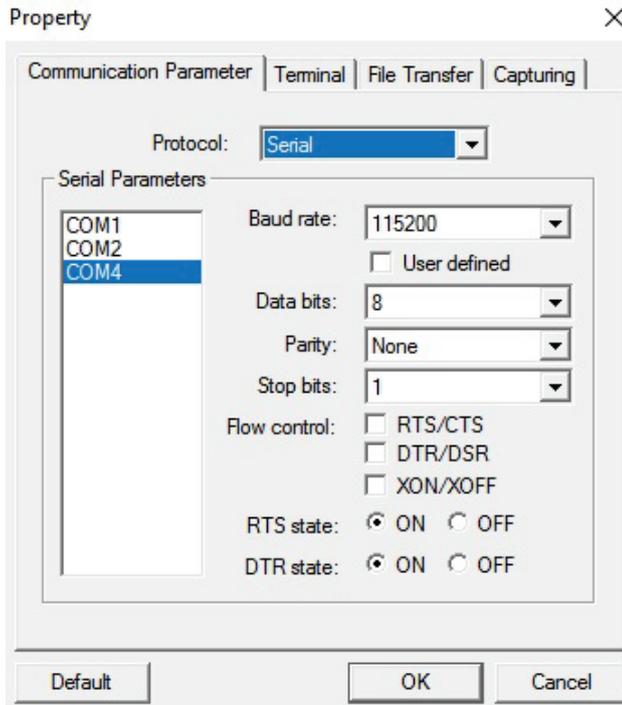


5. Click **Port Manager > Open** to establish a new connection.

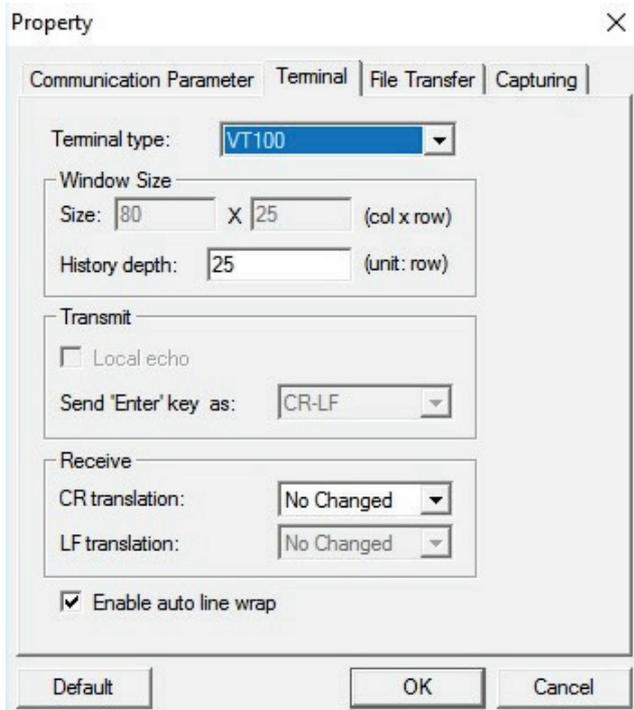
The Property window will appear.



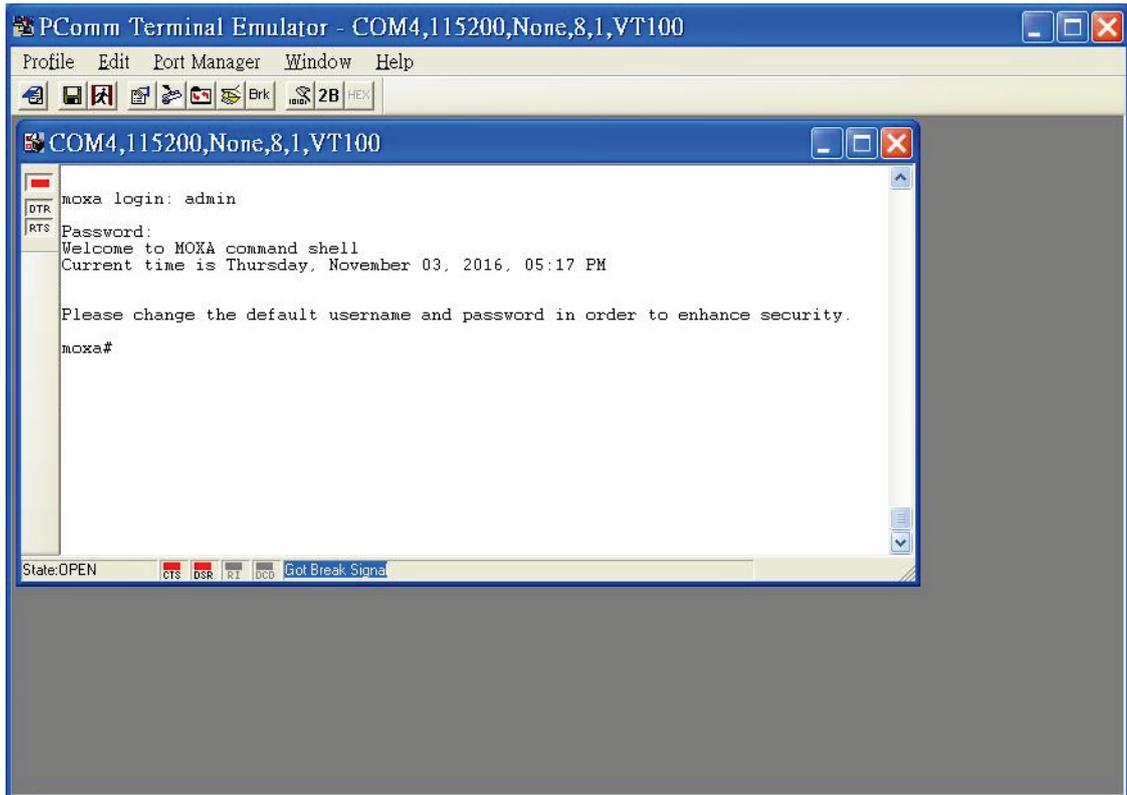
6. On the **Communication Parameter** tab, select the COM port that will be used for the console connection. Configure the fields as follows: **115200** for **Baud rate**, **8** for **Data bits**, **None** for **Parity**, and **1** for **Stop bits**.



7. On the **Terminal** tab, select **VT100** as the **Terminal Type**, and click **OK** to continue.



- Log in to the console using the default login name **admin** and password **moxa**. This password will be required to access any of the consoles (web, serial, Telnet).



- When successfully connected to the switch, you can start configuring the switch parameters by using command line instructions.



## NOTE

By default, the password assigned to the Moxa switch is **moxa**. We recommended changing the default password after logging in for the first time to help keep your system secure.

## Logging in using Telnet

Opening the Moxa switch's Telnet or web console over a network requires that the PC host and Moxa switch are on the same logical subnet. You may need to adjust your PC host's IP address and subnet mask. By default, the Moxa switch's IP address is **192.168.127.253** and the subnet mask is **255.255.255.0**. Your PC's IP address must be configured with an IP in the 192.168.127.xxx and a subnet mask 255.255.255.0.



## NOTE

When connecting to the Moxa switch's through Telnet or the web console, first connect one of the Moxa switch's Ethernet ports to your Ethernet LAN, or directly to your PC's Ethernet port. You may use either a straight-through or cross-over Ethernet cable.

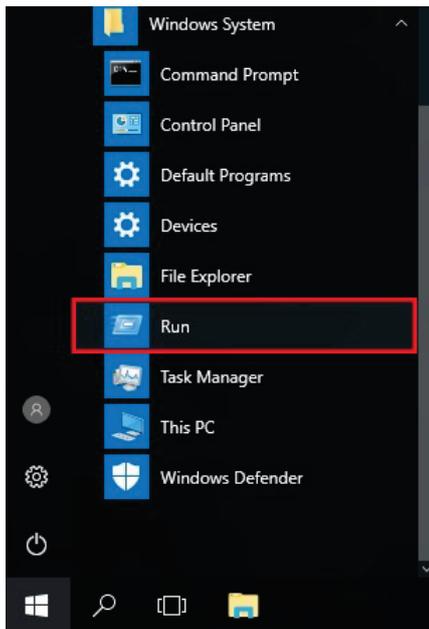


## NOTE

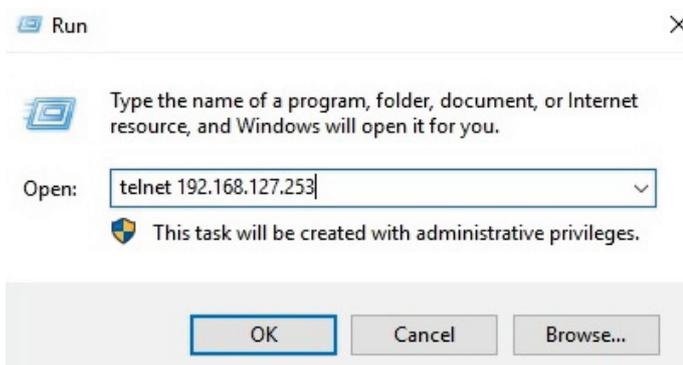
The Moxa switch's default IP address is 192.168.127.253 with subnet mask 255.255.255.0.

After making sure that the Moxa switch is connected to the same LAN and logical subnet as your PC, open the Moxa switch's Telnet console as follows:

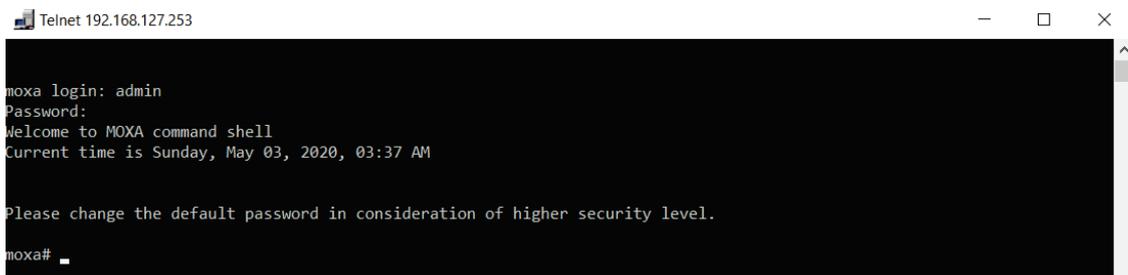
1. In Windows, click **Start > Run**.



2. In the Windows Run window, enter **telnet** followed by the Moxa switch's IP address (192.168.127.253). You can also issue the Telnet command from a DOS prompt.



3. Log in to the Telnet console using the default login name **admin** and password **moxa**. This password will be required to access any of the consoles (web, serial, Telnet).



4. When successfully connected to the switch, you can start configuring the switch parameters by using command line instructions.



## NOTE

By default, the password assigned to the Moxa switch is **moxa**. We recommended changing the default password after logging in for the first time to help keep your system secure.

# Command Modes

## Basic Configuration

The CLI (Command Line Interface) for Moxa’s Managed switches can be accessed through either the serial console or the Telnet console. For either type of connection, access to the CLI is generally referred to as an EXEC session.

The CLI is organized using different configuration levels. When you first enter the CLI, type “?” to view a list of basic commands and a description of each function. Type any of the commands shown on the screen to access the next configuration level. The help panel can be accessed from any configuration level by typing “?”. The switch will show all the commands for the current configuration mode.

```
moxa# ?
clear          Clear the specified parameters
cli           Configure the CLI display parameters
configure     Enter configuration mode
copy         Perform copy operation
end          Exit to the privileged Exec (#) mode
exit        Exit the session
help        Display help for the command
locator     Activate device locator so that the LED on the
            device blinks
logout      Terminate the session
ping       Ping a target to check its status
relay     Relay related command
reload    Halt and perform a warm restart
show     Display configuration / statistics / general
            information
moxa#
```

## Understanding All Command Modes

The Moxa switch’s CLI supports multiple types of configuration levels for performing different functions. Refer to the following table for an overview of all available modes.

Mode	Access Method	Prompt	Exit Method	About This Mode
User EXEC	Begin a new session and login as <b>user</b> .	moxa>	Enter the <b>exit</b> command. This will return you to the previous configuration mode.	Use this mode to display system information.
Privileged EXEC	Begin a session and login as <b>admin</b> .	moxa #	Enter the <b>exit</b> command. This will return you to the previous configuration mode.	Use this mode to verify commands that you have entered.
Global configuration	Enter the <b>configure</b> command while in Privileged EXEC mode.	moxa (config)#	Enter the <b>exit</b> command. This will return you to the previous configuration mode.	Use this mode to configure parameters that will apply to the entire switch.
Interface configuration	While in global configuration mode, enter the interface command, followed by an <b>interface</b> identification.	moxa (config-if)#	Enter the <b>exit</b> command. This will return you to the previous configuration mode.	Use this mode to configure parameters for the specified interface.

Refer to the following example of changing configuration modes below.

Type **config** at the command prompt to enter configuration mode.

```
moxa# config
moxa(config)#
```

Type **exit** to return to the previous configuration mode.

```
moxa(config)# exit
moxa#
```

Type **end** from within any configuration level to return to privileged Exec mode.

```
moxa(config)# end
moxa#
```

## Help Messages

The CLI supports several types of interactive commands. The **Help** commands are listed in the following table:

Command	Purpose
?	Shows a brief description of the Help feature in any command level.
Partial command?	Shows a list of commands that begin with the entered character string. There should be no space between the command and the question mark.
Partial command<Tab>	Completes a partially entered command name. There should be no space between the command and <Tab>.
Command ?	Shows the keywords, arguments, or both associated with the command. There should be a space between the command and the question mark.
Command keyword ?	Shows the arguments that are associated with the keyword. There should be a space between the command and the keyword, and between the keyword and the question mark.

## Special Usage and Limitations

If the command contains any special characters, such as **\***, **#**, and **%**, you need to use the quotation marks (") to cover these special characters. Refer to the following figure for an example.

```
moxa(config)# contact "test#"
moxa(config)# exit
moxa# show run
Building user configuration ...

-----
! Time: 2019-08-30 18:37:01
! Model name: MDS-G4028
! Firmware version: v0.4 Build 2019_0703_1227
! Product revision: V255.255.255
! IP address: 192.168.127.253
! MAC address: 00:01:02:03:04:05
! Serial number: MOXA00000000
! Module M2 product revision: None
! Module M3 product revision: None
! Module M4 product revision: None
! Module M5 product revision: None
! Module M6 product revision: None
! Module M7 product revision: None
-----
configure terminal
contact "test#"
interface ethernet 1/1
!
interface ethernet 1/2
--More--
```

In addition, you may use a semicolon mark (;) to separate several commands. Refer to the figure below for an example.

```
moxa(config)# hostname test;contact test2
moxa(config)#
test(config)#
```

# Abbreviated Commands

The exclamation mark "!" can be used to enter the global configuration mode, as shown in the example below.

```
moxa# !
moxa(config)#
moxa(config)#
```

In addition, you can input one or more letters to quickly see all commands starting with these letters. For example, type **c?**, all commands starting with c will be shown. Refer to the figure below as the example.

```
moxa# c?
clear
cli
configure
copy
```

In addition, when pressing **Tab** after typing the prefix letter, the syntax of the commands starting with that letter will be shown. See the figure below for details.

```
moxa# c
EXEC commands :

  clear logging event-log
  clear screen
  clear spanning-tree detected protocols interface { <interface-type> <interface
-id> | port-channel <integer> }
  clear statistics [interfaces {port-channel <integer> | <interface-type> <inter
face-id> }]
  cli eth-index-naming { modular | non-modular }
  cli pagination turn {on | off}
  configure [ terminal ]
  copy event-log {tftp://server/filename | sftp://<user-name>:<pass-word>@server
/filename}
  copy running-config startup-config
  copy running-config {tftp://server/filename | sftp://<user-name>:<pass-word>@s
erver/filename} [included-default] [password <string(60)>]
  copy startup-config {tftp://server/filename | sftp://<user-name>:<pass-word>@s
erver/filename} [included-default] [password <string(60)>]
  copy { tftp://server/filename running-config | sftp://<user-name>:<pass-word>@
server/filename running-config } [password decrypt-password]
  copy { tftp://server/filename | sftp://<user-name>:<pass-word>@server/filename
--More--
```

# No and Default Forms of Commands

A “no” command can be used to perform the “delete”, “disable”, or “reset to default” functions. Type “no ?” to check how parameters can be used.

```
moxa(config)# no ?
contact          Reset the contact information of the device
description      Reset the description of the device
dot1x            Configure dot1x parameters
event-notification Configure event notification parameters
hostname         Reset the hostname of the device
interface        Configure interface parameters
ip              Configure IP parameters
ipv6            Configure IPv6 parameters
lldp            Configure LLDP parameters
location         Reset the location information of the device
logging          Configure logging parameters
logging-server   Logging server parameters
login           Configure login related configuration
mac-address-table Configure MAC address table parameters
management      Configure management parameters
monitor         Configure Port Mirror parameters
ntp             Configure NTP/SNTP parameters
poE             Configure PoE parameters
port-channel     Configure port-channel parameters
radius-server    Configure RADIUS server configuration
--More--
```

The following example shows how a “no” command can run the “reset to default” function.

```
moxa(config)# hostname test
moxa(config)#
test(config)# no hostname
test(config)#
moxa(config)#
```

The following example shows how “no” can run the “disable” function.

```
moxa(config-if)# gvrp
moxa(config-if)# no gvrp
moxa(config-if)#
```

# CLI Error Messages

You may encounter some error messages while configuring Moxa’s Ethernet switch. Refer the following table for an overview of error messages and solutions.

Error Message	Meaning	Solution
% Ambiguous command	The characters you entered are insufficient for the switch to recognize the command.	Re-enter the command with a space between the command and the question mark (?). The possible keywords with the command will appear.
% Incomplete command	The keywords or values you entered are incomplete.	Re-enter the command with a space between the command and the question mark (?). The possible keywords with the command will appear.
% Invalid input detected at '^' marker.	The command you entered is incorrect. The point of invalid input will be indicated by a caret (^).	Enter a question mark (?) to display all the available commands in this command mode. The possible keywords with the command will appear.

# Command History

Use the Up arrow and Down arrow keys to show to cycle through the history of previously entered commands.

Pressing the Up arrow will display the previously entered command. Pressing the Down arrow will display the next command in the history.

# 3. Commands

This chapter covers all commands for users to configure Moxa's managed Ethernet switch.

## System

### System Management

#### Information Setting

##### Configure Device Hostname

###### Commands

**hostname** text

**no hostname**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>hostname</b>	Configure the device hostname parameters
	device-name	The hostname of the device consisting of lower case letters, numbers, and hyphens
<b>Defaults</b>	hostname: moxa	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# hostname device-name device-name(config)# no hostname moxa(config)#	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

##### Configure Device Description

###### Commands

**description** text

**no description**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>description</b>	Configure the device description parameters
	text	The description of the device
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# description "description data" moxa(config)# no description	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Contact Information

### Commands

**contact** text

**no contact**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>contact</b>	Configure device contact information
	text	The contact information of the device
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# contact "contact info" moxa(config)# no contact	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show Location Information

### Commands

**location** text

**no location**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>location</b>	Configure the device location information
	text	The location information of the device
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# location "location info" moxa(config)# no location	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show System Information

### Commands

**show system information**

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>system</b>	Display system information
	<b>information</b>	Display system information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show system information  Hardware Version           : V0.0.0 Firmware Version          : v0.3 build 2019_050202111 Device Contact             : Device Name                : moxa Device Location            : Device Description         : Device Uptime              :0 Days, 1 Hrs, 35 Mins, 21 Secs Login Authentication Mode  : Local</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Firmware Upgrade

### Copy Device Firmware

#### Commands

**copy { <tftp\_url> | <sftp\_url> | **usb:** <filename> | **micro-sd:** <filename> } **device-firmware****

<b>Syntax Description</b>	<b>copy</b>	Copy from one file to another
	<b>device-firmware</b>	System firmware
	tftp_url	Remote server through TFTP, in the format "tftp://server/filename"
	sftp_url	Remote server through SFTP, in the format "sftp://username:password@server/filename"
	<b>usb</b>	File in ABC-02 under /Moxa to be copied
	<b>micro-sd</b>	File in micro-SD under /Moxa to be copied
	filename	File name
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>(config)# copy tftp://server/"filename" device-firmware (config)# copy sftp://username:password@server/"filename" device-firmware (config)# copy usb:"filename" device-firmware (config)# copy micro-sd:"filename" device-firmware</pre>	
<b>Error messages</b>	Invalid: Firmware verify failed Invalid: Invalid Request Data Invalid: File expects [0-9], [a-z], [A-Z], and -._() Invalid: Not support USB. Invalid: Not support microSD. Invalid: USB function is disable Invalid: MicroSD function is disable	
<b>Related commands</b>	N/A	

## Configuration Backup and Restore



### NOTE

This function is only supported on TSN Series models with firmware v2.3 or later.

