

Moxa Managed Switch Next-generation OS (v6.x) Command Line Interface

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www.moxa.com/products

Models covered by this user manual:

RKS-G4000 Series Managed Ethernet Switches



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Moxa Managed Switch Next-generation OS (v6.x)

Command Line Interface

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Table of Contents

1. About This Manual	5
2. Understanding the Command Line Interface	6
Accessing the Switch.....	6
Logging in using the RS-232 Console.....	6
Logging in using Telnet	9
Command Modes.....	12
Basic Configuration.....	12
Understanding All Command Modes.....	12
Help Messages	13
Special Usage and Limitations	14
Abbreviated Commands.....	14
No and Default Forms of Commands	15
CLI Error Messages	16
Command History	16
3. Commands.....	17
System.....	17
System Management	17
Account Management.....	25
Management Interface	29
Time	43
Port	77
Port Interface	77
Link Aggregation	85
PoE.....	90
Layer 2 Switching	101
VLAN	101
GARP	116
MAC	117
QoS.....	119
Multicast	133
IP Configuration (L2).....	145
Network Interface (L3).....	145
Redundancy	150
Layer 2 Redundancy	150
IEC 62439-3	189
Layer 3 Redundancy	194
Tracking.....	200
Network Service	207
DHCP and MAC-based IP Assignment.....	207
DHCP Relay Agent	213
DNS Settings	217
Routing	218
Unicast Route	218
Multicast Route	240
BFD	262
Security.....	267
Device Security	267
Network Security.....	272
Authentication	340
Diagnostics	343
System Status	343
Network Status	350
Tools	363
Event Logs and Notifications	376
Maintenance and Tools.....	394
Industrial Applications	396
IEC 61850	396
Modbus TCP.....	406

EtherNet/IP	406
PROFINET.....	407
A. Protocol port numbers for external interfaces	409

1. About This Manual

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 idea 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.

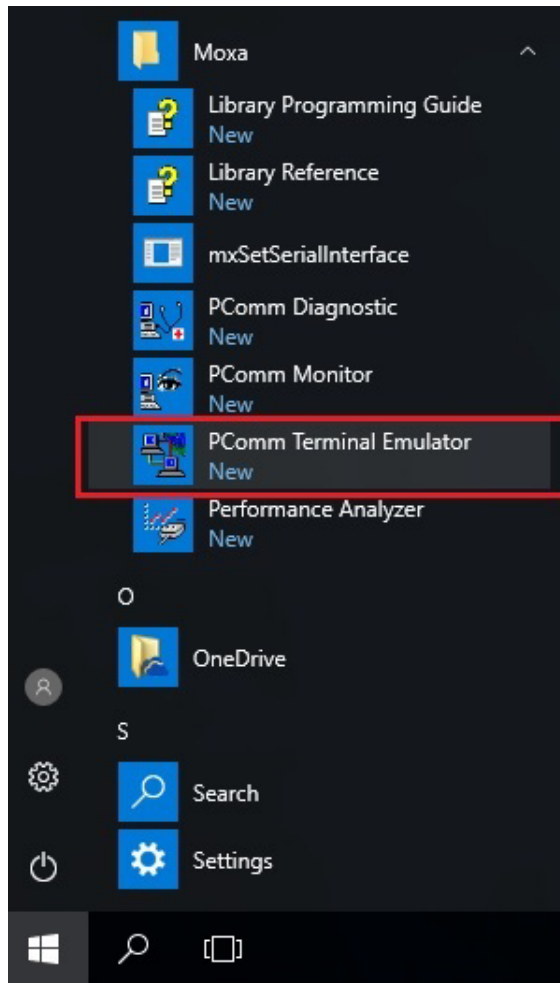


NOTE

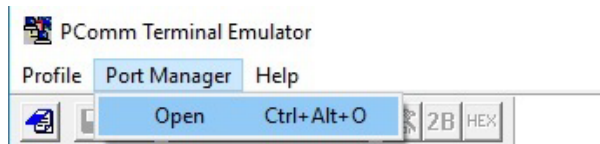
Moxa recommends using PComm Terminal Emulator for serial communication. This software is available for free on the Moxa website. You can use other serial communication software, but the following instructions may be different.

1. Use the 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.

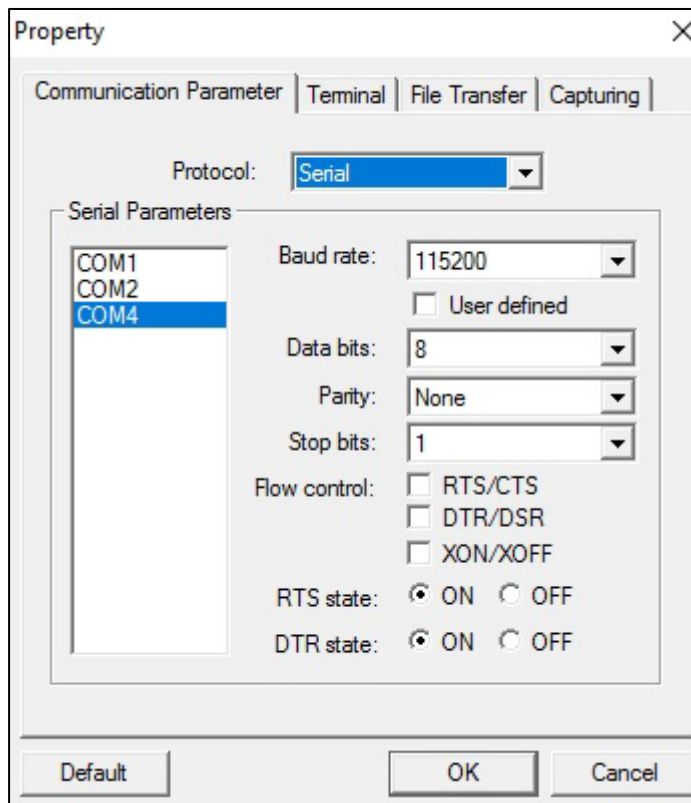
4. In Windows, click **Start > Moxa > PComm Terminal Emulator**.