## Copy Running Configuration

### Commands

**copy running-config** { <tftp\_url> | <sftp\_url> | **usb:** <filename> | **micro-sd:** <filename> }

**copy** { <tftp\_url> | <sftp\_url> | **usb:** <filename> | **micro-sd:** <filename> } **running-config**

<b>Syntax Description</b>	<b>copy</b>	Copies the configuration or system logs
	<b>running-config</b>	running-config to be copied
	tftp_url	File in remote location to be copied
	sftp_url	File in remote location to be copied
	<b>usb</b>	File in ABC-02 under /Moxa/config to be copied
	<b>micro-sd</b>	File in micro-SD under /Moxa/config to be copied
	filename	File name
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>(config)# copy running-config tftp://server/"filename" (config)# copy running-config sftp://username:password@server/"filename" (config)# copy running-config usb: "filename" (config)# copy running-config micro-sd: "filename"  (config)# copy tftp://server/"filename" running-config (config)# copy sftp://username:password@server/"filename" running-config (config)# copy usb: "filename" running-config (config)# copy micro-sd: "filename" running-config</pre>	
<b>Error messages</b>	<pre>Invalid: File expects [0-9], [a-z], [A-Z], and -._() Invalid: Not support USB. Invalid: Not support microSD. Invalid: USB function is disable Invalid: MicroSD function is disable Invalid: USB configuration import failed Invalid: MicroSD configuration import failed</pre>	
<b>Related commands</b>	<pre>copy startup-config { &lt;tftp_url&gt;   &lt;sftp_url&gt;   usb: &lt;filename&gt;   micro-sd: &lt;filename&gt; } config-file encryption password &lt;password&gt; show config-file encryption show customer-key info copy customer-key {&lt;tftp_url&gt;   &lt;sftp_url&gt;} private {&lt;tftp_url&gt;   &lt;sftp_url&gt;} certificate label &lt;name&gt; clear customer-key signed-config {enable   disable}</pre>	

## Copy Startup Configuration

### Commands

**copy startup-config** { <tftp\_url> | <sftp\_url> | **usb:** <filename> | **micro-sd:** <filename> }

<b>Syntax Description</b>	<b>copy</b>	Copy from one file to another
	<b>startup-config</b>	startup-config to be copied
	tftp_url	File in remote location to be copied
	sftp_url	File in remote location to be copied
	<b>usb</b>	File in ABC-02 under /Moxa/config to be copied
	<b>micro-sd</b>	File in micro-SD under /Moxa/config to be copied
	filename	Filename
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# copy startup-config tftp://server/"filename" (config)# copy startup-config sftp://username:password@server/"filename" (config)# copy startup-config usb: "filename" (config)# copy startup-config micro-sd: "filename"	
<b>Error messages</b>	Invalid: File expects [0-9], [a-z], [A-Z], and -._() Invalid: Not support USB. Invalid: Not support microSD. Invalid: USB function is disable Invalid: MicroSD function is disable Invalid: USB configuration import failed Invalid: MicroSD configuration import failed	
<b>Related commands</b>	copy running-config { <tftp_url>   <sftp_url>   usb: <filename>   micro-sd: <filename> } config-file encryption password <password> show config-file encryption show customer-key info copy customer-key {<tftp_url>   <sftp_url>} private {<tftp_url>   <sftp_url>} certificate label <name> clear customer-key signed-config {enable   disable}	

## Configure File Encryption Password

### Commands

**config-file encryption password** <password>

**no config-file encryption**

<b>Syntax Description</b>	<b>config-file</b>	configuration file in device
	<b>encryption</b>	configuration file is be encrypted
	<b>password</b>	password of configuration file
	<password>	password parameter
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# config-file encryption password 1234	
<b>Error messages</b>	N/A	
<b>Related commands</b>	copy running-config { <tftp_url>   <sftp_url>   usb: <filename>   micro-sd: <filename> } copy startup-config { <tftp_url>   <sftp_url>   usb: <filename>   micro-sd: <filename> } show config-file encryption show customer-key info copy customer-key {<tftp_url>   <sftp_url>} private {<tftp_url>   <sftp_url>} certificate label <name> clear customer-key signed-config {enable   disable}	

## Show Configuration File Encryption

### Commands

#### Show config-file encryption

<b>Syntax Description</b>	<b>show</b>	Displays running information for the feature
	<b>config-file</b>	Displays config-file related parameter
	<b>encryption</b>	Display config-file encryption enable/disable
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	# show config-file encryption	
<b>Error messages</b>	N/A	
<b>Related commands</b>	copy running-config { <tftp_url>   <sftp_url>   usb: <filename>   micro-sd: <filename> } copy startup-config { <tftp_url>   <sftp_url>   usb: <filename>   micro-sd: <filename> } config-file encryption password <password> show customer-key info copy customer-key {<tftp_url>   <sftp_url>} private {<tftp_url>   <sftp_url>} certificate label <name> clear customer-key signed-config {enable   disable}	

## Auto Back Up Configuration

### Commands

**auto-backup config** { enable | disable }

<b>Syntax Description</b>	<b>auto-backup</b>	Auto backup file to external storage
	<b>config</b>	Configuration file
	enable	Enable setting
	disable	Disable setting
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# auto-backup config enable (config)# auto-backup config disable	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Auto Restore Configuration

Use the **auto-restore config** privileged command to set auto-restore configuration from the external storages, ABC-02 and micro-SD when boot-up.

### Commands

**auto-restore config** { enable | disable }

<b>Syntax Description</b>	<b>auto-restore</b>	Auto restore file to external storage
	<b>config</b>	Configuration file
	enable	Enable setting
	disable	Disable setting
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# auto-restore config enable (config)# auto-restore config enable	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

# Account Management

## User Account

### Configure User Account Setting

#### Commands

**username** <username> **password** <passwd> **group** { admin | user | supervisor } **status** { enable | disable } **email** <email>

**no username** username

<b>Syntax Description</b>	<b>username</b>	Configures username related parameters
	trusted-access ip-source <uicast_addr> [ { <ip_mask>   "/" <short(0-32)> } ]	User ID to be used for login
	<b>password</b>	Configures password related parameters
	password	Password to be entered by the user
	<b>group</b>	Configures user privilege level
	group	Valid values are "admin", "supervisor", and "user". "admin" for admin group, "supervisor" for supervisor, and "user" for normal user group.
	<b>status</b>	Configures user status related parameters
	enable	Enable user
	disable	Disable user
	<b>email</b>	Configures user email
email	Email string	
<b>Defaults</b>	N/A.	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>(config)# username testuser password test123 group admin status enable email test@test.com (config)# username testuser password test567 (config)# username testuser group supervisor (config)# username testuser status disable (config)# username testuser email test@test.com.tw (config)# no username testuser</pre>	
<b>Error messages</b>	<pre>% Max User Account Amount Reached % Invalid Username Format % Password doesnt comply with password rules. % Invalid Email Format % Invalid Password Format % User does not exist % At least one admin should be active. % User status cannot be updated by self. % User Deletion Failed % User cannot be disabled by self % User cannot be modified group by self % User cannot be deleted by self</pre>	
<b>Related commands</b>	Show user	

## Show User Information

### Commands

**show** user

<b>Syntax Description</b>	<b>show</b>	Displays running information for the feature
	user	Displays user related parameters
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration/ User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre># show user USER    ACTIVE    PRIVILEGE    EMAIL admin   1          admin        admin@sample.com user    1          user         user@sample.com supervisor 1        supervisor   supervisor@sample.com</pre>	
<b>Error messages</b>	N/A	
<b>Related commands</b>	username	

## Show System Online Account

### Commands

**show** system online-account

<b>Syntax Description</b>	<b>show</b>	Displays running information for the feature
	system	Displays system related parameters
	online-account	Displays online account information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre># show system online-account Online Account ----- Account  Role   IP Address  Interface ID  Idle admin    admin  10.122.8.147  SSH         4db512fd 0</pre>	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Password Policy

### Configure Password Maximum Lifetime

#### Commands

**password max-life-time** [<days (0-365)>]

<b>Syntax Description</b>	<b>password</b>	Configure password parameters
	<b>max-life-time</b>	Configure the maximum lifetime of the password
	days	Maximum lifetime in days; a 0 or "no" value means it does not expire
<b>Defaults</b>	0	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# config moxa(config)# password max-life-time 30 moxa(config)# password max-life-time</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show password max-life-time	

## Configure Password Validation Rules

### Commands

**password validate-rules** [lowercase] [uppercase] [numbers] [symbols]

<b>Syntax Description</b>	<b>password</b>	Configure password parameters
	<b>validate-rules</b>	Configure validation rules
	lowercase	Configure at least 1 lowercase flag for password validation
	uppercase	Configure at least 1 uppercase flag for password validation
	numbers	Configure at least 1 numbers flag for password validation
	symbols	Configure at least 1 symbols flag for password validation
<b>Defaults</b>	There are no validation rules configured by default	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# config moxa(config)# password validate-rules lowercase numbers moxa(config)# password validate-rules	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show password validate-rules	

## Configure Password Minimum Length

### Commands

**password minimum-length** <minimum-len (4-63)>

<b>Syntax Description</b>	<b>password</b>	Configure password parameters
	<b>minimum-length</b>	Configure the minimum password length
	minimum-len	The minimum password length
<b>Defaults</b>	4	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# config moxa(config)# password minimum-length 8	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show password minimum-length	

## Show Password Minimum Length

### Commands

**show password minimum-length**

<b>Syntax Description</b>	<b>show</b>	Display running information for the function
	<b>password</b>	Display password parameters
	<b>minimum-length</b>	Display the minimum length of the password
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show password minimum-length	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	password minimum-length	

## Show Password Maximum Lifetime

### Commands

**show password max-life-time**

<b>Syntax Description</b>	<b>show</b>	Displays running information for the feature
	<b>password</b>	Displays password related parameters
	<b>max-life-time</b>	Displays the max lifetime after which the password has to be expired
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	# show password max-life-time	
<b>Error messages</b>	N/A	
<b>Related commands</b>	password max-life-time	

## Show Password Validation Rules

### Commands

**show password validate-rules**

<b>Syntax Description</b>	<b>show</b>	Display running information for the function
	<b>password</b>	Display password parameters
	<b>validate-rules</b>	Display the password validation rules
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show password validate-rules	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	password validate-rules	

## Configure Hardware Interface

### Enable/Disable USB

#### Commands

**hardware-interface usb {enable | disable}**

<b>Syntax Description</b>	<b>usb</b>	USB in device
	enable	Enable setting
	disable	Disable setting
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# hardware-interface usb enable (config)# hardware-interface usb disable	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Enable/Disable Micro SD

### Commands

**hardware-interface micro-sd** {enable | disable}

<b>Syntax Description</b>	<b>micro-sd</b>	microSD in device
	enable	Enable setting
	disable	Disable setting
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# hardware-interface micro-sd enable (config)# hardware-interface micro-sd disable	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show Hardware Interface Information

### Commands

**show hardware-interface**

<b>Syntax Description</b>	<b>show</b>	Display configuration information
	<b>hardware-interface</b>	Display hardware interface information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show hardware-interface microSD: Enabled USB: Enabled	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show External Storage Information

Use the **show external-storage info** privileged command on the device to show configuration of auto-backup configuration, auto-restore configuration and auto-backup event-log.

### Commands

#### show external-storage info

<b>Syntax Description</b>	<b>show</b>	Display configuration information
	<b>external-storage</b>	Display external storage name
	<b>info</b>	Display the external storage information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# show external-storage info External Storage info ----- Auto-backup event log Enable     : YES Auto-backup configuration Enable     : YES Auto-restore configuration Enable     : YES	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Network

### IP Configuration

#### Configure IP Management Address

### Commands

**ip management address** { dhcp | ipv4-address ipv4-netmask [ ipv4-gateway ] }

<b>Syntax Description</b>	<b>ip</b>	Configure IP parameters
	<b>management</b>	Configure IPv4 management address parameters
	<b>address</b>	Configure the IPv4 management address of the device
	dhcp	Assign the IPv4 address by DHCP
	ipv4-address	The IPv4 address
	ipv4-netmask	The IPv4 subnet mask
	ipv4-gateway	The IPv4 gateway
<b>Defaults</b>	ipv4-address: 192.168.127.253 ipv4-netmask: 255.255.255.0 ipv4-gateway: 0.0.0.0	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ip management address dhcp moxa(config)# ip management address 10.1.1.1 255.255.255.0 10.1.1.254	
<b>Error Messages</b>	Invalid: Invalid IPv4 Management Address ipv4-address/ipv4-netmask. Invalid: Gateway ipv4-gateway is not reachable.	
<b>Related Commands</b>	N/A	

# DHCP Server

## Show IP DHCP

### Commands

**show ip dhcp** [ { binding | static | port-based-ip-assignment } ]

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information	
	<b>ip</b>	Display IP information	
	<b>dhcp</b>	Display DHCP server information	
	binding	Display binding information	
	static	Display MAC-based IP assignment information	
<b>Defaults</b>	N/A		
<b>Command Modes</b>	User EXEC		
	Privileged EXEC		
<b>Usage Guidelines</b>	N/A		
<b>Examples</b>	<pre>moxa# show ip dhcp DHCP Server Mode: DHCP / MAC-based IP Assignment DHCP Pool List ----- Index          : 1 State          : Enable First IP Address : 192.168.127.10 Last IP Address  : 192.168.127.20 Netmask        : 255.255.255.0 Lease Time (secs) : 86400 Default Gateway : NTP Server     : DNS Server 1   : DNS Server 2   : moxa# show ip dhcp binding Host Name      IP Address   MAC Address   Time Left ----- VirtualBox    192.168.127.10  08:00:27:f6:bf:98  23 h: 59 m: 55 s // A MAC-based IP assignment is created moxa# show ip dhcp static DHCP Server Mode: DHCP / MAC-based IP Assignment MAC-based IP Assignment List ----- Index          : 1 State          : Enable Host Name      : host1 Host IP Address : 192.168.127.30 Host Netmask   : 255.255.255.0 MAC Address    : 08:00:27:f6:bf:98 Lease Time (secs) : 86400 Default Gateway : NTP Server     : DNS Server 1   : DNS Server 2   : moxa# show ip dhcp binding Host Name      IP Address   MAC Address   Time Left ----- host1          192.168.127.30  08:00:27:f6:bf:98  (static)</pre>		
	<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A		

## Configure/Disable DHCP Server Mode

### Commands

**dhcp-server mode disable**

**dhcp-server mode dhcp-and-mac-based-ip-assignment**

<b>Syntax Description</b>	<b>dhcp-server</b>	Configure DHCP server parameters
	<b>mode</b>	Configure DHCP server mode parameters
	<b>disable</b>	Disable the DHCP server
	<b>dhcp-and-mac-based-ip-assignment</b>	Standard DHCP server and MAC-based DHCP
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# config moxa(config)# dhcp-server mode disable	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Enable/Disable IP DHCP Pool

### Commands

**ip dhcp pool** <integer> [ { enable | disable } ]

<b>Syntax Description</b>	<b>ip</b>	Configure IP parameters
	<b>dhcp</b>	Configure DHCP server parameters
	<b>pool</b>	Configure address pool parameters
	<integer>	Pool number
	enable	Enable the address pool
	disable	Disable the address pool
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ip dhcp pool 1 enable moxa(dhcp-config)#	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Remove IP DHCP Pool

### Commands

**no ip dhcp pool** <integer>

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ip</b>	Configure IP parameters
	<b>dhcp</b>	Configure DHCP server parameters
	<b>pool</b>	Configure address pool parameters
	<integer>	The address pool number
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# no ip dhcp pool 1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Enable/Disable IP DHCP Static Pool

### Commands

**ip dhcp static pool** <string (63)> [ { enable | disable } ]

<b>Syntax Description</b>	<b>ip</b>	Configure IP parameters
	<b>dhcp</b>	Configure DHCP server parameters
	<b>static</b>	Configure MAC-based IP assignment parameters
	<b>pool</b>	Configure address pool parameters
	<string (63)>	The client host name (DHCP option 12)
	enable	Enable the address pool
	disable	Disable the address pool
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ip dhcp static pool host1 enable moxa(dhcp-config)#	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Remove IP DHCP Static Pool

### Commands

**no ip dhcp static pool** <string (63)>

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ip</b>	Configure IP parameters
	<b>dhcp</b>	Configure DHCP server parameters
	<b>static</b>	Configure MAC-based IP assignment parameters
	<b>pool</b>	Configure address pool parameters
	string (63)	The client host name (DHCP option 12)
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no ip dhcp static pool host1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

# DHCP and MAC-based IP Assignment

## Configure DHCP Server Pool

### Commands

**network** <ucast\_addr> <ucast\_addr> <ip\_mask>

<b>Syntax Description</b>	<b>network</b>	Configure network parameters
	<ucast_addr>	The address pool starting IP address
	<ucast_addr>	The address pool ending IP address
	<ip_mask>	The subnet mask
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# network 192.168.127.10 192.168.127.20 255.255.255.0	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure DHCP Server Host IP Address

### Commands

**host** <ucast\_addr> <ip\_mask>

<b>Syntax Description</b>	<b>host</b>	Configure host parameters
	<ucast_addr>	The unicast IP address
	<ip_mask>	The subnet mask
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# host 192.168.127.100	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure DHCP Server Host MAC Address

### Commands

**hardware-address** <ucast\_mac>

<b>Syntax Description</b>	<b>hardware-address</b>	Configure the MAC address
	<ucast_mac>	The MAC address
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# hardware-address 00:90:e8:11:22:33	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Lease Time

### Commands

**lease** <integer (10-604800)>

<b>Syntax Description</b>	<b>lease</b> <integer (10-604800)>	Configure the IP lease duration The IP lease duration in seconds
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# lease 3600	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Reset Lease Time

### Commands

**no lease**

<b>Syntax Description</b>	<b>no</b> <b>lease</b>	Remove configuration/delete entry/reset to default value Configure the IP lease duration
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# no lease	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Default Router IP Address

### Commands

**default-router** <ucast\_addr>

<b>Syntax Description</b>	<b>default-router</b> <ucast_addr>	Configure the default router The unicast IP address
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# default-router 192.168.127.254	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Remove Default Router IP Address

### Commands

**no default-router**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>default-router</b>	Configure the default router
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# no default-router	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure DNS Server IP Address

### Commands

**dns-server** <ucast\_addr> [ <ucast\_addr> ]

<b>Syntax Description</b>	<b>dns-server</b>	Configure the DNS server
	<ucast_addr>	The unicast IP address
	<ucast_addr>	The unicast IP address
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# dns-server 192.168.127.254 moxa(dhcp-config)# dns-server 192.168.127.251 192.168.127.252	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Remove DNS Server IP Address

### Commands

**no dns-server**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>dns-server</b>	Configure the DNS server
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# no dns-server	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure NTP Server IP Address

### Commands

**ntp-server** <ucast\_addr>

<b>Syntax Description</b>	<b>ntp-server</b>	Configure the NTP server
	<ucast_addr>	The unicast IP address
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# ntp-server 192.168.127.254	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Remove NTP Server IP Address

### Commands

**no ntp-server**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ntp-server</b>	Configure the NTP server
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC DHCP Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(dhcp-config)# no ntp-server	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

# Time

## Time Zone

### Configure Clock Time Zone

#### Commands

**clock timezone** { "-12" | "-11" | "-10" | "-9:30" | "-9" | "-8" | "-7" | "-6" | "-5" | "-4" | "-3:30" | "-3" | "-2" | "-1" | "0" | "1" | "2" | "3" | "3:30" | "4" | "4:30" | "5" | "5:30" | "5:45" | "6" | "6:30" | "7" | "8" | "8:30" | "8:45" | "9" | "9:30" | "10" | "10:30" | "11" | "12" | "12:45" | "13" | "14" }

Syntax	Description	
	<b>clock</b>	Configure system clock parameters
	<b>timezone</b>	Configure the timezone
	"-12"	UTC-12:00
	"-11"	UTC-11:00
	"-10"	UTC-10:00
	"-9:30"	UTC-09:30
	"-9"	UTC-09:00
	"-8"	UTC-08:00
	"-7"	UTC-07:00
	"-6"	UTC-06:00
	"-5"	UTC-05:00
	"-4"	UTC-04:00
	"-3:30"	UTC-03:30
	"-3"	UTC-03:00
	"-2"	UTC-02:00
	"-1"	UTC-01:00
	"0"	UTC+00:00
	"1"	UTC+01:00
	"2"	UTC+02:00
	"3"	UTC+03:00
	"3:30"	UTC+03:30
	"4"	UTC+04:00
	"4:30"	UTC+04:30
	"5"	UTC+05:00
	"5:30"	UTC+05:30
	"5:45"	UTC+05:45
	"6"	UTC+06:00
	"6:30"	UTC+06:30
	"7"	UTC+07:00
	"8"	UTC+08:00
	"8:30"	UTC+08:30
	"8:45"	UTC+08:45
	"9"	UTC+09:00
	"9:30"	UTC+09:30
	"10"	UTC+10:00
	"10:30"	UTC+10:30
	"11"	UTC+11:00
	"12"	UTC+12:00
	"12:45"	UTC+12:45
	"13"	UTC+13:00
	"14"	UTC+14:00
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# clock timezone "8"	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## System Time

### Configure Clock Source

#### Commands

**clock source** { local | ntp | sntp | ptp }

<b>Syntax Description</b>	<b>clock</b>	Configure system clock parameters
	<b>source</b>	Configure the source of the system clock
	local	Use the local clock
	ntp	Use Network Time Protocol (NTP)
	sntp	Use Simple Network Time Protocol (SNTP)
	ptp	Use Precision Time Protocol (PTP)
<b>Defaults</b>	clock source: local	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# clock source local	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

### Configure Clock Setting

#### Commands

**clock set** hh:mm:ss [ month ] [ day ] [ year ]

<b>Syntax Description</b>	<b>clock</b>	Configure system clock parameters
	<b>set</b>	Configure the system time
	hh:mm:ss	The system time in the format hh:mm:ss
	month	The month, January (1) to December (12)
	day	The day of the month (1 to 31)
	year	The year
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# clock set 11:11:11 12 31 2019	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

### Enable Clock Summer Time

#### Commands

**clock summer-time enable**

<b>Syntax Description</b>	<b>clock</b>	Configure system clock parameters
	<b>summer-time</b>	Configure Daylight Savings Time parameters
	<b>enable</b>	Enable Daylight Savings Time
<b>Defaults</b>	Daylight saving time is disabled by default	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# clock summer-time enable	
<b>Error Messages</b>	Invalid: The start date plus offset should be before the end date.	
<b>Related Commands</b>	N/A	

## Disable Clock Summertime

### Commands

#### clock summer-time disable

<b>Syntax Description</b>	<b>clock</b>	Configure system clock parameters
	<b>summer-time</b>	Configure Daylight Savings Time parameters
	<b>disable</b>	Disable Daylight Savings Time
<b>Defaults</b>	Daylight saving time is disabled by default	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# clock summer-time disable	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Clock Summertime Start Date

### Commands

#### clock summer-time start-date [ month ] [ day ] [ year ] [hour minute hh:mm:ss ]

<b>Syntax Description</b>	<b>clock</b>	Configure system clock parameters
	<b>summer-time</b>	Configure Daylight Savings Time parameters
	<b>start-date</b>	Configure the start date of Daylight Saving Time
	month	The month, January (1) to December (12)
	day	The day of the month (1 to 31)
	year	The year
	hour	The hour
	minute	The minutes
<b>Defaults</b>	The daylight saving time start date is set to Jan 01 2000 00:00	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# clock summer-time start-date 1 1 2019 23 30	
<b>Error Messages</b>	Invalid: Start date is invalid. Invalid: The start date plus offset should be before the end date.	
<b>Related Commands</b>	N/A	

## Configure Clock Summertime End Date

### Commands

#### clock summer-time end-date month day year hour minute

<b>Syntax Description</b>	<b>clock</b>	Configure system clock parameters
	<b>summer-time</b>	Configure Daylight Savings Time parameters
	<b>end-date</b>	Configure the end date of Daylight Savings Time
	month	The month, January (1) to December (12)
	day	The day of the month (1 to 31)
	year	The year
	hour	The hour
	minute	The minutes
<b>Defaults</b>	The daylight saving time end date is set to Dec 31 2000 23:00	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# clock summer-time end-date 7 31 2019 23 30	
<b>Error Messages</b>	Invalid: End date is invalid Invalid: The start date plus offset should be before the end date.	
<b>Related Commands</b>	N/A	

## Configure Clock Summertime Offset

### Commands

**clock summer-time offset** offset-hour [ offset-minute ]

<b>Syntax Description</b>	<b>clock</b>	Configure system clock parameters
	<b>summer-time</b>	Configure Daylight Savings Time parameters
	<b>offset</b>	Configure the offset of Daylight Saving Time
	offset-hour	The time offset hours
	offset-minute	The time offset minutes
<b>Defaults</b>	daylight saving time offset: 0 Hour 0 Minutes	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# clock summer-time offset 1 30	
<b>Error Messages</b>	Invalid: The start date plus offset should before the end date.	
<b>Related Commands</b>	N/A	

## Configure NTP Authentication Key

### Commands

**ntp authentication-key** key-index key-id md5 key-string

**no ntp authentication-key** key-index

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ntp</b>	Configure NTP/SNTP parameters
	<b>authentication-key</b>	Configure the NTP authentication key
	key-index	The index of the key, ranging from 1 to 10
	key-id	The key ID, ranging from 1 to 65535
	md5	Use MD5 authentication
key-string	The authentication key with a maximum length of 32 characters for plain text, 66 characters for Moxa-encrypted hex	
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ntp authentication-key 1 1 md5 1a2b3c4d moxa(config)# no ntp authentication-key 1	
<b>Error Messages</b>	Invalid: Authentication key ID key-id is duplicated.	
<b>Related Commands</b>	N/A	

## Configure NTP Remote Server

### Commands

**ntp remote-server ntp** server-index server-address [ authentication key key-id ]

**no ntp remote-server ntp** server-index [ authentication ]

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ntp</b>	Configure NTP/SNTP parameters
	<b>remote-server</b>	Configure remote time server parameters
	<b>ntp</b>	Configure NTP server parameters
	server-index	The index of the server, ranging from 1 to 2
	server-address	The NTP server address
	authentication	Configure NTP authentication parameters
	key	Use key authentication
	key-id	The ID of the authentication key
<b>Defaults</b>	NTP time server: time.nist.gov	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ntp remote-server ntp 1 1.1.1.1 moxa(config)# ntp remote-server ntp 2 2.2.2.2 authentication key 1 moxa(config)# no ntp remote-server ntp 2 authentication moxa(config)# no ntp remote-server ntp 1	
<b>Error Messages</b>	Invalid: Authentication key ID key-id of NTP client server-index does not exist.	
<b>Related Commands</b>	N/A	

## Configure SNTP Remote Server

### Commands

**ntp remote-server sntp** server-index server-address

**no ntp remote-server sntp** server-index server-address

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ntp</b>	Configure NTP/SNTP parameters
	<b>remote-server</b>	Configure remote time server parameters
	<b>sntp</b>	Configure SNTP server parameters
	server-index	The index of the server, ranging from 1 to 2
	server-address	The SNTP server address
<b>Defaults</b>	The default SNTP time server is set to time.nist.gov	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ntp remote-server sntp 1 1.1.1.1 moxa(config)# no ntp remote-server sntp 1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Enable NTP Server

### Commands

#### ntp server enable

<b>Syntax Description</b>	<b>ntp</b>	Configure NTP/SNTP parameters
	<b>server</b>	Configure NTP server parameters
	<b>enable</b>	Enable the NTP server
<b>Defaults</b>	NTP server: disable	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ntp server enable	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Disable NTP Server

### Commands

#### ntp server disable

<b>Syntax Description</b>	<b>ntp</b>	Configure NTP/SNTP parameters
	<b>server</b>	Configure NTP server parameters
	<b>disable</b>	Disable the NTP server
<b>Defaults</b>	The NTP server is disabled by default	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ntp server disable	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure NTP Server Authentication

### Commands

#### ntp server authentication

<b>Syntax Description</b>	<b>ntp</b>	Configure NTP/SNTP parameters
	<b>server</b>	Configure NTP server parameters
	<b>authentication</b>	Enable authentication
<b>Defaults</b>	NTP server authentication is disabled by default	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ntp server authentication	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Disable NTP Server Authentication

### Commands

#### no ntp server authentication

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ntp</b>	Configure NTP/SNTP parameters
	<b>server</b>	Configure NTP server parameters
	<b>authentication</b>	NTP authentication
<b>Defaults</b>	NTP server authentication is disabled by default	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# no ntp server authentication	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show Clock Information

### Commands

#### show clock

<b>Syntax Description</b>	<b>show</b>	Display the configuration/status information.
	<b>clock</b>	Display the system clock information.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show clock Clock Source : Local Time Zone : UTC+00:00 Current Time : Fri May 03 22:59:33 2019 Daylight Saving : Disabled Start Date : Jan 01 2000 00:00 End Date : Dec 31 2000 23:00 Offset : 0 Minutes Authentication Keys NTP Client Time Server [1] time.nist.gov (No Auth) SNTP Client Time Server [1] time.nist.gov NTP/SNTP Server : Disabled Authentication : Disabled	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

# Time Synchronization

## Show 802.1AS gPTP Global Information

### Commands

show ptp

<b>Syntax Description</b>	<b>ptp</b>	Display PTP status and information
	<b>profile</b>	PTP profile selection
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show ptp PTP GLOBAL INFO: PTP Status : Enabled Current Profile : 802.1AS Offset From Master(ns): -7.0 Mean Path Delay(ns) : 79 Steps Removed : 2 Sync. Status : Locked PTP Clock Time(TAI) : Wed Jan 01 01:08:33 2020	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show 802.1AS gPTP Clock Information

### Commands

show ptp profile dot1as clock

<b>Syntax Description</b>	<b>ptp</b>	Display PTP status and information
	<b>profile</b>	PTP profile selection
	<b>dot1as</b>	802.1AS profile
	<b>clock</b>	PTP clock information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show ptp profile dot1as clock  802.1AS CLOCK DATA SET PTP Device Type : Time-Aware Bridge PTP Device Profile : 802.1AS Clock Identity : 00:90:E8:FF:FE:11:22:40 Clock Domain : 0 Number of PTP Ports : 4 Priority1 : 100 Priority2 : 248 Clock Quality: Class : 248 Accuracy : 254 Offset From Master(ns): 10.0 Mean Path Delay(ns) : 77 Steps Removed : 2 Slave Port : 4 Sync. Status : Locked PTP Clock Time(TAI) : Wed Jan 01 00:37:18 2020	
<b>Error messages</b>	N/A	
<b>Related commands</b>	show ptp profile dot1as parent	

## Show 802.1AS gPTP Profile and Parent Property

### Commands

**show ptp profile dot1as parent**

<b>Syntax Description</b>	<b>ptp</b>	Display PTP status and information
	<b>profile</b>	PTP profile selection
	<b>dot1as</b>	802.1AS profile
	<b>parent</b>	PTP parent properties
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show ptp profile dot1as parent  802.1AS PARENT DATA SET Parent Clock:   Parent Clock Identity   : 00:90:E8:FF:FE:11:22:54   Parent Port Number     : 8 Grandmaster Clock:   Cumulative Rate Ratio   : 1.000000009 (+0 PPM)   Grandmaster Clock Identity : 00:90:E8:FF:FE:00:00:03 Grandmaster Clock Quality:   Class                   : 248   Accuracy                 : 254   Priority1                : 100   Priority2                : 248</pre>	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show gPTP Port Profile

### Commands

**show ptp profile dot1as port** [<interface-type> <interface-id>]

<b>Syntax Description</b>	<b>ptp</b>	Display PTP status and information
	<b>profile</b>	PTP profile selection
	<b>dot1as</b>	802.1AS profile
	<b>port</b>	PTP port properties
	<interface-type>	Ethernet (interface-type)
	<interface-id>	Interface-id : <1-X>/<1-Y> Slot Number/Port Number
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show ptp profile dot1as port Ethernet 1/1  802.1AS PORT DATA SET: Port Identity           : 00:90:E8:FF:FE:11:22:40-1 Port State              : MASTER Announce Interval(log) : 0 Announce Receipt Timeout : 3 Sync Interval(log)     : -3 Sync Receipt Timeout   : 3 Pdelay Req Interval(log) : 0 Neighbor Propagation Delay Threshold(ns): 800 Peer Mean Path Delay(ns) : 27 Neighbor Rate Ratio    : 0.999999998 (+0 PPM) Port 802.1AS Capable   : True</pre>	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Enable/disable 802.1AS gPTP Function

### Commands

**ptp enable**

**ptp disable**

<b>Syntax Description</b>	<b>ptp</b>	Configure the PTP parameters.
	<b>enable</b>	Enable the PTP operation.
	<b>disable</b>	Disable the PTP operation.
<b>Defaults</b>	Enable	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa (config)# ptp enable moxa (config)# ptp disable	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure 802.1AS gPTP Priority 1 and Priority 2

### Commands

**ptp profile dot1as priority1 <value>**

**no ptp profile dot1as priority1**

<b>Syntax Description</b>	<b>ptp/no ptp</b>	Configure PTP parameters / Reset to default value
	<b>profile</b>	PTP profile selection
	<b>dot1as</b>	802.1AS profile
	<b>priority1</b>	Priority 1 value used by the BMC algorithm
	<value>	0~255
<b>Defaults</b>	128	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ptp profile dot1as priority1 246 moxa(config)# no ptp profile dot1as priority1	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

### Commands

**ptp profile dot1as priority2 <value>**

**no ptp profile dot1as priority2**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ptp</b>	Configure PTP parameters
	<b>profile</b>	PTP profile selection
	<b>dot1as</b>	802.1AS profile
	<b>priority2</b>	Priority2 value used by the BMC algorithm
	<value>	0~255
<b>Defaults</b>	128	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ptp profile dot1as priority2 248 moxa(config)# no ptp profile dot1as priority2	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure 802.1AS gPTP Message Interval

### Commands

**ptp profile dot1as** <message> **interval** <value>

**no ptp profile dot1as** <message> **interval**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ptp</b>	Configure PTP parameters
	<b>profile</b>	PTP profile selection
	<b>dot1as</b>	802.1AS profile
	<message>	announce/sync/pdelay-req
	<b>interval</b>	Logarithmic message interval
	<value>	Announce: 0~4 Sync: -3~5 Pdelay-req: -3~5
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile dot1as announce interval 0 moxa(config-if)# no ptp profile dot1as announce interval moxa(config-if)# ptp profile dot1as sync interval -3 moxa(config-if)# no ptp profile dot1as sync interval moxa(config-if)# ptp profile dot1as pdelay-req interval 0 moxa(config-if)# no ptp profile dot1as pdelay-req interval</pre>	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure 802.1AS gPTP Timeout

### Commands

**ptp profile dot1as** <message> **timeout** <value>

**no ptp profile dot1as** <message> **timeout**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ptp</b>	Configure PTP parameters
	<b>profile</b>	PTP profile selection
	<b>dot1as</b>	802.1AS profile
	<message>	announce/sync
	<b>timeout</b>	Number of intervals without receiving corresponding message.
	<value>	Announce: 2~10 Sync: 2~10
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile dot1as announce timeout 3 moxa(config-if)# no ptp profile dot1as announce timeout moxa(config-if)# ptp profile dot1as sync timeout 3 moxa(config-if)# no ptp profile dot1as sync timeout</pre>	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure 802.1AS gPTP Neighbor Propagation Delay Threshold

### Commands

**ptp profile dot1as neighbor-prop-delay-threshold** <value>

**no ptp profile dot1as neighbor-prop-delay-threshold**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>ptp</b>	Configure PTP parameters
	<b>profile</b>	PTP profile selection
	<b>dot1as</b>	802.1AS profile
	<b>neighbor-prop-delay-threshold</b> <value>	Neighbor propagation delay threshold nanoseconds
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile dot1as neighbor-prop-delay-threshold 800 moxa(config-if)# no ptp profile dot1as neighbor-prop-delay-threshold	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show IEEE1588 PTP Information

### Commands

**show ptp**

<b>Syntax Description</b>	<b>ptp</b>	Display PTP status and information
	<b>profile</b>	PTP profile selection
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show ptp PTP GLOBAL INFO: PTP Status : Enabled Current Profile : 1588v2 Default Profile Offset From Master(ns): -7.0 Mean Path Delay(ns) : 79 Steps Removed : 2 Sync. Status : Locked PTP Clock Time(TAI) : Wed Jan 01 01:09:20 2020	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show IEEE1588 PTP Profile Default Clock

### Commands

**show ptp profile default clock**

<b>Syntax Description</b>	<b>ptp</b>	Display PTP status and information
	<b>profile</b>	PTP profile selection
	<b>default</b>	Default profile
	<b>clock</b>	PTP clock information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show ptp profile default clock  1588v2 CLOCK DATA SET PTP Clock Type : End-to-End Boundary Clock PTP Device Profile : 1588v2 Default Profile Clock Identity : Transport Type : 802.3 Ethernet Clock Domain : 0 Number of PTP Ports : 4 Priority1 : 128 Priority2 : 128 Clock Quality: Class : 248 Accuracy : 254 Offset From Master(ns): 0 Mean Path Delay(ns) : 0 Steps Removed : 0 Slave Port : Sync. Status : Unlocked PTP Clock Time(TAI) : Wed Jan 01 00:00:00 2020	
<b>Error messages</b>	N/A	
<b>Related commands</b>	show ptp profile default parent	

## Show IEEE1588 PTP Profile Default Parent Information

### Commands

**show ptp profile default parent**

<b>Syntax Description</b>	<b>ptp</b>	Display PTP status and information
	<b>profile</b>	PTP profile selection
	<b>default</b>	Default profile
	<b>parent</b>	PTP parent properties
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show ptp profile default parent 1588v2 PARENT DATA SET Parent Clock: Parent Clock Identity : 0x70:C9:C6:FF:FE:96:34:80 Parent Port Number : 1 Grandmaster Clock: Grandmaster Clock Identity : Grandmaster Clock Quality: Class : 248 Accuracy : 254 Priority1 : 246 Priority2 : 248	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show IEEE1588 PTP Profile Default Port

### Commands

**show ptp profile default port** [<interface-type> <interface-id>]

<b>Syntax Description</b>	<b>ptp</b>	Display the PTP status and information.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>port</b>	The PTP port properties.
	<interface-type>	Ethernet (interface-type)
	<interface-id>	Interface-id : <1-X>/<1-Y> Slot Number/Port Number
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show ptp profile default port Ethernet 1/1  PTP PORT DATASET: Port Identity: 1ca0d3.ffffe.200600-1 Port State: Disabled Announce Interval(log): 0 Announce Receipt Timeout: 3 Sync Interval(log): -3 Sync Receipt Timeout: 3 Pdelay Req Interval(log): 0 Neighbor Prop. Delay Threshold: 800 Delay Asymmetry: 0 Peer Mean Path Delay(ns): 0 Neighbor Rate Ratio: 1.000000000000 Port Default Capable: False</pre>	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Enable/Disable IEEE1588 PTP Function

### Commands

**ptp enable**

**ptp disable**

<b>Syntax Description</b>	<b>ptp</b>	Configure the PTP parameters.
	<b>enable</b>	Enable the PTP operation.
	<b>disable</b>	Disable the PTP operation.
<b>Defaults</b>	Enable	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa(config)# ptp enable moxa(config)# ptp disable</pre>	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Mode

### Commands

**ptp profile default mode** {boundary | transparent} **delay-mechanism** {e2e | p2p}

<b>Syntax Description</b>	<b>ptp</b>	Configure PTP parameters
	<b>profile</b>	PTP profile selection
	<b>default</b>	Default profile
	<b>mode</b>	PTP clock mode
	boundary	Boundary clock
	transparent	Transparent clock
	<b>delay-mechanism</b>	Path delay mechanism
	e2e	End-to-End
	p2p	Peer-to-Peer
<b>Defaults</b>	End-to-End boundary clock	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ptp profile default mode boundary delay-mechanism e2e	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Priority1

### Commands

**ptp profile default priority1** <value>

**no ptp profile default priority1**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>priority1</b>	Priority 1 value used by the BMC algorithm
	<value>	0 to 255
<b>Defaults</b>	128	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ptp profile default priority1 128 moxa(config)# no ptp profile default priority1	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Priority2

### Commands

**ptp profile default priority2** <value>

**no ptp profile default priority2**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>ptp/no ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>priority2</b>	Priority2 value used by the BMC algorithm
	<value>	0 to 255
<b>Defaults</b>	128	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ptp profile default priority2 128 moxa(config)# no ptp profile default priority2	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Delay Mechanism

### Commands

**ptp profile default delay-mechanism** { e2e | p2p }

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>pt</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>delay-mechanism</b>	Propagation delay mechanism configuration
	e2e	The end-to-end delay mechanism.
p2p	The peer-to-peer delay mechanism.	
<b>Defaults</b>	1	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ptp profile default delay mechanism 1	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Domain

### Commands

**ptp profile default domain** <domain-number>

**no ptp profile default domain**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>domain</b>	The PTP Domain related configuration.
	<domain-number>	0 to 255
<b>Defaults</b>	0	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ptp profile default domain 0	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Network-Transport

### Commands

**ptp profile default network-transport** { ethernet | ipv4 }

<b>Syntax Description</b>	<b>ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>network-transport</b>	PTP network transport type related configuration
	ethernet	Layer 2 Transmission
	ipv4	UDP Internet Protocol version4
<b>Defaults</b>	802.3	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# ptp profile default network-transport 802.3	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default

### Commands

**ptp profile default**

**no ptp profile default**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# interface Ethernet 1/1 /* Enable port ptp */ moxa(config-if)# ptp profile default /* Disable port ptp */ moxa(config-if)# no ptp profile default	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Announcement Interval

### Commands

**ptp profile default announce interval** <value>

**no ptp profile default announce interval**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>announce</b>	Announce message related configuration
	<b>interval</b>	Logarithmic message interval
	<value>	Announce: 0 to 4
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa (config)# interface Ethernet 1/1 moxa (config-if)# ptp profile default announce interval 0 moxa (config-if)# no ptp profile default announce interval	
<b>Error messages</b>	N/A	

## Configure IEEE1588 PTP Profile Default Synchronization Interval

### Commands

**ptp profile default sync interval** <value>

**no ptp profile default sync interval**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	Default profile.
	<b>sync</b>	Sync message related configuration.
	<b>interval</b>	Logarithmic message interval.
	<value>	Sync: -3 to 5
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile default sync interval -3 moxa(config-if)# no ptp profile default sync interval	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Delay Request Interval

### Commands

**ptp profile default delay-req interval** <value>

**no ptp profile default delay-req interval**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>delay-req</b>	Delay request related configuration
	<b>interval</b>	Logarithmic message interval
	<value>	Delay-req: 0 to 5
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile default delay-req interval 0 moxa(config-if)# no ptp profile default delay-req interval	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Pdelay Request Interval

### Commands

**ptp profile default pdelay-req interval** <value>

**no ptp profile default pdelay-req interval**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>pdelay-req</b>	Pdelay request related configuration
	<b>interval</b>	Logarithmic message interval
	<value>	Pdelay-req: 0 to 5.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile default pdelay-req interval 0 moxa(config-if)# no ptp profile default pdelay-req interval	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure IEEE1588 PTP Profile Default Announcement Timeout

### Commands

**ptp profile default announce timeout** <value>

**no ptp profile default announce timeout**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>ptp</b>	Configure the PTP parameters.
	<b>profile</b>	The PTP profile selection.
	<b>default</b>	The Default profile.
	<b>announce</b>	announce
	<b>timeout</b>	Number of intervals without receiving corresponding message. <value> Announce: 2 to 10
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile default announce timeout 3 moxa(config-if)# no ptp profile default announce timeout	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Port

### Port Interface

#### Port Setting

#### Show Interface Status

### Commands

**show interface status**

<b>Syntax Description</b>	<b>show</b>	Show running system information				
	<b>interface</b>	Display interface information				
	<b>status</b>	The status of the interface				
<b>Defaults</b>	N/A					
<b>Command Modes</b>	Privileged EXEC					
<b>Usage Guidelines</b>	N/A					
<b>Examples</b>	moxa# show interface status					
	Port	Status	Duplex	Speed	Negotiation	MDI/MDIX
	----	-----	-----	-----	-----	-----
	Eth1/1	connected	Full	100 Mbps	Auto	MDIX(Auto)
	Eth1/2	not connected	-	-	Auto	
	Eth1/3	not connected	-	-	Auto	
	Eth1/4	not connected	-	-	Auto	
	Eth1/5	not connected	-	-	Auto	
	Eth1/6	not connected	-	-	Auto	
	Eth1/7	not connected	-	-	Auto	
	Eth1/8	not connected	-	-	Auto	
moxa#						
<b>Error Messages</b>	N/A					
<b>Related Commands</b>	N/A					

## Show Interface Type and ID

### Commands

**show interfaces** [<interface-type> <interface-id> ]

**show interfaces** [{ [<interface-type> <interface-id>] [{ description | storm-control | status }]]

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general
	<b>interfaces</b>	Display interface information
	interface-type	The Ethernet type
	interface-id	The slot number/port number
	description	Description about the interface
	storm-control	Broadcast, multicast, and unicast storm control suppression levels for an interface
	status	The status of the interface
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre> moxa# show interfaces ethernet 1/1 Eth1 admin up, oper status is up (connected) Interface SubType: gigabitEthernet Interface Alias: Slot1 Media Type: 1000Combo. Hardware Address is 00:90:E8:11:22:32 MTU :1522 bytes Duplex: Full duplex Speed: 100 Mbps Negotiation: Auto Negotiation MDI/MDIX: MDIX(Auto) Port State: Forwarding Reception Counters Octets : 71652 Packets : 933 Unicast Packets : 504 Multicast Packets : 313 Broadcast Packets : 116 Discarded Packets : 0 CRC Errors : 0 Undersize Packets : 0 Oversize Packets : 0 Transmission Counters Octets : 59783 Packets : 866 Unicast Packets : 443 Multicast Packets : 423 Broadcast Packets : 0 moxa# </pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show Interface Description

### Commands

**show interface description**

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general information
	<b>interface</b>	Display interface information
	<b>description</b>	Description about the interface
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show interface description Interface AdminStatus OperStatus Description ----- Eth1/1 up up Eth1/2 up down Eth1/3 up down Eth1/4 up down Eth1/5 up down Eth1/6 up down Eth1/7 up down Eth1/8 up down moxa#	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Shutdown Settings

### Commands

**shutdown**

**no shutdown**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>shutdown</b>	Configure shutdown parameters
<b>Defaults</b>	Physical ports are enabled by default	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# config moxa(config)# interface ethernet 1/1 moxa(config-if)# shutdown	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Description Settings

### Commands

**description** <description of this interface>

**no description**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>description</b>	Configure description parameters
	description of this interface	The description of the interface
<b>Defaults</b>	Empty string	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# description moxa	
<b>Error Messages</b>	% Port Setting: Invalid: data.portTable[0].description must be shorter than or equal to 127 characters	
<b>Related Commands</b>	N/A	

## Configure Duplex Settings

### Commands

**duplex** { full | half }

<b>Syntax Description</b>	<b>duplex</b>	Configure duplex parameters
	full	Set the port to full-duplex mode
	half	Set the port to half-duplex mode
<b>Defaults</b>	The port is full-duplex without auto-negotiation by default	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	If the port is a combo port, the port duplex configuration is only effective on the copper interface.	
<b>Examples</b>	moxa(config-if)# no auto-negotiation moxa(config-if)# duplex full	
<b>Error Messages</b>	% Port Setting: Invalid: Fiber port can only be configured to full duplex/auto-mdix. % Port Setting: Invalid: Speed, Duplex and MDI/MDIX can only be configured when the port exists.	
<b>Related Commands</b>	speed { 10   100 }	

## Configure Speed Settings

### Commands

**speed** { 10 | 100 }

<b>Syntax Description</b>	<b>speed</b>	Configure port speed parameters
	10	Set the port to run at 10 Mbps
	100	Set the port to run at 100 Mbps
<b>Defaults</b>	The port is set to 100 Mbps by default if auto-negotiation is disabled on the port	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	If the port is a combo port, the speed configuration is only effective on the copper interface.	
<b>Examples</b>	moxa(config-if)# no auto-negotiation moxa(config-if)# speed 100	
<b>Error Messages</b>	% Port Setting: Invalid: Speed cannot configure a speed which is over the ability of the port. % Port Setting: Invalid: If a speed is equal to or faster than 10G, the port cannot configure autoNego/duplex/speed. % Port Setting: Invalid: Speed, Duplex and MDI/MDIX can only be configured when the port exists.	
<b>Related Commands</b>	duplex { full   half }	

## Configure MDIX Setting

### Commands

**mdix** { auto | mdi | mdix }

<b>Syntax Description</b>	<b>mdix</b>	Configure MDI/MDIX parameters
	auto	Set the port as an auto-crossover port
	mdi	Set the port as an MDI port
	mdix	Set the port as an MDIX port
<b>Defaults</b>	Auto-crossover is enabled by default	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	If the port is a combo port, the mdix configuration is only effective on the copper interface.	
<b>Examples</b>	moxa(config-if)# mdix auto	
<b>Error Messages</b>	% Port Setting: Invalid: Fiber port can only be configured to full duplex/auto-mdix. % Port Setting: Invalid: Speed, Duplex and MDI/MDIX can only be configured when the port exists.	
<b>Related Commands</b>	N/A	

## Link Aggregation



### NOTE

This function is only supported on TSN Series models with firmware v2.3 or later.

## Configure Interface Port Channel

### Commands

**interface port-channel** <port-channel-id>

**no interface port-channel** [<port-channel-id>]

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>interface</b>	Configure interface parameters
	<b>port-channel</b>	The port-channel interface
	port-channel-id	Port channel ID, the range is from 1 to (total port/2).
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# interface port-channel 10 moxa(config-if)# no shutdown moxa(config-if)# exit moxa(config)# no interface port-channel 10	
<b>Error Messages</b>	'Invalid: Link Aggregation/Port-Channel group is out of range.' 'Invalid: Port channel should be activated before setting the selection policy configuration.' 'Invalid: The port-channel does not exist.'	
<b>Related Commands</b>	show port-channel load-balance	

## Configure Port Channel Shutdown Settings

### Commands

**shutdown**

**no shutdown**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>shutdown</b>	Shut down the port-channel
<b>Defaults</b>	N/A	
<b>Command Modes</b>	port channel Interface Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# interface port-channel 10 moxa(config-if)# no shutdown moxa(config-if)# shutdown	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show port-channel port	

## Show Link Aggregation Information

### Commands

**show port-channel** [<port-channel-id>] [{ summary }]

<b>Syntax Description</b>	<b>show</b>	Display configuration / status information
	<b>port-channel</b>	Display port-channel information
	port-channel-id	Display channel group information
	summary	Display summary per channel group
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show port-channel 10 summary	
<b>Error Messages</b>	'Invalid: The port-channel does not exist.'	
<b>Related Commands</b>	interface port-channel	

# Layer 2 Switching

## VLAN

### IEEE 802.1Q

#### Show VLAN Interface Status

### Commands

**show vlan**

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general information
	<b>vlan</b>	Display the VLAN interface status
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/ User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show vlan  vlan database ----- vlan ID      : 1 Member Ports : Eth1/1, Eth1/2, Eth1/3, Eth1/4, Eth2/1, Eth2/2               Eth2/3, Eth2/4, Eth3/1, Eth3/2, Eth3/3, Eth3/4               Eth4/1, Eth4/2, Eth4/3, Eth4/4, Eth5/1, Eth5/2               Eth5/3, Eth5/4, Eth6/1, Eth6/2, Eth6/3, Eth6/4               Eth7/1, Eth7/2, Eth7/3, Eth7/4 Untagged Ports : Eth1/1, Eth1/2, Eth1/3, Eth1/4, Eth2/1, Eth2/2                 Eth2/3, Eth2/4, Eth3/1, Eth3/2, Eth3/3, Eth3/4                 Eth4/1, Eth4/2, Eth4/3, Eth4/4, Eth5/1, Eth5/2                 Eth5/3, Eth5/4, Eth6/1, Eth6/2, Eth6/3, Eth6/4                 Eth7/1, Eth7/2, Eth7/3, Eth7/4 -----</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	vlan <vlan-id> ports add <interface-type> <1/a-b> untagged <interface-type> <1/a-b> forbidden <interface-type> <1/a-b> vlan active vlan name	



## Show VLAN Port Configuration

### Commands

**show vlan port config port** [port {port-channel <integer> | < interface-type > < interface-id> }]

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general information
	<b>vlan</b>	Display VLAN interface status
	<b>port</b>	The port interface
	<b>config</b>	The port's configuration
	<b>port</b>	The port interface
	port-channel <integer>	The port channel ID This number is the max number of trunk group IDs
	interface-type	The Ethernet type
	interface-id integer	The interface ID: slot number/port number
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/ User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show vlan port config port eth 1/1  Vlan Port configuration table ----- Port Eth1/1 Port Vlan ID           : 1 Port Acceptable Frame Type : Admit Only Untagged and Priority Tagged Port Ingress Filtering  : Enabled Port Mode               : Access -----</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	<pre>switchport pvid switchport acceptable-frame-type switchport mode</pre>	

## Show MAC Address Table for Dynamic Unicast

### Commands

**show mac-address-table dynamic unicast** [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>]  
 [interface {port-channel <integer> | <interface-type> <interface-id> }]

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general information																				
	<b>mac-address-table</b>	Display MAC address information																				
	<b>dynamic</b>	Display dynamically learned MAC addresses																				
	<b>unicast</b>	The unicast MAC addresses																				
	vlan	The VLAN interface																				
	vlan-range	The VLAN ID range for which the details will be displayed. This value ranges from 1 to 4094. For example, 4000-4010 will show information for those VLAN IDs.																				
	interface-type port-channel	The Ethernet type The port-channel																				
	interface-id	The slot number/port number																				
<b>Defaults</b>	N/A																					
<b>Command Modes</b>	Privileged EXEC/User EXEC																					
<b>Usage Guidelines</b>	N/A																					
<b>Examples</b>	<pre>moxa# show mac-address-table dynamic unicast</pre> <table border="1"> <thead> <tr> <th>vlan</th> <th>Mac Address</th> <th>Type</th> <th>ConnectionId</th> <th>Ports</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>00:00:5e:00:01:02</td> <td>Learnt</td> <td></td> <td>Eth1/3</td> </tr> <tr> <td>1</td> <td>00:05:1b:a1:ae:62</td> <td>Learnt</td> <td></td> <td>Eth1/3</td> </tr> <tr> <td>1</td> <td>00:0c:29:9b:83:e9</td> <td>Learnt</td> <td></td> <td>Eth1/3</td> </tr> </tbody> </table> <p>Total Mac Addresses displayed: 44</p>		vlan	Mac Address	Type	ConnectionId	Ports	1	00:00:5e:00:01:02	Learnt		Eth1/3	1	00:05:1b:a1:ae:62	Learnt		Eth1/3	1	00:0c:29:9b:83:e9	Learnt		Eth1/3
vlan	Mac Address	Type	ConnectionId	Ports																		
1	00:00:5e:00:01:02	Learnt		Eth1/3																		
1	00:05:1b:a1:ae:62	Learnt		Eth1/3																		
1	00:0c:29:9b:83:e9	Learnt		Eth1/3																		
<b>Error Messages</b>	N/A																					
<b>Related Commands</b>	mac-address-table																					

## Show MAC Address Table for Static Multicast and Unicast

### Commands

**show mac-address-table static multicast** [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] [interface {port-channel <integer> | <interface-type> <interface-id> }]

**show mac-address-table static unicast** [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] [interface {port-channel <integer> | <interface-type> <interface-id> }]

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general information
	<b>mac-address-table</b>	Display MAC address information
	<b>static</b>	Static entry
	<b>multicast</b>	The multicast MAC address
	<b>unicast</b>	The unicast MAC address
	vlan	The VLAN interface
	vlan-range	The VLAN ID range for which the details will be displayed. This value ranges from 1 to 4094. For example, 4000-4010 will show information for those VLAN IDs.
	interface-type port-channel interface-id	The Ethernet type The port-channel The slot number/port number
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/ User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre> moxa# show mac-address-table static multicast vlan 1  Static Multicast Table ----- Vlan          : 1 Mac Address   : 01:00:00:00:11:22 Member Ports  : Eth1/1 ----- Vlan          : 1 Mac Address   : 01:00:00:11:22:33 Member Ports  : Eth1/1, Eth1/2, Eth1/3, Eth1/4, Eth1/5, Eth1/6                 Eth1/7, Eth1/8 -----  Total Mac Addresses displayed: 2  moxa# show mac-address-table static unicast  VLAN  MAC Address      Type  Ports ----  - 1     02:99:55:23:85:46  Static Eth1/3  Total Mac Addresses displayed: 1 </pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	mac-address-table	

## Show VLAN Management

### Commands

**show management vlan**

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general information
	<b>management</b>	Display Management VLAN information
	<b>vlan</b>	The VLAN interface
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/ User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show management vlan  Management VLAN-List 1,2, .....	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	Management vlan No management vlan	

## Create/Delete a VLAN

### Commands

**vlan** <vlan-id>

**no vlan** <vlan-id>

**vlan active**

**vlan name** < vlan name string >

<b>SyntaxDescription</b>	<b>vlan/no vlan</b>	Create/delete a VLAN
	vlan-id	The VLAN identifier
	<b>active</b>	Activate the VLAN
	name < vlan name string >	The VLAN name string consisting of a total of 32 characters
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# vlan 100 moxa(config-vlan)# vlan active moxa(config)# no vlan 100 moxa(config)#	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	interface vlan <vlan-id> show vlan	

## Configure VLAN Mode

### Commands

**ports add** {member ([<iftyp> <iface\_list>][port-channel <integer>]) | untagged ([<iftyp> <iface\_list>][port-channel <integer>])}

**ports set member** ([<iftyp> <iface\_list>][port-channel <integer>]) [untagged ([<iftyp> <iface\_list>][port-channel <integer>])] [port-channel <integer>]]

**no ports** [<interface-type> <slot/port-port,slot/port,...>] [port-channel <integer>] [untagged ([<interface-type> <slot/port-port,slot/port,...>] [port-channel <integer>])] [port-channel <integer>]]

<b>Syntax Description</b>	<b>ports/no ports</b>	Set/delete member/untagged/forbidden port
	<b>add</b>	Add member/untag/forbidden port
	<b>set</b>	Overwrite member/untagged/forbidden port
	<b>slot/port-port</b>	The slot number/port number
	interface-type	The Ethernet type
	port-channel	<1-N> Set the list of port channel interfaces or a specific port channel identifier.
	member	Configure the ports to be set as a member of the VLAN
	untagged	Configure the ports that will be used by the VLAN to transmit egress traffic as untagged packets.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Config VLAN mode	
<b>Usage Guidelines</b>	This command can only be executed from within VLAN configuration mode. From Configuration mode, enter vlan <vlan-id> to enter VLAN config mode.	
<b>Examples</b>	moxa(config)# vlan 10 moxa(config-vlan)#ports add member ethernet 1/3 untagged all	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	vlan active switchport mode show vlan show mac-address-table count	

## Configure a Static Unicast MAC Address in the Forwarding Database

### Commands

**mac-address-table static unicast** <aa:aa:aa:aa:aa:aa> vlan <vlan-id> set interface ([<interface-type> <interface-id>][port-channel <integer>])

**no mac-address-table static unicast** <aa:aa:aa:aa:aa:aa> vlan <vlan-id>

<b>Syntax Description</b>	<b>mac-address-table</b>	Configure mac-address-table parameters
	<b>static</b>	The statically configured MAC address
	<b>unicast</b>	Configure the unicast MAC address
	aa:aa:aa:aa:aa:aa	The unicast MAC address
	vlan	Configure the VLAN
	vlan-id	The VLAN ID
	set	Set the unicast MAC address to a specified port
	interface-type	The Ethernet type The port-channel
	interface-id	The slot number/port number
	status	Set the status of the static unicast entry
	permanent	The entry remains even after the next reset of the bridge
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# mac-address-table static unicast 00:11:22:33:22:11 vlan 1 set ethernet 1/2 status permanent	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	mac-address-table static multicast vlan vlan ports add show mac-address-table static unicast	

## Configure MAC Address Table Aging Time

### Commands

**mac-address-table aging-time** <10-300 seconds>

**no mac-address-table aging-time**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>mac-address-table</b>	Configure the MAC-address-table
	<b>aging-time</b>	Maximum age of an entry in the MAC address table to its default value.
	second	The aging time ranging from 10 to 300 seconds
<b>Defaults</b>	300s	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# mac-address-table aging-time 100	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show mac-address-table aging-time	

## Configure PVID on a Specified Port

### Commands

**switchport pvid** <vlan-id>

**no switchport pvid**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>pvid</b>	Configure port-based VLAN parameters
	vlan-id	The VLAN ID, ranging from 1 to 4094.
<b>Defaults</b>	1	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	<p>If a PVID does not exist for this system, it will be created automatically after configuration.</p> <p>If the port is configured to be in Access Mode, the actions below will be applied automatically.</p> <p>Remove this port from member port list if it is bound to another VID which is different from PVID</p> <p>Modify this port into an untagged member of this PVID</p> <p>If the port is configured to be in Trunk Mode, the port will automatically be modified into a tagged member of this PVID.</p>	
<b>Examples</b>	moxa(config-if)# switchport pvid 1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	switchport vlan vlan active switchport acceptable-frame-type	

## Configure VLAN-dependent BPDU Frames

### Commands

**switchport acceptable-frame-type** {all | tagged | untaggedAndPrioritytagged }

<b>Syntax Description</b>	<b>acceptable-frame-type</b>	Configure acceptable-frame-type parameters
	all	Configures the acceptable frame type as all which are acceptable and subjected to ingress filtering.
	tagged	Configures the acceptable frame type as tagged.
	untaggedAndPrioritytagged	Configures the acceptable frame type as untagged and priority tagged.
<b>Defaults</b>	all	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# switchport acceptable-frame-type untaggedAndPrioritytagged	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	switchport switchport pvid switchport ingress-filter switchport mode show vlan port config	

## Configure Switch Port Operation Mode

### Commands

**switchport mode** {access | trunk | hybrid}

<b>Syntax Description</b>	<b>switchport</b>	Configure the switch port
	<b>mode</b>	Configure switch port mode parameters
	access	Configure the port as an access port that accepts and sends only untagged packets. This kind of port is added as a member to a specific VLAN and only carries traffic for the VLAN to which the port is assigned. The port can only be set as an access port if the following 3 conditions are met: The acceptable frame type is set as "Admit untagged and pri-tagged". The port is not a tagged member of any VLAN. The PVID is the same as the only untagged VLAN it joined.
	trunk	Configures the port as trunk port that accepts and sends only tagged frames. This kind of port is added as members of several existing VLANs, and carries traffic for all of them. The port can only be set as a trunk port. if the following 2 conditions are met: The acceptable frame type is set as "Admit tagged only" The port is not an untagged member of any VLAN.
	hybrid	Configures the port as a hybrid port that accepts and sends both tagged and untagged frames
<b>Defaults</b>	The default port operation mode is set to Hybrid	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	<p>When changing from trunk or hybrid to access mode, the following changes will be automatically applied:</p> <ul style="list-style-type: none"> <li>Forces the port to become an untagged member of the PVID domain</li> <li>If the port exists in another VLAN, it will be removed</li> <li>Forces the accept frame type to be set to "Admit untagged and pri-tagged"</li> </ul> <p>When changing from access or hybrid to trunk mode, the following changes will be automatically applied:</p> <ul style="list-style-type: none"> <li>Forces the port to become a tagged member of the PVID domain</li> <li>If the port was an untagged member in another VLAN, it will change into a tagged member.</li> <li>Forces the accept frame type to be set to "Admit tagged only"</li> </ul> <p>When changing from access or trunk to hybrid mode, there will be no changes</p>	
<b>Examples</b>	moxa (config-if)# switchport mode hybrid	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	switchport vlan ports switchport acceptable-frame-type show vlan port config	

## Set VLAN Access Port

### Commands

**switchport access** vlan <vlan-id>

<b>Syntax Description</b>	<b>switchport access</b> vlan <vlan-id>	Configure the port as an access port The specified VLAN ID for which this access port will carry traffic, ranging from 1 to 4094.
<b>Defaults</b>	The port mode is set to access port by default	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	Disregarding the current operation mode of the port, this command will change the port to access mode and the following changes will automatically apply: Forces the acceptable frame type to be set to "untagged AND priority tagged" Sets PVID to specified a VLAN Changes the port into an untagged member of a specified VLAN and removes this port from any other VLANs. Sets the port mode to access mode	
<b>Examples</b>	moxa(config-if)# switchport access vlan 10	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show vlan port config show vlan	

## Configure VLAN Management

### Commands

**management vlan** <vlan-id>

**no management vlan** <vlan>

<b>Syntax Description</b>	<b>no</b> <b>management</b> <b>vlan</b> vlan-id	Remove configuration/delete entry/reset to default value Configure management Configure the management VLAN The management VLAN ID
<b>Defaults</b>	The default management VLAN ID is set to 1	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# management vlan 1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

# MAC

## Static Unicast

### Configure a Static Unicast MAC Address in the Forwarding Database

#### Commands

**mac-address-table static unicast** <aa:aa:aa:aa:aa:aa> vlan <vlan-id> **set** [interface ([<interface-type> <slot/port-port,slot/port,...>] [<interface-type> <slot/port-port,slot/port,...>] [status { permanent }])]

**no mac-address-table static unicast** <aa:aa:aa:aa:aa:aa> vlan <vlan-id>

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>mac-address-table</b>	Configure MAC address table parameters
	<b>static</b>	Statically configured MAC address
	<b>unicast</b>	The unicast MAC address
	<b>set</b>	Overwrite port
	interface-id	The slot number/port number
	status	Specify the status of the static unicast entry: permanent - entry remains even after the next reset of the bridge
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# mac-address-table static unicast aa:aa:aa:bb:bb:cc vlan 168 set interface ethernet 2/4 status permanent	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	mac-address-table static multicast vlan vlan ports add show mac-address-table static unicast	

# MAC Address Table

## Show MAC Address Table Information

### Commands

**show mac-address-table** [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] [interface <interface-type> <interface-id> ]

**show mac-address-table aging-time**

**show mac-address-table count** [vlan <vlan-id>]

**show mac-address-table dynamic unicast** [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] [interface {port-channel <integer> | <interface-type> <interface-id> }]

**show mac-address-table static multicast** [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] [interface {port-channel <integer> | <interface-type> <interface-id> }]

**show mac-address-table static unicast** [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] [interface {port-channel <integer> | <interface-type> <interface-id> }]

<b>Syntax Description</b>	<b>mac-address-table</b>	Display MAC address information																				
	<b>address</b>	The MAC address entry																				
	<b>aging-time</b>	The maximum age of a MAC address table entry																				
	<b>count</b>	The number of MAC addresses present on all VLANs or on a specified VLAN																				
	<b>dynamic</b>	Dynamically learned MAC address																				
	<b>static</b>	Statically configured MAC address																				
	<b>multicast</b>	The multicast MAC address																				
	<b>unicast</b>	The unicast MAC address																				
	vlan	The VLAN interface																				
	vlan-range	The VLAN ID range for which the details will be displayed. This value ranges from 1 to 4094. For example, 4000-4010 will show information for those VLAN IDs.																				
	interface-id	The slot number/port number																				
	port-channel <integer>	The port channel ID This number is the max number of trunk group IDs																				
	<b>Defaults</b>	N/A																				
<b>Command Modes</b>	Privileged EXEC/User EXEC																					
<b>Usage Guidelines</b>	N/A																					
<b>Examples</b>	<pre>moxa# show mac-address-table</pre> <table border="1"> <thead> <tr> <th>vlan</th> <th>Mac Address</th> <th>Type</th> <th>ConnectionId</th> <th>Ports</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>00:00:5e:00:01:02</td> <td>Learnt</td> <td></td> <td>Eth1/3</td> </tr> <tr> <td>1</td> <td>00:21:cc:62:f7:0b</td> <td>Learnt</td> <td></td> <td>Eth1/3</td> </tr> <tr> <td>1</td> <td>00:21:cc:72:a8:d7</td> <td>Learnt</td> <td></td> <td>Eth1/3</td> </tr> </tbody> </table> <p>Total Mac Addresses displayed: 3</p>		vlan	Mac Address	Type	ConnectionId	Ports	1	00:00:5e:00:01:02	Learnt		Eth1/3	1	00:21:cc:62:f7:0b	Learnt		Eth1/3	1	00:21:cc:72:a8:d7	Learnt		Eth1/3
vlan	Mac Address	Type	ConnectionId	Ports																		
1	00:00:5e:00:01:02	Learnt		Eth1/3																		
1	00:21:cc:62:f7:0b	Learnt		Eth1/3																		
1	00:21:cc:72:a8:d7	Learnt		Eth1/3																		
<b>Error Messages</b>	N/A																					
<b>Related Commands</b>	mac-address-table																					

# QoS

## Classification

### Configure QoS Default Priority Setting

#### Commands

**qos default-priority** <default-priority(0-7)>

<b>Syntax Description</b>	<b>qos</b>	Configure QoS parameters
	<b>default-priority</b>	Configure the default user priority
	default-priority (0-7)	The VLAN priority
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa (config-if)# qos default-priority 1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	moxa # show qos defaultPriority [ interface <iftype> <ifnum> ]	

### Show QoS Default Priority Setting

#### Commands

**show qos default-priority** [ interface <iftype> <ifnum> ]

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>qos</b>	Display QoS information
	<b>default-priority</b>	Display the QoS default user priority
	interface	Interface information
	iftype	The interface type
	ifnum	The interface index
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa # show qos default-priority interface ethernet 1/1  QoS Default Priority ----- Interface Ethernet 1/1 Default Priority is 3  moxa # show qos default-priority  QoS Default Priority ----- Interface Ethernet 1/1 Default Priority is 3 Interface Ethernet 1/2 Default Priority is 3 Interface Ethernet 1/3 Default Priority is 3 Interface Ethernet 1/4 Default Priority is 3 Interface Ethernet 2/1 Default Priority is 3 Interface Ethernet 2/2 Default Priority is 3 ..... Interface Ethernet 7/4 Default Priority is 3	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	moxa (config)# qos default-priority <default-priority(0-7)>	

# Multicast

## Static Multicast

### Show MAC Address Table for Static Multicast

#### Commands

**show mac-address-table static multicast** [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] | <interface-type> <interface-id>]

<b>Syntax Description</b>	<b>mac-address-table</b>	Display the MAC address table information
	<b>static multicast</b>	Display static multicast address information
	vlan <vlan-range>	Display all entries in the FDB table for the specified VLANs
	address <aa:aa:aa:aa:aa:a a>	Display the specified multicast MAC address in the FDB table
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC User EXEC	
<b>Usage Guidelines</b>	Display static multicast address table	
<b>Examples</b>	show mac-address-table static multicast  Static Multicast Table ----- Vlan          : 1 Mac Address   : 01:99:55:23:85:46 Member Ports  : Eth1/3, Eth1/4 -----  Total Mac Addresses Displayed: 1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	mac-address-table static multicast	

## Configure MAC Address Table for Static Multicast

### Commands

**mac-address-table static multicast** <aa:aa:aa:aa:aa:aa> vlan <vlan-id> {add | set} interface  
 ([<interface-type> <slot/port-port,slot/port,...>][port-channel <integer>])

<b>Syntax Description</b>	<b>mac-address-table</b>	Configure the MAC address table
	<b>static multicast</b>	Configure the static multicast address
	aa:aa:aa:aa:aa:aa	The multicast destination MAC address
	vlan <vlan-id>	The VLAN ID of the VLAN the multicast destination MAC address belongs to
	add	Add the new interface port
	Set	Overwrite the new interface port
	interface	Configure member ports details.
	status	The status of the static multicast entry.
	permanent	Entry remains even after the next reset of the bridge
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	Configure the static multicast address	
<b>Examples</b>	moxa(config)# mac-address-table static multicast 01:02:03:04:05:06 vlan 1 add interface ethernet 1/1-2	
<b>Error Messages</b>	"Invalid: Duplicate MAC Address." "Invalid: Configuration fail." "Invalid: Reserved multicast address (01:80:C2) is not allowed to set static multicast."	
<b>Related Commands</b>	show mac-address-table static multicast	

## 802.1Qbv

### Show 802.1Qbv Administrative Information

#### Commands

**show dot1qbv** [interface <iftype> <ifnum>] **administrative**

<b>Syntax Description</b>	<b>dot1qbv</b>	Display information for 802.1Qbv.
	interface	The port interface.
	iftype	The interface type (Ethernet).
	ifnum	The interface ID : <1-X>/<1-Y> Slot Number/Port Number ; Note: X, Y are project-dependent values. X indicates the max number of slots. Y indicates the max number of module ports.
	<b>administrative</b>	Show 802.1Qbv administrative information.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show dot1qbv interface ethernet 1/1 administrative IEEE 802.1Qbv configuration Port Idx: 1 Schedule Gate: False Default Gate States: 0xFF Admin Base Time Seconds: 0 Nanoseconds: 0 Admin Cycle Time Numerator: 1 Denominator: 1000 Control List Length: 0 Config Change: False	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show 802.1Qbv Operative Information

### Commands

**show dot1qbv** [interface <iftype> <ifnum>] **operative**

<b>Syntax Description</b>	<b>dot1qbv</b>	Display information for 802.1Qbv.
	interface	The port interface.
	iftype	The interface type (Ethernet).
	ifnum	The interface ID : <1-X>/<1-Y> Slot Number/Port Number ; Note: X, Y are project-dependent values. X indicates the max number of slots. Y indicates the max number of module ports.
	<b>administrative</b>	Show 802.1Qbv operative information.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC/User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show dot1qbv interface ethernet 1/1 operative IEEE 802.1Qbv information Port Idx: 1 Default Gate States: 0xFF Current Time     Seconds: 1725     Nanoseconds: 914026836 Oper Base Time     Seconds: 0     Nanoseconds: 0 Oper Cycle Time     Numerator: 1     Denominator: 0 Control List Length: 0 Config Change Time     Seconds: 0     Nanoseconds: 0 Tick Granularity: 9 Config Pending: False Config Change Error: 0 Supported List Max: 2048</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Enable/Disable 802.1Qbv

### Commands

**dot1qbv**

**no dot1qbv**

<b>Syntax Description</b>	<b>dot1qbv</b>	Enable 802.1Qbv functionality.
	<b>no</b>	Remove configuration/delete entry/reset to default value.
	<b>administrative</b>	Show 802.1Qbv operative information.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa(config-if)# dot1qbv moxa(config-if)# no dot1qbv</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure 802.1Qbv Default Gate-states

### Commands

**dot1qbv default gate-states** <integer(0 to 255)>

<b>Syntax Description</b>	<b>dot1qbv</b>	Configure 802.1Qbv parameters.
	<b>default</b>	Configure default value parameters.
	<b>gate-states</b>	Configure 802.1Qbv gate-state parameters.
	(0 to 255)	Specify the gate-state value.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# dot1qbv default gate-states 255	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure 802.1Qbv Admin Time



### NOTE

This function is only supported on TSN Series models with firmware v2.4 or later.

### Commands

**dot1qbv admin-time sec** <integer(0-4294967295)> **ns** <integer(0-999999999)>

<b>Syntax Description</b>	<b>dot1qbv</b>	Configure 802.1Qbv parameters.
	<b>admin time</b>	Configure admin time parameters.
	<b>sec</b>	Configure the second duration of admin time.
	(0-4294967295)	Specify admin time duration (in seconds).
	<b>ns</b>	Configure the nanosecond duration of admin time.
(0-999999999)	Specify admin time duration (in seconds).	
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# dot1qbv admin-time sec 123456 ns 987654321	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure 802.1Qbv Config-change Operation

### Commands

**dot1qbv config-change operation** { true | false }

<b>Syntax Description</b>	<b>dot1qbv</b>	Configure 802.1Qbv parameters.
	<b>config-change</b>	Configure config-change parameters.
	<b>operation</b>	Configure config-change operation parameters.
	true	Configure when config-change operations start.
	false	Configure when config-change operations stop.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# dot1qbv config-change operation true moxa(config-if)# dot1qbv config-change operation false	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	



## Append 802.1Qbv Control List

### Commands

**dot1qbv control-list append oper-name** { sgs | shm | srm } **gate-states** <integer(0-255)> **time** <integer(0-999999999)>

<b>Syntax Description</b>	<b>dot1qbv</b>	Configure 802.1Qbv parameters.
	<b>control-list</b>	Configure control list parameters.
	<b>append</b>	Append control list parameters.
	<b>oper-name</b>	Configure the control list operation name.
	sgs	Set the operation name to set-gate-states.
	shm	Set the operation name to set-and-hold-mac.
	srm	Set the operation name to set-and-release-mac.
	<b>gate-states</b>	Configure 802.1Qbv gate-state parameters.
	(0-255)	Specify the gate-state value.
	<b>time</b>	Configure the interval (in seconds).
(0-999999999)	Specify the interval value.	
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# dot1qbv control-list append oper-name sgs gate-states 100 time 12345 moxa(config-if)# dot1qbv control-list append oper-name shm gate-states 100 time 12345 moxa(config-if)# dot1qbv control-list append oper-name srm gate-states 100 time 12345	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Remove 802.1Qbv Control List

### Commands

**dot1qbv control-list remove** { index <integer(0-1023)> | all }

<b>Syntax Description</b>	<b>dot1qbv</b>	Configure 802.1Qbv parameters.
	<b>control-list</b>	Configure control list parameters.
	<b>remove</b>	Remove a specific or all control-list entries.
	index	Configure a specific control list gate rule.
	(0-1023)	Remove the entry with the specified index.
	all	Remove all control-list entries.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# dot1qbv control-list remove index 10 moxa(config-if)# dot1qbv control-list remove all	
<b>Error Messages</b>	Invalid index:10	
<b>Related Commands</b>	N/A	

## Set 802.1Qbv Control List

### Commands

**dot1qbv control-list set index** <integer(0-1023)> **oper-name** { sgs | shm | srm } **gate-states** <integer(0-255)> **time** <integer(0-999999999)>

<b>Syntax Description</b>	<b>dot1qbv</b>	Configure 802.1Qbv parameters.
	<b>control-list</b>	Configure control list parameters.
	<b>set</b>	Control control-list set operations.
	<b>index</b>	Configure a specific control list gate rule.
	(0-255)	Specify the entry index.
	<b>oper-name</b>	Configure the control list operation name.
	sgs	Set the operation name to set-gate-states.
	shm	Set the operation name to set-and-hold-mac.
	srm	Set the operation name to set-and-release-mac.
	<b>gate-states</b>	Configure 802.1Qbv gate-state parameters.
	(0-255)	Specify the gate-state value.
<b>time</b>	Configure the interval (in seconds).	
(0-999999999)	Specify the interval value.	
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# dot1qbv control-list set index 11 oper-name sgs gate 100 time 10000 moxa(config-if)# dot1qbv control-list set index 11 oper-name shm gate 100 time 10000 moxa(config-if)# dot1qbv control-list set index 11 oper-name srm gate 100 time 10000	
<b>Error Messages</b>	Set index :11 failure	
<b>Related Commands</b>	N/A	

## Configure 802.1Qbv Cycle Time

### Commands

**dot1qbv cycle-time numerator** <integer(0-4294967295)> **denominator** <integer(0-4294967295)>

<b>Syntax Description</b>	<b>dot1qbv</b>	Configure 802.1Qbv parameters.
	<b>cycle-time</b>	Configure cycle time parameters.
	<b>numerator</b>	Configure the value of the cycle time numerator value.
	(0-4294967295)	Specify the cycle time numerator value.
	<b>denominator</b>	Configure the value of the cycle time denominator value.
	(0-4294967295)	Specify the cycle time denominator value.
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# dot1qbv cycle-time numerator 1 denominator 100	
<b>Error Messages</b>	Invalid index:10	
<b>Related Commands</b>	N/A	

## QBV Commands

### Queue Max SDU



#### NOTE

This function is only supported on TSN Series models with firmware v2.4 or later.

#### Commands

**dot1qbv max-sdu <integer(48-1516)> { queue <integer(0-7)> | all }**

<b>Syntax Description</b>	<b>dot1qbv</b>	Configure 802.1Qbv parameters.
	<b>max-sdu</b>	Configure queueMasSDU parameter.
	<b>(48-1516)</b>	Configure value of queueMaxSDU.
	<b>queue</b>	Configure value of queue intended to configured.
	<b>(0-7)</b>	Configure value of cycle time denominator.
	<b>all</b>	Configure all of the queue.
<b>Defaults</b>	1516	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# dot1qbv max-sdu 1500 queue 0	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

### Cycle-time-extension

#### Commands

**dot1qbv cycle-time-extension <integer(0-4294967295)>**

<b>Syntax Description</b>	<b>dot1qbv</b>	Configure 802.1Qbv parameters.
	<b>cycle-time-extension</b>	Configure cycle-time-extension parameter.
	<b>(0-4294967295)</b>	Configure value of cycle-time-extension.
<b>Defaults</b>	1000	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config-if)# dot1qbv cycle-time-extension 1000	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

# Network Redundancy

## Layer 2 Redundancy

### Spanning Tree

#### Enable/Disable Spanning Tree

##### Commands

**spanning-tree**

**no spanning-tree**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
<b>Defaults</b>	Spanning Tree Protocol is disabled by default	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree moxa(config-if)# no spanning-tree	
<b>Error Messages</b>	Invalid: Port channel member port cannot be assigned to a redundant protocol. Invalid: The port-channel group does not exist.	
<b>Related Commands</b>	show spanning-tree detail show spanning-tree summary	

#### Configure Spanning Tree Compatibility

##### Commands

**spanning-tree compatibility { stp | rstp }**

**no spanning-tree compatibility**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/resets to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>compatibility</b>	The Spanning Tree compatibility version
	stp	Spanning Tree Protocol configuration
	rstp	Rapid Spanning Tree configuration
<b>Defaults</b>	Spanning Tree Protocol compatibility is set to rstp by default.	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	The "no spanning-tree compatibility" command will restore the default value	
<b>Examples</b>	moxa# configure terminal moxa(config)# spanning-tree compatibility stp moxa(config)# spanning-tree compatibility rstp moxa(config)# no spanning-tree compatibility	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show spanning-tree show spanning-tree detail	

## Configure Spanning Tree Priority

### Commands

**spanning-tree priority** <value (0-61440)>

**no spanning-tree priority**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration / deletes the entry / resets to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>priority</b>	Configure switch priority for Spanning Tree instances
	value	The switch priority value ranging from 0 to 61440
<b>Defaults</b>	The default priority is set to 32768	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	The "no spanning-tree priority" command will restore the default value	
<b>Examples</b>	moxa# configure terminal moxa(config)# spanning-tree priority 61440 moxa(config)# no spanning-tree priority	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show spanning-tree show spanning-tree detail	

## Configure Spanning Tree Forward Time

### Commands

**spanning-tree forward-time** <seconds (4-30)>

**no spanning-tree forward-time**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/deletes the entry/resets to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>forward-time</b>	The interval (in seconds) in which a port stays in its current state before moving to next state
	seconds	The forwarding time ranging from 4 to 30 seconds
<b>Defaults</b>	The default forwarding time is 15 seconds	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	Command "no spanning-tree forward-time" will reset to default value $2 * (\text{ForwardDelay} - 1) \geq \text{MaxAge} \geq 2 * (\text{Hello Time} + 1)$	
<b>Examples</b>	moxa# configure terminal moxa(config)# spanning-tree forward-time 16 moxa(config)# no spanning-tree forward-time	
<b>Error Messages</b>	% RSTP: $2 * (\text{Forward time} - 1) \geq \text{Max age time} \geq 2 * (\text{Hello time} + 1)$	
<b>Related Commands</b>	show spanning-tree show spanning-tree detail	

## Configure Spanning Tree Hello Time

### Commands

**spanning-tree hello-time** <seconds (1-2)>

**no spanning-tree hello-time**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/deletes the entry/resets to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>hello-time</b>	The interval (in seconds) between the transmission of configuration BPDUs
	seconds	The hello time interval ranging from 1 to 2 seconds
<b>Defaults</b>	The default hello time is set to 2 seconds	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	The "no spanning-tree hello-time" command will restore the default value $2 * (\text{ForwardDelay} - 1) \geq \text{MaxAge} \geq 2 * (\text{Hello Time} + 1)$	
<b>Examples</b>	moxa# configure terminal moxa(config)# spanning-tree hello-time 1 moxa(config)# no spanning-tree hello-time	
<b>Error Messages</b>	% RSTP: $2 * (\text{Forward time} - 1) \geq \text{Max age time} \geq 2 * (\text{Hello time} + 1)$	
<b>Related Commands</b>	show spanning-tree show spanning-tree detail	

## Configure Spanning Tree Maximum Age

### Commands

**spanning-tree max-age** <seconds (6-40)>

**no spanning-tree max-age**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>max-age</b>	The maximum age (in seconds) before learnt STP information is discarded
	seconds	The maximum age ranging from 6 to 40 seconds
<b>Defaults</b>	The STP maximum age is set to 20 seconds by default	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	The "no spanning-tree max-age" command will restore the default value $2 * (\text{ForwardDelay} - 1) \geq \text{MaxAge} \geq 2 * (\text{Hello Time} + 1)$	
<b>Examples</b>	moxa# configure terminal moxa(config)# spanning-tree max-age 21 moxa(config)# no spanning-tree max-age	
<b>Error Messages</b>	% RSTP: $2 * (\text{Forward time} - 1) \geq \text{Max age time} \geq 2 * (\text{Hello time} + 1)$	
<b>Related Commands</b>	show spanning-tree show spanning-tree detail	

## Configure Spanning Tree Transmission Hold Counter

### Commands

**spanning-tree transmit hold-count** <value (1-10)>

**no spanning-tree transmit hold-count**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol
	<b>transmit</b>	Transmission hold counter configuration
	<b>hold-count</b>	Configure the hold counter to limit the maximum transmission rate of the switch
	value	The transmission hold counter value ranging from 1 to 10
<b>Defaults</b>	The STP hold counter is set to 6 by default	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	The "no spanning-tree transmit hold-count" command will restore the default value	
<b>Examples</b>	moxa# configure terminal moxa(config)# spanning-tree transmit hold-count 10 moxa(config)# no spanning-tree transmit hold-count	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show spanning-tree detail	

## Configure Spanning Tree Auto-edge

### Commands

**spanning-tree auto-edge**

**no spanning-tree auto-edge**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol
	<b>auto-edge</b>	Configure the automatic detection of bridges attached to an interface
<b>Defaults</b>	Spanning Tree auto-edge is enabled by default	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree auto-edge moxa(config-if)# no spanning-tree auto-edge	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show spanning-tree detail show spanning-tree interface ethernet 1/1 detail	

## Configure Spanning Tree Cost

### Commands

**spanning-tree cost** <value (0-200000000)>

**no spanning-tree cost**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol
	<b>cost</b>	Configure the path cost
	value	The Spanning Tree cost ranging from 0 to 200000000
<b>Defaults</b>	The default path cost is set to 0	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	The "spanning-tree cost 0" command will auto-detect the cost based on port speed The "no spanning-tree cost" command will restore the default value	
<b>Examples</b>	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree cost 20000 moxa(config-if)# no spanning-tree cost	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show spanning-tree detail show spanning-tree interface ethernet 1/1 detail show spanning-tree interface ethernet 1/1 detail	

## Configure Spanning Tree Link Type

### Commands

**spanning-tree link-type** { point-to-point | shared }

**no spanning-tree link-type**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>link-type</b>	Configure the link type as a point-to-point link or as a shared LAN segment on which another bridge is present
	point-to-point	Set the link to a point-to-point link
	shared	Set the link as a shared link
<b>Defaults</b>	The default Spanning Tree link-type is set to auto-detect	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	The "no spanning-tree link-type" command will auto-detect the interface link type based on the port duplex mode	
<b>Examples</b>	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree link-type point-to-point moxa(config-if)# spanning-tree link-type shared moxa(config-if)# no spanning-tree link-type	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show spanning-tree detail show spanning-tree interface ethernet 1/1 show spanning-tree interface ethernet 1/1 detail	

## Configure Spanning Tree Portfast

### Commands

**spanning-tree portfast**

**no spanning-tree portfast**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>portfast</b>	Specify ports that have only hosts connected to enable immediate transition to a forwarding state
<b>Defaults</b>	Spanning Tree Portfast is disabled by default	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	Shut down the interface before enabling the Portfast function The Portfast function cannot be enabled on a port that has loop guard enabled	
<b>Examples</b>	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree portfast moxa(config-if)# no spanning-tree portfast	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show spanning-tree detail show spanning-tree interface ethernet 1/1 show spanning-tree interface ethernet 1/1 detail	

## Configure Spanning Tree Port Priority

### Commands

**spanning-tree port-priority <value (0-240)>**

**no spanning-tree port-priority**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>port-priority</b>	Configure the port priority value
	value	The Spanning Tree port priority ranging from 0 to 240
<b>Defaults</b>	The default Spanning Tree port priority is set to 128	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	The "no spanning-tree port-priority" command will restore the default value	
<b>Examples</b>	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree port-priority 16 moxa(config-if)# no spanning-tree port-priority	
<b>Error Messages</b>	N/A	

## Configure Spanning Tree BPDU Filter

### Commands

**spanning-tree bpdupfilter**

**no spanning-tree bpdupfilter**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>bpdupfilter</b>	Configure BPDU filtering
<b>Defaults</b>	Spanning Tree BPDU filtering is disabled by default	
<b>Command Modes</b>	Interface Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree bpdupfilter moxa(config-if)# no spanning-tree bpdupfilter	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show spanning-tree detail show spanning-tree interface ethernet 1/1 show spanning-tree interface ethernet 1/1 detail	

## Clear Spanning Tree Detected Protocols

### Commands

**clear spanning-tree detected protocols interface { <interface-id> }**

<b>Syntax Description</b>	<b>clear</b>	Clear the configuration
	<b>spanning-tree</b>	Configure Spanning Tree Protocol parameters
	<b>detected</b>	Spanning Tree detected protocols
	<b>protocols</b>	Spanning Tree detected protocols
	<b>interface</b>	Configure the interface
	interface-id	The interface ID
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# clear spanning-tree detected protocols interface ethernet 1/1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show Spanning Tree Bridge Information

### Commands

#### show spanning-tree bridge

<b>Syntax Description</b>	<b>show</b>	Display the Configuration/statistics/general information
	<b>spanning-tree</b>	Spanning Tree-related information
	<b>bridge</b>	Spanning Tree bridge information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show spanning-tree bridge	
	<pre>Bridge ID           HelloTime  MaxAge  FwdDly  Protocol ----- 80:00:00:01:02:03:04:05  2 sec   20 sec  15 sec   rstp</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show Spanning Tree Root Information

### Commands

#### show spanning-tree root

<b>Syntax Description</b>	<b>show</b>	Display the configuration/statistics/general information
	<b>spanning-tree</b>	Spanning Tree-related information
	<b>root</b>	Spanning Tree root information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show spanning-tree root	
	<pre>Root ID           RootCost  MaxAge  FwdDly  RootPort ----- 00:00:00:00:00:00:00:00  0 sec   20 sec  15 sec   0</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show Spanning Tree Interface Information

### Commands

**show spanning-tree interface** { <interface-type> <interface-id> }

**show spanning-tree interface** { <interface-type> <interface-id> } detail

<b>Syntax Description</b>	<b>show</b>	Display the configuration/statistics/general information															
	<b>spanning-tree</b>	Spanning Tree-related information															
	<b>interface</b>	Spanning Tree interface information															
	ethernet <slot/port>	The Ethernet slot or port number															
	detail	Detailed information about the port and bridge															
<b>Defaults</b>	N/A																
<b>Command Modes</b>	User EXEC Mode																
<b>Usage Guidelines</b>	N/A																
<b>Examples</b>	<pre>moxa# show spanning-tree interface ethernet 1/2 moxa# show span in eth 1/1</pre> <table border="1"> <thead> <tr> <th>Root</th> <th>State</th> <th>Cost</th> <th>Prio</th> <th>Type</th> </tr> <tr> <th>-----</th> <th>-----</th> <th>-----</th> <th>-----</th> <th>-----</th> </tr> </thead> <tbody> <tr> <td>Disabled</td> <td>Disable</td> <td>200000000</td> <td>128</td> <td>SharedLAN</td> </tr> </tbody> </table> <pre>moxa#</pre>		Root	State	Cost	Prio	Type	-----	-----	-----	-----	-----	Disabled	Disable	200000000	128	SharedLAN
Root	State	Cost	Prio	Type													
-----	-----	-----	-----	-----													
Disabled	Disable	200000000	128	SharedLAN													
<b>Error Messages</b>	N/A																
<b>Related Commands</b>	N/A																

## Show Spanning Tree Details

### Commands

**show spanning-tree** [detail]

<b>Syntax Description</b>	<b>show</b>	Display the configuration/statistics/general information					
	<b>spanning-tree</b>	Spanning Tree related information					
	detail	Detailed Spanning Tree information					
<b>Defaults</b>	N/A						
<b>Command Modes</b>	User EXEC Mode						
<b>Usage Guidelines</b>	N/A						
<b>Examples</b>	<pre> moxa# show spanning-tree Root Id      Priority 0       Address 00:00:00:00:00:00       Cost    0       Port    0       Max Age 20 sec       Forward Delay 15 sec       Hello Time 2 sec  Spanning tree Protocol has been disabled Bridge Id    Priority 32768       Address 00:90:E8:11:22:31       Hello Time 2 sec       Max Age 20 sec       Forward Delay 15 sec  Port      Role      State      Cost      Prio      Type ----      - Eth1/1    Disabled  Discarding 20000     128      SharedLan Eth1/2    Disabled  Discarding 20000     128      SharedLan Eth1/3    Disabled  Discarding 20000     128      SharedLan Eth1/4    Disabled  Discarding 20000     128      SharedLan Eth1/5    Disabled  Discarding 20000     128      SharedLan Eth1/6    Disabled  Discarding 20000     128      SharedLan Eth1/7    Disabled  Discarding 20000     128      SharedLan Eth1/8    Disabled  Discarding 20000     128      SharedLan moxa# </pre>						
<b>Error Messages</b>	N/A						
<b>Related Commands</b>	N/A						

## Turbo Chain



### NOTE

This function is only supported on TSN Series models with firmware v2.3 or later.

## Show Turbo Chain Information

### Commands

#### show turbo-chain

<b>Syntax</b>	<b>show</b>	Display configuration/statistics/general information
<b>Description</b>	<b>turbo-chain</b>	Display Turbo Chain information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show turbo-chain Admin Status: Disabled Role: Member Port Role    Port Number    Port State ----- Member Port    Eth1/1    --- Member Port    Eth1/2    ---	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Turbo Chain Setting

### Commands

**turbo-chain** { enable | disable }

**turbo-chain role** { head | member | tail } **primary interface** { port-channel <port-channel-id (1-65535)> | <interface-type> <interface-id> } **secondary interface** { port-channel <port-channel-id (1-65535)> | <interface-type> <interface-id> }

<b>Syntax Description</b>	<b>turbo-chain</b>	Configure Turbo Chain parameters
	enable	Enable Turbo Chain
	disable	Disable Turbo Chain
	<b>role</b>	Configure the role of the switch in the Turbo Chain
	head	Set the switch as the Turbo Chain head
	member	Set the switch as a Turbo Chain member
	tail	Set the switch as the Turbo Chain tail
	<b>primary interface</b>	Configure the Turbo Chain primary port
		The interface of Turbo Chain
	port-channel	The port channel interface
	port-channel-id	The port channel ID
	interface-type	Ethernet interface
	interface-id	Slot number/port number
	<b>secondary interface</b>	Configure the Turbo Chain secondary port
	The interface of Turbo Chain	
<b>Defaults</b>	Turbo Chain is disabled by default	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa(config)# turbo-chain disable moxa(config)# turbo-chain role member primary interface ethernet 1/1 secondary interface ethernet 1/2</pre>	
<b>Error Messages</b>	<pre>% Turbo Chain: Invalid: Two Identical Turbo Chain Ports. % L2 Redundancy: Invalid: Two redundant protocols cannot use the same port. % L2 Redundancy: Invalid: Port channel member port cannot be assigned to a redundant protocol. % L2 Redundancy: Invalid: The port-channel group does not exist. % L2 Redundancy: Invalid: A maximum of two redundant protocols can be enabled. % L2 Redundancy: Invalid: Turbo Chain and STP/RSTP cannot be enabled at the same time.</pre>	
<b>Related Commands</b>	show turbo-chain	

# Management

## Network Management

### SNMP

#### Show SNMP Server Information

##### Commands

##### show snmp-server information

<b>Syntax Description</b>	<b>show</b>	Display the configuration/statistics/general information
	<b>snmp-server</b>	Display SNMP server information
	<b>information</b>	Display general SNMP server information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show snmp-server information ----- snmp-server : enable ----- version : v1-v2c community read-only : public community read-write : private	
<b>Error Messages</b>	% Can't get snmp-server information % Can't get snmp-server community information	
<b>Related Commands</b>	snmp-server	

## Show SNMP Server User Account Information

### Commands

**show snmp-server user**

<b>Syntax Description</b>	<b>show</b>	Displays the configuration/statistics/general information
	<b>snmp-server</b>	Displays SNMP server information
	<b>user</b>	Displays SNMP server user accounts
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show snmp-server user ----- snmp-server user-account : 3 ----- user-name : testNoAuthNoPriv authority : read_write authenticate-type : none encryption-method : disable  user-name : testAuthNoPriv authority : read_write authenticate-type : md5 encryption-method : disable  user-name : testAuthPriv authority : read_write authenticate-type : md5 encryption-method : des	
<b>Error Messages</b>	% Can't get snmp-server user-account information % Can't get snmp-server user-account table	
<b>Related Commands</b>	snmp-server	

## Show SNMP Server Engine ID Information

### Commands

**show snmp-server engine-id**

<b>Syntax Description</b>	<b>show</b>	Display the configuration/statistics/general information
	<b>snmp-server</b>	Display SNMP server information
	<b>engine-id</b>	Display the engine ID of the SNMP server
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show snmp-server engine-id snmp-server engineID : 800021f303000111234567	
<b>Error Messages</b>	% Can't get snmp-server status information	
<b>Related Commands</b>	snmp-server	

## Configure SNMP Server Access Mode

### Commands

**snmp-server access** { enable | disable | read-only }

<b>Syntax Description</b>	<b>snmp-server</b>	Configure SNMP server parameters
	<b>access</b>	Configure the SNMP server access mode
	enable	Enable SNMP server access
	disable	Disable SNMP server access
	read-only	Set SNMP server access to read-only mode
<b>Defaults</b>	SNMP server access is enabled by default	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# snmp-server access enable moxa(config)# snmp-server access disable moxa(config)# snmp-server access read-only	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-server show snmp-server	

## Configure SNMP Server Read-Only Community Settings

### Commands

**snmp-server community read-only** <community-name(32)>

<b>Syntax Description</b>	<b>snmp-server</b>	Configure snmp-server related parameters
	<b>community</b>	Configure the SNMP server community
	<b>read-only</b>	Configure the SNMP server community for read-only
	string (32)	The SNMP server read-only community name
<b>Defaults</b>	The default read-only community name is set to public	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# snmp-server community read-only public	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-server show snmp-server	

## Delete SNMP Server Read-Only Community

### Commands

**no snmp-server community read-only**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>snmp-server</b>	Configure SNMP server parameters
	<b>community</b>	Configure the SNMP server community
	<b>read-only</b>	Configure the SNMP server community for read-only
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no snmp-server community read-only	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-server show snmp-server	

## Configure SNMP Server Read-Write Community Settings

### Commands

**snmp-server community read-write** <community-name(32)>

<b>Syntax Description</b>	<b>snmp-server</b>	Configure SNMP server parameters
	<b>community</b>	Configure the SNMP server community
	<b>read-write</b>	Configure the SNMP server community for read-write
	<b>community-name</b>	Configure the community name of the SNMP server
	string (32)	The SNMP server read-write community name
<b>Defaults</b>	The default read-write community name is set to private	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# snmp-server community read-write private	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-server show snmp-server	

## Configure SNMP Server Read-Write Community to Default Value

### Commands

**no snmp-server community read-write**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry /reset to default value
	<b>snmp-server</b>	Configures SNMP server parameters
	<b>community</b>	Configure the SNMP server community
	<b>read-write</b>	Configure the SNMP server community for read-write
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no snmp-server community read-write	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-server show snmp-server	

## Configure SNMP Server Version

### Commands

**snmp-server version** { v1-v2c-v3 | v1-v2c | v3 }

<b>Syntax Description</b>	<b>snmp-server</b>	Configure SNMP server parameters
	<b>version</b>	Configure the SNMP server version compatibility
	v1-v2c-v3	Set the SNMP server version to v1-v2c-v3
	v1-v2c	Set the SNMP server version to v1-v2c
	v3	Set the SNMP server version to v3-only
<b>Defaults</b>	The default SNMP server version is set to v1-v2c	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	Set up at least one SNMP server user account before enabling v1-v2c-v3 or v3	
<b>Examples</b>	moxa(config)# snmp-server version v1-v2c-v3 moxa(config)# snmp-server version v1-v2c moxa(config)# snmp-server version v3	
<b>Error Messages</b>	% Atleast setup one valid user before enable snmp-server version v1-v2c-v3 or v3	
<b>Related Commands</b>	snmp-server show snmp-server	

## Configure SNMP Server Version to Default Value

### Commands

#### **no snmp-server version**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>snmp-server</b>	Configure SNMP server parameters
	<b>version</b>	Configure the SNMP server version compatibility
<b>Defaults</b>	The default SNMP server version is set to v1-v2c	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no snmp-server version	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-server show snmp-server	

## Configure SNMP Server User Account Settings

### Commands

**snmp-server user** <user-name(32)>

**authority** { read-only | read-write }

**auth-type** { none | md5 | sha } [auth-passwd <authentication-password(64)> ] encryption { disable| des | aes } [encryption-key <encryption-key(64)>]

<b>Syntax Description</b>	<b>snmp-server</b>	Configure SNMP server parameters
	<b>user</b>	Configure SNMP server user accounts
	user-name (32)	The user name of the SNMP server user account
	<b>authority</b>	Configure the access right for the user account
	read-only	Give read-only access to the user
	read-write	Give read-write access to the user
	<b>auth-type</b>	Configure the authentication protocol for the SNMP server user account
	none	Do not use any authentication protocol
	md5	Use MD5 authentication
	sha	Use SHA authentication
	auth-passwd	Configure the authentication password for the SNMP server user account
	authentication-password (64)	The authentication password
	<b>encryption</b>	Configure the data encryption protocol for the SNMP server user account
	disable	Disable data encryption
	des	Use DES data encryption
	aes	Use AES data encryption
encryption-key	Configure the data encryption key for the SNMP server user account	
encryption-key (64)	The data encryption key	
<b>Defaults</b>	There is no user account table by default	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	If the authentication type is set to none, data encryption should be disabled. If the authentication type is not none, an authentication password must be set up. If data encryption is not disabled, a data encryption key must be set up.	
<b>Examples</b>	<pre>moxa(config)# snmp-server user testNoAuthNoPriv authority read-write auth-type none encryption disable moxa(config)# moxa(config)# moxa(config)# snmp-server user testAuthNoPriv authority read-write auth-type md5 auth-passwd 1111111111 encryption disable moxa(config)# moxa(config)# moxa(config)# snmp-server user testAuthPriv authority read-write auth-type md5 auth-passwd 1111111111 encryption des encryption-key 2222222222 moxa(config)# moxa(config)#</pre>	
<b>Error Messages</b>	<pre>% If authentication-type is none, data-encryption method should be disabled % must setup authentication password % must setup data encryption key % Can't get snmp-server user-account information % Can't get snmp-server user-account table % Can't get snmp-server user-account table index ('%d') % Can't get user-name from snmp-server user-account table('%d') % Can't create user account % Can't modify user account</pre>	
<b>Related Commands</b>	<pre>snmp-server show snmp-server</pre>	

## Delete SNMP Server User Account

### Commands

**no snmp-server user** <user-name (32)>

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>snmp-server</b>	Configure SNMP server parameters
	<b>user</b>	Configure SNMP server user accounts
	user-name (32)	The user name of the SNMP server user account
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no snmp-server user testNoAuthNoPriv moxa(config)# no snmp-server user testAuthNoPriv moxa(config)# no snmp-server user testAuthPriv	
<b>Error Messages</b>	% Can't get snmp-server user-account information % Can't get snmp-server user-account table % Can't get snmp-server user-account table index ('%d') % Can't get user-name from snmp-server user-account % Can't delete user account	
<b>Related Commands</b>	snmp-server show snmp-server	

## Configure SNMP Server Transport Protocol Mode

### Commands

**snmp-server transport-protocol** { udp | tcp }

<b>Syntax Description</b>	<b>snmp-server</b>	Configure SNMP server parameters
	<b>transport-protocol</b>	transport-protocol Transport layer protocol
	udp	udp User datagram protocol
	tcp	tcp Transmission control protocol
<b>Defaults</b>	udp	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# config moxa(config)# snmp-server transport-protocol udp moxa(config)# snmp-server transport-protocol tcp	
<b>Error messages</b>	N/A	
<b>Related commands</b>	snmp-server show snmp-server	

## SNMP Trap/Inform

### Show SNMP Trap Information

#### Commands

##### show snmp-trap information

<b>Syntax Description</b>	<b>show</b>	Display the configuration/statistics/general information
	<b>snmp-trap</b>	Display SNMP trap information
	<b>information</b>	Display general SNMP trap information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show snmp-trap information ----- snmp-trap : ----- inform-retry : 3 inform-timeout : 10	
<b>Error Messages</b>	% Can't get snmp-trap information	
<b>Related Commands</b>	snmp-trap	

### Show SNMP Trap User Account Information

#### Commands

##### show snmp-trap user

<b>Syntax Description</b>	<b>show</b>	Display the configuration/statistics/general information
	<b>snmp-trap</b>	Display SNMP trap information
	<b>user</b>	Display SNMP trap user accounts
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show snmp-trap user ----- snmp-trap user-account : 1 ----- user-name : testNoAuthNoPriv authenticate-type : none encryption-method : disable	
<b>Error Messages</b>	% Can't get snmp-trap user-account information % Can't get snmp-trap user-account table % Can't get snmp-trap user-account table index ('%d')	
<b>Related Commands</b>	snmp-trap	

## Show SNMP Trap Host Information

### Commands

#### show snmp-trap host

<b>Syntax Description</b>	<b>show</b>	Display the configuration/statistics/general information
	<b>snmp-trap</b>	Display SNMP trap information
	<b>host</b>	Display SNMP trap host information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show snmp-trap host ----- snmp-trap host-table : 2 ----- hostName : 192.168.137.254 mode : trap-v1 community : public  hostName : 192.168.127.253 mode : inform-v3 community :	
<b>Error Messages</b>	% Can't get snmp-trap host information % Can't get snmp-trap host table % Can't get snmp-trap host table index('%d')	
<b>Related Commands</b>	snmp-trap	

## Configure SNMP Trap Host Settings

### Commands

```
snmp-trap host <host-address(32)> mode { trap-v1 | trap-v2c | inform-v2c | trap-v3 | inform-v3 }
[community <community-name(32)>]
```

<b>Syntax Description</b>	<b>snmp-trap</b>	Configure SNMP trap parameters
	<b>host</b>	Configure the SNMP trap host address
	host-address (32)	The SNMP trap host address
	<b>mode</b>	Configure the SNMP trap mode
	trap-v1	Use trap-v1 mode
	trap-v2c	Use trap-v2c mode
	inform-v2c	Use inform-v2c mode
	trap-v3	Use trap-v3 mode
	inform-v3	Use inform-v3 mode
	community	Configure the community for the SNMP trap host
community-name (32)	The community name for the SNMP trap host	
<b>Defaults</b>	There is no SNMP trap host entry by default	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	A community name must be set when using trap-v1, trap-v2c, or inform-v2c mode. SNMP v3 must be enabled when SNMP trap-v3 mode is enabled. At least one valid user must be set up before setting the SNMP trap host to trap-v3 mode.	
<b>Examples</b>	moxa(config)# snmp-trap host 192.168.127.254 mode trap-v1 community public moxa(config)# snmp-trap host 192.168.127.253 mode inform-v3	
<b>Error Messages</b>	% Can't get snmp-trap host information % Can't get host name from snmp-trap host table % Can't get snmp-trap host table index('%d') % Can't get host-name from snmp-trap host table('%d') % Can't create host entry % Can't modify host entry % must set community name when mode is trap-v1, trap-v2c or inform-v2c % must enable v3 in snmp-server when snmp-trap host <host-address> trap-v3 mode is enable % Atleast setup one valid user before enable snmp-trap host to trap-v3 mode	
<b>Related Commands</b>	snmp-trap show snmp-trap	

## Delete SNMP Trap Host Entry

### Commands

```
no snmp-trap host <host-address(32)>
```

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>snmp-trap</b>	Configure SNMP trap parameters
	host	Configure the SNMP trap host address
	host-address (32)	The SNMP trap host address
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no snmp-trap host 192.168.127.254 moxa(config)# no snmp-trap host 192.168.127.253	
<b>Error Messages</b>	% Can't get snmp-trap host information % Can't get host name from snmp-trap host table % Can't get snmp-trap host table index('%d') % Can't get host-name from snmp-trap host table('%d') % Can't delete host entry	
<b>Related Commands</b>	snmp-trap show snmp-trap	

## Configure SNMP Trap Inform Retry Setting

### Commands

**snmp-trap inform-retries** <inform-retries-number(1-99)>

<b>Syntax Description</b>	<b>snmp-trap</b>	Configure SNMP trap parameters
	<b>inform-retries</b>	Configure SNMP trap inform retries
	inform-retries-number (1-99)	The amount of SNMP trap inform retries
<b>Defaults</b>	The default number of SNMP trap inform retries is set to 3	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# snmp-trap inform-retries 3	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-trap show snmp-trap	

## Reset SNMP Trap Inform Retry to Default Value

### Commands

**no snmp-trap inform-retries**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>snmp-trap</b>	Configure SNMP trap parameters
	<b>inform-retries</b>	Configure SNMP trap inform retries
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no snmp-trap inform-retries	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-trap show snmp-trap	

## Configure SNMP Trap Inform Timeout Setting

### Commands

**snmp-trap inform-timeout** <inform-timeout-number(1-300)>

<b>Syntax Description</b>	<b>snmp-trap</b>	Configure SNMP trap parameters
	<b>inform-timeout</b>	Configure the SNMP trap inform timeout
	inform-timeout-number (1-300)	The SNMP trap inform timeout in seconds
<b>Defaults</b>	The default SNMP trap inform timeout is set to 10 seconds	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# snmp-trap inform-timeout 10	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-trap show snmp-trap	

## Reset SNMP Trap Inform Timeout to Default Value

### Commands

**no snmp-trap inform-timeout**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>snmp-trap</b>	Configure SNMP trap parameters
	<b>inform-timeout</b>	Configure the SNMP trap inform timeout
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no snmp-trap inform-timeout	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	snmp-trap show snmp-trap	

## Configure SNMP Trap User Account Settings

### Commands

**snmp-trap user** <user-name(32)> **auth-type** { none | md5 | sha } [auth-passwd <authentication-password(64)> ] **encryption** { disable| des | aes } [encryption-key <encryption-key(64)>]

<b>Syntax Description</b>	<b>snmp-trap</b>	Configures SNMP trap parameters
	<b>user</b>	Configure SNMP trap user accounts
	<b>user-name(32)</b>	The user name of the SNMP trap user account
	<b>auth-type</b>	Configure the authentication protocol for the SNMP trap user account
	none	Do not use any authentication protocol
	md5	Use MD5 authentication
	sha	Use SHA authentication
	<b>auth-passwd</b>	Configure the authentication password for the SNMP trap user account
	<b>authentication-password (64)</b>	The authentication password
	<b>encryption</b>	Configure the data encryption protocol for the SNMP trap user account
	disable	Disable data encryption
	des	Use DES data encryption
	aes	Use AES data encryption
<b>encryption-key</b>	Configure the data encryption key for the SNMP trap user account	
<b>encryption-key (64)</b>	The data encryption key	
<b>Defaults</b>	There is no user account table by default	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	If the authentication type is set to none, data encryption should be disabled. If the authentication type is not none, an authentication password must be set up. If data encryption is not disabled, a data encryption key must be set up.	
<b>Examples</b>	moxa# config moxa(config)# snmp-trap user test auth-type none encryption disable moxa(config)# snmp-trap user test auth-type md5 auth-passwd 1111111111 encryption disable moxa(config)# snmp-trap user test auth-type md5 auth-passwd 1111111111 encryption des encryption-key 2222222222	
<b>Error Messages</b>	% If authentication-type is none, data-encryption method should be disabled % must setup authentication password % must setup data encryption key % Can't get snmp-trap user-account information % Can't get snmp-trap user-account table % Can't get snmp-trap user-account table index ('%d') % Can't get user-name from snmp-trap user-account table('%d') % Can't create user account % Can't modify user account	

<b>Related Commands</b>	snmp-trap show snmp-trap
-------------------------	-----------------------------

## Delete SNMP Trap User Account

### Commands

**no snmp-trap user** <user-name (32)>

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>snmp-trap</b>	Configures SNMP trap parameters
	<b>user</b>	Configure SNMP trap user accounts
	user-name (32)	The user name of the SNMP trap user account
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no snmp-trap user test	
<b>Error Messages</b>	% Can't get snmp-trap user-account information % Can't get snmp-trap user-account table % Can't get snmp-trap user-account table index ('%d') % Can't get user-name from snmp-trap user-account % Can't delete user account	
<b>Related Commands</b>	snmp-trap show snmp-trap	

# Security

## Device Security

### Management Interface

#### Enable Network Server

### Commands

**ip** { http | https | telnet | ssh | moxa-command } **server enable**

<b>Syntax Description</b>	<b>ip</b>	Configure IP parameters
	http	Configure HTTP management UI service parameters
	https	Configure HTTPS management UI service parameters
	telnet	Configure Telnet management UI service parameters
	ssh	Configure SSH management UI service parameters
	moxa-command	Configure Moxa Command management UI service parameters
	<b>server</b>	Configure management UI service server parameters
	<b>enable</b>	Enable the management UI service
<b>Defaults</b>	http: enabled https: enabled telnet: enabled ssh: enabled moxa-command: enabled	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ip https server enable	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Disable Network Server

### Commands

**ip** { http | https | telnet | ssh | moxa-command } **server disable**

<b>Syntax Description</b>	<b>ip</b>	Configure IP parameters
	http	Configure HTTP management UI service parameters
	https	Configure HTTPS management UI service parameters
	telnet	Configure Telnet management UI service parameters
	ssh	Configure SSH management UI service parameters
	moxa-command	Configure Moxa Command management UI service parameters
	<b>server disable</b>	Configure management UI service server parameters
<b>Defaults</b>	http: enabled https: enabled telnet: enabled ssh: enabled moxa-command: enabled	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ip telnet server disable	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Network Port Numbers

### Commands

**ip** { http | https | telnet | ssh } **port** <port-number>

<b>Syntax Description</b>	<b>ip</b>	Configure IP parameters
	http	Configure HTTP management UI service parameters
	https	Configure HTTPS management UI service parameters
	telnet	Configure Telnet management UI service parameters
	ssh	Configure SSH management UI service parameters
	<b>port</b>	Configure the service port of the management UI service
	port-number	The service port number
<b>Defaults</b>	http server port: 80 https server port: 443 telnet server port: 23 ssh server port: 22	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ip http port 8080	
<b>Error Messages</b>	Invalid: UI service management port port-number is duplicated.	
<b>Related Commands</b>	N/A	

## Configure SNMP Server Port Number

### Commands

**snmp-server port** <port-number>

<b>Syntax Description</b>	<b>snmp-server</b>	Configure SNMP server parameters
	<b>port</b>	Configure the service port of the SNMP server
	port-number	The service port number
<b>Defaults</b>	The default SNMP server port is set to 161	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# snmp-server port 1661	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Network Maximum Session Numbers

### Commands

**ip http max-session** <session-number>

<b>Syntax Description</b>	<b>ip</b>	Configure IP parameters
	<b>http</b>	Configure HTTP/HTTPS management UI service parameters
	<b>max-session</b>	Configure the maximum number of concurrent login sessions through HTTP and HTTPS
	session-number	The maximum number of login sessions
<b>Defaults</b>	The maximum number of concurrent HTTP sessions is set to 5 by default	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ip http max-session 3	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure Network Terminal Maximum Session Numbers

### Commands

**ip terminal max-session** <session-number>

<b>Syntax Description</b>	<b>ip</b>	Configure IP parameters
	<b>terminal</b>	Configure Telnet and SSH terminal parameters
	<b>max-session</b>	Configure the maximum number of concurrent login sessions through Telnet and SSH terminal
	session-number	Maximum number of login sessions
<b>Defaults</b>	max terminal session: 1	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure terminal moxa(config)# ip terminal max-session 3	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Show Network Service Information

### Commands

**show ip service information**

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>ip</b>	Display IP information
	<b>service</b>	Display management UI service information
	<b>information</b>	Display the information for management UI services
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show ip service information HTTP service: Enabled HTTP port: 80 HTTPS service: Enabled HTTPS port: 443 Telnet service: Enabled Telnet port: 23 SSH service: Enabled SSH port: 22 SNMP service: Enabled SNMP port: 161 MOXA service: Enabled HTTP/HTTPS Maximum Login Sessions: 5 Telnet/SSH Maximum Login Sessions: 1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Login Policy

### Configure Login Lockout Settings

#### Commands

**login lockout** <enable|disable>

**login lockout** <minute(1-10)> **attempts** <tries(1-10)>

<b>Syntax Description</b>	<b>login</b>	Configure login parameters
	<b>lockout</b>	Configure the maximum number of failed login attempts and the lockout time to block the user from logging in
	enable	Enable login lockout
	disable	Disable login lockout
	minute	Configure the lockout time ranging from 1 to 10 minutes
	<b>attempts</b>	Configure the maximum number of login attempts
	tries	The number of tries ranging from 1 to 10
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# login lockout 10 attempts 5 (config)# login lockout enable (config)# login lockout disable	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure Login Banner

### Commands

**login banner** <string (500)>

**no login banner**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>login</b>	Configure login parameters
	<b>banner</b>	Configure a login banner
	string	The login banner content up to 500 characters
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# login banner "this is a banner" (config)# no login banner	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure Login Failure Message

### Commands

**login fail-message** <fail-message>

**no login fail-message**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>login</b>	Configure login parameters
	<b>fail-message</b>	Configure a login failure message
	string	The login failure message up to 500 characters
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# login fail-message "this is a failure message" (config)# no login fail-message	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure Timeout Value for a Session End

### Commands

**session timeout** <integer (0-1440)>

<b>Syntax Description</b>	<b>session</b>	Configure session parameters
	<b>timeout</b>	Configure the session timeout value
	integer	The timeout value ranging from 0 to 1440 seconds
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# config moxa(config)# session timeout 100	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show Session Timeout Information

### Commands

show session timeout

<b>Syntax Description</b>	<b>show</b>	Display running information
	<b>session</b>	Display session information
	<b>timeout</b>	Display session timeout information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show session timeout Session TimeOut: 5 (Min)	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show Login Failure Message

### Commands

show login fail-message

<b>Syntax Description</b>	<b>show</b>	Display running information
	<b>login</b>	Display login information
	<b>fail-message</b>	Display the login failure message
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show log fail-message Login Fail Message: This is a failed message!	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show Login Banner

### Commands

show login banner

<b>Syntax Description</b>	<b>show</b>	Display running information
	<b>login</b>	Display login information
	<b>banner</b>	Display the login banner
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show log banner Login Banner Message: this is a banner	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Show Login Authentication

### Commands

show login authentication

<b>Syntax Description</b>	<b>show</b>	Display running information
	<b>login</b>	Display login information
	<b>authentication</b>	Display authentication information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show login authentication Login Authentication Method: Local	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Trusted Access

### Configure Trusted Access Settings

#### Commands

**trusted-access ip-source** <ip-address> [{<subnet-mask> | / <prefix-length(0-32)>}]

**no trusted-access ip-source** <ip-address> [{<subnet-mask> | / <prefix-length(0-32)>}]

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>trusted-access</b>	Configure IP trusted access parameters
	<b>ip-source</b>	Configure the IP source
	ucast_addr	Configure the network or host IP address
	ip_mask	Configure the subnet mask of the IP address
	"/"	Configure the CIDR notation
	short (0-32)	Configure the prefix length
<b>Defaults</b>	Trusted access is disabled by default	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	Trusted access will take effect when the "trusted-access enable" command is executed.	
<b>Examples</b>	(config)# trusted-access ip-source 10.10.10.10 255.255.255.0 (config)# trusted-access ip-source 20.10.10.10 / 24 (config)# trusted-access ip-source 30.10.10.10 (config)# no trusted-access ip-source 10.10.10.10 255.255.255.0 (config)# no trusted-access ip-source 20.10.10.10 / 24 (config)# no trusted-access ip-source 30.10.10.10	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show trusted-access trusted-access enable	

## Enable/Disable IP Trusted Access List

### Commands

**trusted-access** <enable>

**trusted-access** <disable>

<b>Syntax Description</b>	<b>trusted-access</b>	Configure IP trusted access parameters
	enable	Enable the IP trusted access list
	disable	Disable the IP trusted access list
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# trusted-access enable (config)# trusted-access disable	
<b>Error messages</b>	N/A	
<b>Related commands</b>	trusted-access disable	

## Show Trusted Access IP List

### Commands

**show trusted-access**

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>trusted-access</b>	Display IP trusted access information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show trusted-access Trusted Access Table : Disabled ----- IP Address : 210.222.222.225 Subnet Mask : 255.255.255.0 moxa#	
<b>Error Messages</b>	% No such manager found % Manager is not configured	
<b>Related Commands</b>	trusted-access	

## SSH & SSL

### Re-generate New Web SSL Certificate

#### Commands

**web certificate generate**

<b>Syntax Description</b>	<b>web</b>	Configure web parameters
	<b>certificate</b>	Configure the web server certificate
	<b>generate</b>	Generate a self-signed certificate
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# web certificate generate	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Import New Web SSL Certificate via TFTP or SFTP

### Commands

**web certificate import** {<tftp\_url> | <sftp\_url>}

<b>Syntax Description</b>	<b>web</b>	Configure web parameters
	<b>certificate</b>	Configure the web server certificate
	<b>import</b>	Import the certificate from a remote server
	tftp_url	The file on the remote TFTP server to be copied
	sftp_url	The file on the remote SFTP server to be copied
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# web certificate import tftp://192.168.1.1/server.crt	
<b>Error messages</b>	Format or Password Error Server not Connected	
<b>Related commands</b>	N/A	

## Export Web SSL Certificate Signing Request via TFTP/SFTP

### Commands

**web signing-request export** {<tftp\_url> | <sftp\_url>}

<b>Syntax Description</b>	<b>web</b>	Configure Web related parameters
	<b>signing-request</b>	Configure the web server certificate signing request
	<b>export</b>	Export the certificate
	tftp_url	The file on the remote TFTP server to be copied
	sftp_url	The file on the remote SFTP server to be copied
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# web signing-request export tftp://192.168.1.1/server.csr	
<b>Error Messages</b>	Server not Connected	
<b>Related Commands</b>	N/A	

## Re-generate New SSH Key

### Commands

**ssh key generate**

<b>Syntax Description</b>	<b>ssh</b>	Configure SSH parameters
	<b>key</b>	Configure the SSH server key
	<b>generate</b>	Generate the SSH key
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# ssh key generate	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Network Security

### Traffic Storm Control

Due to hardware limitations, the **Traffic Storm Control** calculation is different depending on the model.

- TSN-G5004/G5008 models: fps

- TSN-G5016 models: bps

## Enable/Disable Storm Control (fps)



### NOTE

This command applies to TSN-G5004/G5008 models only.

#### Commands

**storm-control {bc | mc | bc\_mc} level <rate -value(1000-1488000)>**

**no storm-control {bc | mc | bc\_mc}**

<b>Syntax Description</b>	<b>no</b>	Remove configuration delete entry/reset to default value
	<b>storm-control</b>	Configure storm control parameters
	<b>bc</b>	Configure broadcast packet storm control parameters
	<b>mc</b>	Configure multicast packet storm control parameters
	<b>bc_mc</b>	Configure broadcast and multicast packet storm control parameters
	<b>level</b>	Configure the control suppression level
	<b>rate-value (1000-1488000)</b>	Configure the traffic storm control rate value
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# storm-control bc level 1000  moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# storm-control bc mc level 1270  moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# no storm-control bc</pre>	
<b>Error Messages</b>	'Invalid: Your configure value {}.format(cfg_val) + ' exists too large bias because of limitation of hardware.' + ' We suggest configure the value {} again.'.format(suggest cfg_val)	
<b>Related Commands</b>	<pre>moxa(config-if)# no storm-control {bc   mc   bc_mc} moxa# show [&lt;ifXtype&gt; &lt;ifnum&gt;] storm-control</pre>	

## Enable/Disable Storm Control (bps)



### NOTE

This command applies to TSN-G5016 models only.

#### Commands

**storm-control {bc | mc | bc\_mc} bps level <1-max\_rate\_limit\_value (Mbps)>**

**no storm-control {bc | mc | bc\_mc}**

<b>Syntax Description</b>	<b>no</b>	Remove configuration delete entry/reset to default value
	<b>storm-control</b>	Configure storm control parameters
	<b>bc</b>	Configure broadcast packet storm control parameters
	<b>mc</b>	Configure multicast packet storm control parameters

	<b>bc_mc</b>	Configure broadcast and multicast packet storm control parameters
	<b>bps</b>	Configure the storm control suppression in bits-per-second
	max_rate_limit_value (Mbps)	Specify the maximum amount of data that can be sent from a port (in Mbps) 1GbE ports: 1 to 850 Mbps 10GbE ports: 1 to 8500 Mbps
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# storm-control bc bps 5  moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# storm-control bc_mc bps 100  moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# no storm-control bc</pre>	
<b>Error Messages</b>	Invalid: The value of traffic storm control should be less than ingress max rate limit value 850 Mbps.	
<b>Related Commands</b>	<pre>moxa(config-if)# no storm-control {bc   mc   bc_mc} moxa# show [&lt;interface-type&gt; &lt;interface-id&gt;] storm-control</pre>	

## Show Storm Control Status (fps)



### NOTE

This command applies to TSN-G5004/G5008 models only.

### Commands

**show interfaces** [<ifXtype> <ifnum>] storm-control

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>interface</b>	Display interface information
	ifXtype	The interface type
	ifnum	The interface number
	<b>storm-control</b>	Display the broadcast, multicast, and unicast storm control suppression levels of the interface
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show interface ethernet 1/1 storm-control  Eth1/1 DLF Storm Control      : Disabled Broadcast Storm Control : Disabled Multicast Storm Control : Disabled  moxa# show interface ethernet 1/1 storm-control  Eth1/1 DLF Storm Control      : Disabled Broadcast Storm Control : Enabled Broadcast Storm Control Level : 635</pre>	

	Multicast Storm Control : Disabled
<b>Error Messages</b>	N/A
<b>Related Commands</b>	moxa(config-if)# storm-control {bc   mc   bc_mc } level <rate-value(625-1488100)> moxa(config-if)# no storm-control {bc   mc   bc_mc }

## Show Storm Control Status (bps)



### NOTE

This command applies to TSN-G5016 models only.

#### Commands

**show interfaces** [<interface-type> <interface-id>] **storm-control**

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>interface</b>	Display interface information
	interface-type	The interface type
	interface-id	The interface number
	<b>storm-control</b>	Display the broadcast, multicast, and unicast storm control suppression levels of the interface
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show interface ethernet 1/1 storm-control  Eth1/1 Broadcast Storm Control : Disabled Multicast Storm Control : Disabled  moxa# show interface ethernet 1/1 storm-control  Eth1/1 Broadcast Storm Control : Enabled Broadcast Storm Control Level : 200 Mbps Multicast Storm Control : Enabled Multicast Storm Control Threshold : 200 Mbps</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	moxa (config-if)# storm-control {bc   mc   bc_mc} bps <1-max_rate_limit_value (Mbps)> moxa (config-if)# no storm-control {bc   mc   bc_mc}	

## Authentication

### Login Authentication

#### Configure Login Authentication Settings

##### Commands

**login authentication** [{ radius | tacacs }] [local]

<b>Syntax Description</b>	<b>login</b>	Configure login parameters
	<b>authentication</b>	Configure authentication parameters
	radius	Configure RADIUS authentication servers
	tacacs	Configure a TACACS authentication system
	local	Configure a local authentication database
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	

<b>Usage Guidelines</b>	N/A
<b>Examples</b>	(config)# login authentication radius (config)# login authentication tacacs (config)# login authentication local (config)# login authentication radius local (config)# login authentication tacacs local
<b>Error messages</b>	N/A
<b>Related commands</b>	N/A

## RADIUS

### Configure RADIUS Server Host Settings

#### Commands

**radius-server host** { <ucast\_addr> } [auth-port {<integer(1-65535)>}] [timeout {<short(5-180)>}] [retransmit {<short(0-5)>}] key {<string(60)>} authtype { pap | chap | mschap } { primary | secondary }

**no radius-server** { primary | secondary }

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>radius-server</b>	Configure RADIUS server parameters
	host	Configure the RADIUS host
	auth-port	Configures the UDP destination port for authentication requests
	timeout	Configure time period (in seconds) until which a client waits for a response from the server before re-transmitting the request
	retransmit	Configure the maximum number of attempts the client undertakes to contact the server
	key	Configure the RADIUS server encryption key
	authtype	Configure the authentication type of the RADIUS server
	primary	Set as the primary server
	secondary	Set as the secondary server
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# radius-server host 1.1.1.1 auth-port 2222 timeout 5 retransmit 5 key test authtype pap primary (config)# no radius-server primary	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

### Show RADIUS Server Information

#### Commands

**show radius-server**

<b>Syntax Description</b>	<b>show</b>	Display running information
	<b>radius- server</b>	Display the RADIUS server parameters
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC / User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show radius-server	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## TACACS+

### Configure TACACS+ Server Host Settings

#### Commands

**tacacs-server host** { <ucast\_addr> } [auth-port {<integer(1-65535)>}] [timeout {<short(5-130)>}] [retransmit {<short(0-5)>}] key {<string(64)>} authtype { pap | chap | ascii } { primary | secondary }

**no tacacs-server** { primary | secondary }

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>tacacs -server</b>	Configure TACACS server parameters
	<b>host</b>	Configure TACACS host parameters
	auth-port	Configure authentication port parameters
	timeout	Configure timeout parameters
	retransmit	Configure the maximum number of attempts the client undertakes to contact the server
	key	Configure the per-server encryption key
	authtype	Configure the authentication type of the TACACS server
	primary	Set as the primary server
	secondary	Set as the secondary server
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# tacacs-server host 1.1.1.1 auth-port 2222 timeout 5 retransmit 5 key test authtype pap primary (config)# no tacacs-server primary	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

### Show TACACS+ Server Information

#### Commands

**show tacacs server**

<b>Syntax Description</b>	<b>show</b>	Displays running information
	<b>tacacs-server</b>	Displays the TACACS server parameters
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC / User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show tacacs-server	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

# Diagnostics

## System Status

### Utilization

#### Show Device Current Information

##### Commands

**show env** {all | power | RAM | CPU }

<b>Syntax Description</b>	<b>show</b>	Display the statistics information
	<b>env</b>	Display switch information
	all	Show the current information for all resources such as CPU, RAM, and power
	power	Show the current power input information
	RAM	Show the current RAM information
	CPU	Show the current CPU information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration / User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show env all moxa# show env power moxa# show env RAM moxa# show env CPU	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

### Statistics

#### Show Traffic Statistics

##### Commands

**show statistics** [ interface <interface-type> <interface-id> ]

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>statistics</b>	Display the interface statistics table
	interface-type	Display interface information
	interface-id	Display the specific interface information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Mode.	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show statistics interface ethernet 1/1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	clear statistics	

## Clear Traffic Statistics

### Commands

**clear statistics** [ interface < interface-type> <interface-id> ]

<b>Syntax Description</b>	<b>clear</b>	Clear input
	<b>statistics</b>	Clear statistics
	interface-type	The interface type
	interface-id	The interface ID
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Mode.	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# clear statistics interface ethernet 1/1	
<b>Error messages</b>	N/A	
<b>Related commands</b>	show statistics	

## Event Notification

### Show Event Notification

#### Commands

**show event-notification** {general-event | port-event | switching-event}

<b>Syntax Description</b>	<b>show</b>	Displays running information for the feature
	<b>event-notification</b>	Display event-notification configuration
	general-event	general event config
	port-event	port event config
	switching-event	switching event config
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC /User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show event-notification port-event Port link up Event Enable :Enabled Registered Action :Trap, Email, Registered Port :1/1, 1/2, 1/3, 1/4, 1/5, 1/6, 1/7, 1/8, Port Link down Event Enable :Enabled Registered Action :Trap, Email, Registered Port :1/1, 1/2, 1/3, 1/4, 1/5, 1/6, 1/7, 1/8,	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	event-notification general-event event-notification port-event event-notification switching-event	

## Configure Event Notification Settings

### Commands

**event-notification general-event all**

**event-notification general-event cold-start**

**event-notification general-event all action trap email relay**

**event-notification general-event cold-start action trap email relay**

**no event-notification general-event all**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/deletes the entry/reset to default value
	<b>event-notification</b>	Configure event notifications
	<b>general-event</b>	Configure notifications for general events
	<b>all</b>	Notify for all general events
	<b>cold-start</b>	Notify when the system performs a cold start
	<b>warm-start</b>	Notify when the system performs a warm start
	<b>config-change</b>	Notify when the system configuration changes
	<b>login-success</b>	Notify when a user successfully logs in
	<b>login-fail</b>	Notify when a user failed to log in
	<b>login-lockout</b>	Notify when a user is locked out due to the login policy
	<b>account-setting-changed</b>	Notify when the user account information changes, including create account, remove account, and change of username, permission
	<b>password-changed</b>	Notify when the user account password changes
	<b>config-import</b>	Notify when the system configuration is imported
	<b>ssl-certificated-changed</b>	Notify when system certification changes
	<b>log-capacity</b>	Notify when the system log reaches the capacity threshold
	<b>power-on</b>	Notify when the power supply is on
	<b>power-off</b>	Notify when the power supply is on
	<b>di-on</b>	Notify when the digital input is on
	<b>di-off</b>	Notify when the digital input is off
	<b>action</b>	Set action for event notification
	<b>trap</b>	Set trap action for notification
	<b>email</b>	Set email action for notification
	<b>relay</b>	Set relay action for notification
<b>Defaults</b>	All configuration, trap, email event notifications are enabled by default	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# config moxa(config)# event-notification general-event all action trap email relay moxa(config)# no event-notification general-event all action trap email relay	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show event-notification event-notification port-event event-notification switching-event	

## Configure Notification for Switching Event Settings

### Commands

**event-notification switching-event all**

**event-notification switching-event all action trap email relay**

**event-notification switching-event pd-power-on action trap email relay**

**no event-notification switching -event all**

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/deletes the entry/resets to default value
	<b>event-notification</b>	Configure event notifications
	<b>switching-event</b>	Configure notifications for switching events
	<b>all</b>	Notify for all switching events
	<b>topology-changed</b>	Notify when the network topology changes
	<b>rstp-topology-changed</b>	Notify when the RSTP network topology changes
	<b>lldp-table-changed</b>	Notify when the LLDP remote table changes
	<b>action</b>	Set action for event notification
	<b>trap</b>	Set trap action for notification
	<b>email</b>	Set email action for notification
<b>relay</b>	Set relay action for notification	
<b>Defaults</b>	All configuration, trap, email event notifications are enabled by default	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# config moxa(config)# event-notification switching-event all action trap moxa(config)# no event-notification switching-event all action trap email	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show event-notification event-notification general-event event-notification port-event	

## Relay Alarm Cut-off

### Configure Relay Alarm Cut-off Settings

#### Commands

**relay alarm cut-off relay**

<b>Syntax Description</b>	<b>relay</b>	Configure relay parameters
	<b>alarm</b>	Configure the relay alarm
	<b>cut-off</b>	Configure the relay alarm cut-off
	<b>relay</b>	Cut off the relay alarm
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# relay alarm cut-off relay	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Email Notification

### Configure Email Notification Server

#### Command

**email-notification server server-address** <ucast\_addr> [server-port <integer(1-65535)>] **username** <string(60)> **password** <string(60)>

<b>Syntax Description</b>	<b>email-notification</b>	Configure email notification parameters
	<b>server</b>	Configure server parameters
	<b>server-address</b>	Configure the email notification server IP address
	<b>server-port</b>	Configure the email-notification server port
	<b>username</b>	Configure the email notification server username
	<b>password</b>	Configure the email notification server password
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# email-notification server-address 1.2.3.4 username aaa password bbb	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

### Configure Email Notification Sender

#### Commands

**email-notification sender** <string (60)>

<b>Syntax Description</b>	<b>email-notification</b>	Configure email notification parameters
	<b>sender</b>	Configure the email notification sender's email address
	string (60)	The sender's email address up to 60 characters
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# email-notification sender testuser@test.com	
<b>Error messages</b>	Invalid Email Format	
<b>Related commands</b>	N/A	

### Configure Email Notification Server TLS Mode Setting

#### Commands

**email-notification server tls** {enable | disable}

<b>Syntax Description</b>	<b>email-notification</b>	Configure email notification parameters
	<b>server</b>	Configure server parameters
	<b>tls</b>	Configure the email notification server TLS mode
	enable	Enable the TLS mode
	disable	Disable the TLS mode
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# mail-server server tls enable (config)# mail-server server tls disable	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Configure Email Notification Receiver

### Commands

**email-notification receiver** <string (60)> **index** <integer (1-5)>

**no email-notification receiver index** <integer (1-5)>

<b>Syntax Description</b>	<b>no</b>	Disable the configuration/delete the entry/reset to default value
	<b>email-notification</b>	Configure email notification parameters
	<b>receiver</b>	Configure the email notification receiver
	<b>index</b>	Configure the index of the receiver
	string (60)	The receiver's name up to 60 characters
	integer (1-5)	The number index of the receiver ranging from 1 to 5
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# email-notification receiver testuser@test.com index 1 (config)# no email-notification receiver index 1	
<b>Error Messages</b>	Invalid Email Format	
<b>Related Commands</b>	N/A	

## Show Email Notification Server

### Commands

**show email-notification server**

<b>Syntax Description</b>	<b>show</b>	Display the configuration/statistics/general information
	<b>email-notification</b>	Display email notification parameters
	<b>server</b>	Display server parameters
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC / User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	# show email-notification server	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Syslog

### Configure Logging Server

#### Commands

**logging-server** <short(1-3)> { ipv4 <ucast\_addr> | <dns\_host\_name> } [ port <integer(1-65535)>]

<b>Syntax Description</b>	<b>logging-server</b>	Configure logging server parameters
	short (1-3)	The index of the syslog server
	ipv4	Configure IPv4 parameters
	ucast_addr	The IP address
	dns_host_name	The host domain name
	port	Configure port parameters
	integer (1-65535)	The port number
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# logging-server 1 ipv4 10.128.1.8 port 514	
<b>Error Messages</b>	'Invalid: The server addresses are duplicated.' 'Invalid: The syslog server address cannot be empty if it is enabled.'	
<b>Related Commands</b>	no logging-server <short(1-3)> show logging server	

## Delete Logging Server

### Commands

**no logging-server** <short(1-3)> [ enable ]

<b>Syntax Description</b>	<b>no</b>	Remove configuration / delete entry / reset to default value
	<b>logging-server</b>	Configure logging server parameters
	short (1-3)	The index of the syslog server
	enable	Disable this server entry
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no logging-server 1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	logging-server <short(1-3)> {ipv4 <ucast_addr>   <dns_host_name>} [ port <integer(1-65535)>] show logging syslog-server	

## Enable/Disable Logging Syslog Server

### Commands

**logging syslog-server** { enable | disable }

<b>Syntax Description</b>	<b>logging</b>	Configure logging parameters
	<b>syslog-server</b>	Configure the syslog server
	enable	Enable the syslog server
	disable	Disable the syslog server
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# logging syslog-server { enable   disable }	
<b>Error Messages</b>	'Invalid: The server addresses are duplicated.' 'Invalid: The syslog server address cannot be empty if it is enabled.'	
<b>Related Commands</b>	show logging server	

## Show Syslog Server Configuration

### Commands

**show logging syslog-server**

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>logging</b>	Display logging information
	<b>syslog-server</b>	Display syslog server information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC / User EXEC	
<b>Examples</b>	Syslog Server Configuration	
	Syslog Enable: disable	
	Index	Server Address Port Status Auth Enable
	-----	-----
	1	111.2.21.1 514 enable TLS
	2	200.2.2.2 2540 enable disable
	3	disable disable
	Authentication	
	Common name(CN)	Start Time End Time
	-----	-----
	PKI-123	2020-01-01 2020-12-31
<b>Help Message</b>	Display the Syslog logging server table	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	logging server enable logging-server <short(1-3)> {ipv4 <uaddr>   <dns_host_name>} [ port <integer(1-65535)>]	

## Copy Syslog Server Client Certificate

### Commands

**copy syslog-server** {<tftp\_url> | <sftp\_url>} **client-certificate** {<tftp\_url> | <sftp\_url>} **client-key** {<tftp\_url> | <sftp\_url>} **ca-key**

<b>Syntax Description</b>	<b>copy</b>	Perform copy operation
	<b>syslog-server</b>	Syslog-server configuration
	<b>client-certificate</b>	SYSLOG client certificate file
	<b>client-key</b>	SYSLOG client key file
	<b>ca-key</b>	SYSLOG on CA key file
	tftp_url	File in remote location to be copied
	sftp_url	File in remote location to be copied
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# copy syslog-server client-certificate tftp://192.168.127.200/filename1 client-key tftp://192.168.127.200/filename2 ca-key tftp://192.168.127.200/filename3	
	Moxa# copy syslog-server client-certificate	
	sftp://username:password@192.168.127.200/filename1 client-key	
	sftp://username:password@192.168.127.200/filename2 ca-key sftp://username:password@192.168.127.200/filename3	
<b>Error messages</b>	The certificate and key are not in the same set.	
<b>Related commands</b>	show logging syslog-server clear syslog-server certificate-and-key	

## Clear Syslog Server Certificate and Key

### Commands

**clear syslog-server certificate-and-key**

<b>Syntax Description</b>	<b>clear</b>	Perform clear operation
	<b>syslog-server</b>	Syslog-server configuration
	<b>certificate-and-key</b>	Authentication certificate file and key file
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# clear syslog-server certificate-and-key	
<b>Error messages</b>	N/A	
<b>Related commands</b>	show logging syslog-server clear syslog-server certificate-and-key copy syslog-server client-certificate {<tftp_url>   <sftp_url>} client-key {<tftp_url>   <sftp_url>} ca-key {<tftp_url>   <sftp_url>}	

## Configure Logging Server Settings

### Commands

**logging-server <short(1-3)> authentication {disable | tls}**

<b>Syntax Description</b>	<b>logging-server</b>	Configure logging server parameters
	short (1-3)	Index of syslog server
	<b>authentication</b>	Authentication method
	disable	Disable authentication
	tls	TLS authentication
<b>Defaults</b>	disable	
<b>Command Modes</b>	Global configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# logging-server 1 authentication tls moxa(config)# logging-server 2 authentication disable	
<b>Error messages</b>	The authentication certificate and key do not exist.	
<b>Related commands</b>	no logging-server <short(1-3)> show logging server	

# Diagnosis

## LLDP

### Show LLDP Information

#### Commands

##### show lldp

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general information
	<b>lldp</b>	Display global LLDP information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC User EXEC	
<b>Usage Guidelines</b>	Display the global LLDP settings	
<b>Examples</b>	moxa# show lldp LLDP status : Enabled Transmit Interval : 30 Holdtime Multiplier : 4 Chassis Id SubType : MAC Address Chassis Id : 00:90:e8:11:22:31 System Name : moxa System Desc : TSN-G5008-2GTXSFP	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	config lldp {enable   disable} config lldp holdtime-multiplier <2-10> config lldp transmit-interval <seconds(5-32768)>	

### Show LLDP Neighbors

#### Commands

##### show lldp neighbors

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general information
	<b>lldp</b>	Display the LLDP interface status
	<b>neighbors</b>	Display the LLDP remote interface database
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC User EXEC	
<b>Usage Guidelines</b>	Display LLDP neighbor interface information	
<b>Examples</b>	moxa# show lldp neighbors Chassis Local Port ID Intf Id ----- 00:60:6e:ba:ba:0b Eth1/1 00:60:6e:ba:ba:0b Total Entries Displayed : 1	
<b>Error Messages</b>	N/A	

## Show LLDP Traffic

### Commands

#### show lldp traffic

<b>Syntax Description</b>	<b>show</b>	Display configuration/statistics/general information
	<b>lldp</b>	Display the LLDP interface status
	<b>traffic</b>	Display the LLDP local traffic
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC User EXEC	
<b>Usage Guidelines</b>	Display LLDP traffic for the local counter	
<b>Examples</b>	<pre> moxa# show lldp traffic Ethernet 1/1 Total Frames Out          : 125 Total Entries Aged        : 0 Total Frames In           : 6 Total Frames Received In Error : 0 Total Frames Discarded    : 0 Total TLVS Unrecognized   : 1 Ethernet 1/2 Total Frames Out          : 0 Total Entries Aged        : 0 Total Frames In           : 0 Total Frames Received In Error : 0 Total Frames Discarded    : 0 Total TLVS Unrecognized   : 0 Ethernet 1/3 Total Frames Out          : 0 Total Entries Aged        : 0 Total Frames In           : 0 Total Frames Received In Error : 0 Total Frames Discarded    : 0 Total TLVS Unrecognized   : 0 Ethernet 1/4 Total Frames Out          : 0 Total Entries Aged        : 0 Total Frames In           : 0 Total Frames Received In Error : 0 Total Frames Discarded    : 0 Total TLVS Unrecognized   : 0 </pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show lldp	

## Enable/Disable LLDP Function

### Commands

**lldp enable**

**lldp disable**

<b>Syntax Description</b>	<b>lldp</b>	Configure LLDP parameters
	<b>enable</b>	Enable LLDP
	<b>disable</b>	Disable LLDP
<b>Defaults</b>	Enable	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	Enable or disable global LLDP	
<b>Examples</b>	moxa (config)# lldp enable moxa (config)# lldp disable	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show lldp show lldp interface show lldp neighbors show lldp traffic	

## Configure Global LLDP Transmission Timer Interval

### Commands

**lldp transmit-interval** <seconds (5-32768)>

**no lldp transmit-interval**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>lldp</b>	Configure LLDP parameters
	<b>transmit-interval</b>	Configure the transmit interval
	seconds	The interval time ranging from 5 to 32768 seconds
<b>Defaults</b>	The interval between successive transmit cycles is set to 30 seconds by default	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	Configure the global LLDP transmit interval time	
<b>Examples</b>	moxa(config)# lldp transmit-interval 30 moxa(config)# no lldp transmit-interval	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show lldp config lldp enable	

## Configure LLDP Holdtime Multiplier

### Commands

**lldp holdtime-multiplier** <value (2-10)>

**no lldp holdtime-multiplier**

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>lldp</b>	Configure LLDP parameters
	<b>holdtime-multiplier</b>	A multiplier on the transmit-interval used to compute the TTL value of txTTL.
	value	The multiplier value ranging from 2 to 10
<b>Defaults</b>	The default holdtime multiplier is set to 4	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# lldp holdtime-multiplier 4 moxa(config)# no lldp holdtime-multiplier	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show lldp config lldp enable	

## Port Mirroring

### Enable/Disable Mirroring

#### Commands

**port-mirror** {enable | disable}

<b>Syntax Description</b>	<b>port-mirror</b>	Configure port mirror parameters
	enable	Enable mirroring in the system
	disable	Disable mirroring in the system
<b>Defaults</b>	Port mirroring is enabled by default	
<b>Command Modes</b>	Global Configuration Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure moxa(config)# port-mirror enable  moxa# configure moxa(config)# port-mirror disable	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	moxa# show monitor { session <session-id (1)>   range <session-list> }	

## Show Mirroring Information

### Commands

**show monitor** { session <session-id (1-1)> }

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>monitor</b>	Display port mirror information
	session	The mirroring information related to a specific session
	session-id	The index of the mirroring session
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# show monitor session 1 Mirroring is globally Enabled.   Session   : 1   ----- Source Ports   Rx        : None   Tx        : None   Both     : Eth1/1 Destination Ports : Eth1/2 Session Status  : Active</pre>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Configure the Source for a Mirroring Session

### Commands

**monitor session** <session-id (1-1)> { source{interface <interface-type> <interface-id> [{rx|tx|both}]}}

<b>Syntax Description</b>	<b>monitor</b>	Configure port mirroring parameters
	<b>session</b>	Configure the mirroring session
	session-id	The index of the mirroring session
	source	Configure the mirroring source port
	interface	Configure the interface
	interface-type	Interface type
	interface-id	Interface number
	rx, tx, both	Mirror received, transmitted, or both types of traffic
<b>Defaults</b>	The traffic type to mirror is set to both by default	
<b>Command Modes</b>	Global Configuration Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	<pre>moxa# configure moxa(config)# monitor session 1 source interface ethernet 1/1  moxa# configure moxa-(config)# monitor session 1 source interface ethernet 1/1 rx  moxa-# configure moxa(config)# monitor session 1 source interface ethernet 1/1 tx</pre>	
<b>Error Messages</b>	<pre>% Invalid: Duplicated Rx source port. % Invalid: Duplicated Tx source port. % Invalid: The destination port conflicts with the Tx source port or Rx source port. % Invalid: If the port is a Port-Channel member, it cannot be set to the destination port, RX source port, or TX source port. % Invalid: The Port-Channel with no member ports cannot be set to the RX source port. % Invalid: The Port-Channel with no member ports cannot be set to the TX source port.</pre>	
<b>Related Commands</b>	<pre>moxa(config)# no monitor session &lt;session-id (1)&gt; { source { interface { port-channel &lt;port-channel-id&gt;   &lt;interface-type&gt; &lt;interface-id&gt; } } }</pre>	

## Remove Source Port Configurations for a Mirroring Session

### Commands

**no monitor session** <session-id (1-1)> { source{interface <interface-type> <interface-id> } }

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>monitor</b>	Configure port mirroring parameters
	<b>session</b>	Configure the mirroring session
	session-id	The index of the mirroring session
	source	Configure the mirroring source port
	interface	Configure the interface
	interface-type	The interface type
interface-id	The interface number	
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure moxa-product(config)# no monitor session 1 source interface ethernet 1/1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	moxa(config)# monitor session <session-id (1)> { source { interface { port-channel <port-channel-id>   <interface-type> <interface-id> } [{ rx   tx   both } ] }	

## Configure the Destination for a Mirroring Session

### Commands

**monitor session** <session-id (1-1)> destination { interface <interface-type> <interface-id> }

<b>Syntax Description</b>	<b>monitor</b>	Configure port mirroring parameters
	<b>session</b>	Configure the mirroring session
	session-id	The index of the mirroring session
	destination	Configure the mirroring destination port
	interface	Configure the interface
	interface-type	The interface type
	interface-id	The interface number
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure moxa(config)# monitor session 1 destination interface ethernet 1/2	
<b>Error Messages</b>	% Invalid: Duplicate Destination Port. % Invalid: Destination Port conflicts with Tx Source Port or Rx Source Port. % Invalid: If the port is a Port-Channel member, it cannot be set to the destination port, RX source port, or TX source port. % Invalid: If the port is set as the Turbo Chain head/tail/member port, it cannot be set to the destination port. % Invalid: If the port is set as the RSTP port, it cannot be set to the destination port.	
<b>Related Commands</b>	moxa(config)# no monitor session <session-id (1)> destination { interface <interface-type> <interface-id> }	

## Delete the Destination Configuration for a Mirroring Session

### Commands

**no monitor session** <session-id(1-1)> destination { interface <interface-type> <interface-id> }

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>monitor</b>	Configure port mirroring parameters
	<b>session</b>	Configure the mirroring session
	session-id	The index of the mirroring session
	destination	Configure the mirroring destination port
	interface	Configure the interface
	interface-type	The interface type
interface-id	The interface number	
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure moxa(config)# no monitor session 1 destination interface ethernet 1/2	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	moxa(config)# monitor session <session-id (1)> destination { interface <interface-type> <interface-id> }	

## Delete Mirroring Configurations

### Commands

**no monitor session** { session-id (1-1) }

<b>Syntax Description</b>	<b>no</b>	Remove configuration/delete entry/reset to default value
	<b>monitor</b>	Configure port mirroring parameters
	<b>session</b>	Configure the mirroring session
	session-id	The index of the mirroring session
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Global Configuration Mode	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# configure moxa(config)# no monitor session 1	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

# Ping

## Ping the Host

### Commands

**ping** <host> [repeat <repeat\_count (1-10)>] [size <packet\_size (36-2080)>] [timeout <timeout (1-100)>]

<b>Syntax Description</b>	<b>ping</b>	Ping a target to check its status
	<b>host</b>	The IP address or domain name of the node to be pinged
	repeat	The number of ping packets that are sent to the destination address
	repeat-count	The repeat value
	size	The size of the ping packet
	packet-size	The length of the ping packet value
	timeout	The time in seconds after which the entity waiting for the ping response times out
	timeout (1-100)	The timeout value
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# ping 192.168.127.254 repeat 5 PING 192.168.127.254 (192.168.127.254) 56(84) bytes of data. 64 bytes from 192.168.127.254: icmp_seq=1 ttl=64 time=1.52 ms 64 bytes from 192.168.127.254: icmp_seq=2 ttl=64 time=0.803 ms 64 bytes from 192.168.127.254: icmp_seq=3 ttl=64 time=0.879 ms 64 bytes from 192.168.127.254: icmp_seq=4 ttl=64 time=0.791 ms 64 bytes from 192.168.127.254: icmp_seq=5 ttl=64 time=0.845 ms  --- 192.168.127.254 ping statistics --- 5 packets transmitted, 5 received, 0% packet loss, time 4002ms rtt min/avg/max/mdev = 0.791/0.968/1.523/0.279 ms	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## ARP Table

### Show IP ARP Table

#### Commands

**show ip arp**

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>ip</b>	Display IP information
	<b>arp</b>	Display the ARP table
<b>Defaults</b>	N/A	
<b>Command Modes</b>	User EXEC Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show ip arp IP Address      MAC Address ----- 192.168.127.113 00:05:1b:a1:ae:62 192.168.127.112 00:05:1b:a3:53:d6	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Event Log

### Show Logging Event Log

#### Commands

**show logging event-log**

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>logging</b>	Display logging information
	<b>event-log</b>	Display event log entries
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC / User EXEC	
<b>Examples</b>	moxa# show logging event-log  Total number of log entries = 7 Boot SEV Timestamp Message ----- 19 5 2018-02-05 12:00:51 [Account:admin] successfully logged in via local. 19 5 2018-02-05 12:00:14 Port 7/4 link up. 19 5 2018-02-05 12:00:12 Port 7/1 link up. 19 5 2018-02-05 12:00:11 Port 7/2 link up. 19 5 2018-02-05 12:00:11 System has performed a warm start. 19 5 2018-02-05 12:00:09 Port 4/3 link up. 19 5 2018-02-05 12:00:08 Port 4/4 link up.	
<b>Help Message</b>	Display the log entries information	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	clear logging event-log	

### Show Logging Log Capacity

#### Commands

**show logging log-capacity**

<b>Syntax Description</b>	<b>show</b>	Display configuration/status information
	<b>logging</b>	Display logging information
	<b>log-capacity</b>	Display log capacity information
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC / User EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# show logging log-capacity	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

### Clear Logging Event Log

#### Commands

**clear logging event-log**

<b>Syntax Description</b>	<b>clear</b>	Clear the event
	<b>logging</b>	Display logging information
	<b>event-log</b>	The local event log entries to be cleared
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# clear logging event-log	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	show logging event-log	

## Configure Event Log Capacity Settings

### Commands

**logging log-capacity threshold** <short (50-100)>

<b>Syntax Description</b>	<b>logging</b>	Configure logging parameters
	<b>log-capacity</b>	Configure the log capacity
	<b>threshold</b>	Configure the log capacity threshold
	short (50-100)	The log capacity threshold in percentage
<b>Defaults</b>	The default log threshold is set to 80 entries	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# logging log-capacity threshold <short(50-100)>	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Delete Logging Log Capacity Threshold

### Commands

**no logging log-capacity threshold**

<b>Syntax Description</b>	<b>no</b>	Remove configuration / delete entry / reset to default value
	<b>logging</b>	Configure logging parameters
	<b>log-capacity</b>	Configure the log capacity
	<b>threshold</b>	Configure the log capacity threshold
<b>Defaults</b>	The default log threshold is set to 80 entries	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# no logging log-capacity threshold	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	logging log-capacity threshold	

## Configure Oversized Log Action Setting

### Commands

**logging oversize-action** { overwrite-oldest | stop-recording }

<b>Syntax Description</b>	<b>logging</b>	Configure logging parameters
	<b>oversize-action</b>	Configure the action when exceeding the log threshold
	overwrite-oldest	Overwrite the oldest entry
	stop-recording	Stop recording events
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC Global Configuration	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa(config)# logging oversize-action { overwrite-oldest   stop-recording }	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Auto Back Up Log

### Commands

**auto-backup log** { enable | disable }

<b>Syntax Description</b>	<b>auto-backup</b>	Auto backup file to external storage
	<b>log</b>	log file
	enable	Enable setting
	disable	Disable setting
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# auto-backup log enable (config)# auto-backup log disable	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	

## Copy Event Log

### Commands

**copy event-log** { <tftp\_url> | <sftp\_url> | **usb:** <filename> | **micro-sd:** <filename> }

<b>Syntax Description</b>	<b>copy</b>	Copy from one file to another
	<b>event-log</b>	System event log
	tftp_url	Remote server through TFTP, in the format "tftp://server/filename"
	sftp_url	Remote server through SFTP, in the format "sftp://username:password@server/filename"
	<b>usb</b>	Copy event-log to ABC-02
	<b>micro-sd</b>	Copy event-log to micro-SD
	filename	Filename
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	(config)# copy event-log tftp://server/moxa.log (config)# copy event-log sftp://username:password@server/moxa.log (config)# copy event-log usb: Moxa/log/moxa.log (config)# copy event-log micro-sd: Moxa/log/moxa.log	
<b>Error messages</b>	Invalid: File expects [0-9], [a-z], [A-Z], and -._() Invalid: Not support USB. Invalid: Not support microSD. Invalid: USB function is disable Invalid: MicroSD function is disable Invalid: Invalid Request Data	
<b>Related commands</b>	N/A	

# Maintenance and Tool

## Locator

### Show the Locator

#### Commands

**locator** [ <duration (30-300)> ]

<b>Syntax Description</b>	<b>locator</b> duration (30-300)	Activate the device locator so that the LED on the device blinks The duration of locator activation in seconds
<b>Defaults</b>	The locator duration is set to 60 seconds by default	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# locator 100	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Reboot

### Reboot the Switch

#### Commands

**reload**

<b>Syntax Description</b>	<b>reload</b>	Perform a warm restart
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# reload Are you sure you want to restart the device? [y/N] y Restarting device...	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Reset to Default

### Reset to Default

#### Commands

**reload factory-default**

<b>Syntax Description</b>	<b>reload</b> <b>factory-default</b>	Perform a warm restart Perform a warm restart and restore the factory default settings
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# reload factory-default Would you like to reset system configuration to factory default? [y/N] y Resetting device into factory default and restarting...	
<b>Error Messages</b>	N/A	
<b>Related Commands</b>	N/A	

## Logout

### Commands

#### exit

<b>Syntax</b>	<b>exit</b>	Log out from the device
<b>Description</b>	N/A	
<b>Defaults</b>	N/A	
<b>Command Modes</b>	Privileged EXEC	
<b>Usage Guidelines</b>	N/A	
<b>Examples</b>	moxa# exit	
<b>Error messages</b>	N/A	
<b>Related commands</b>	N/A	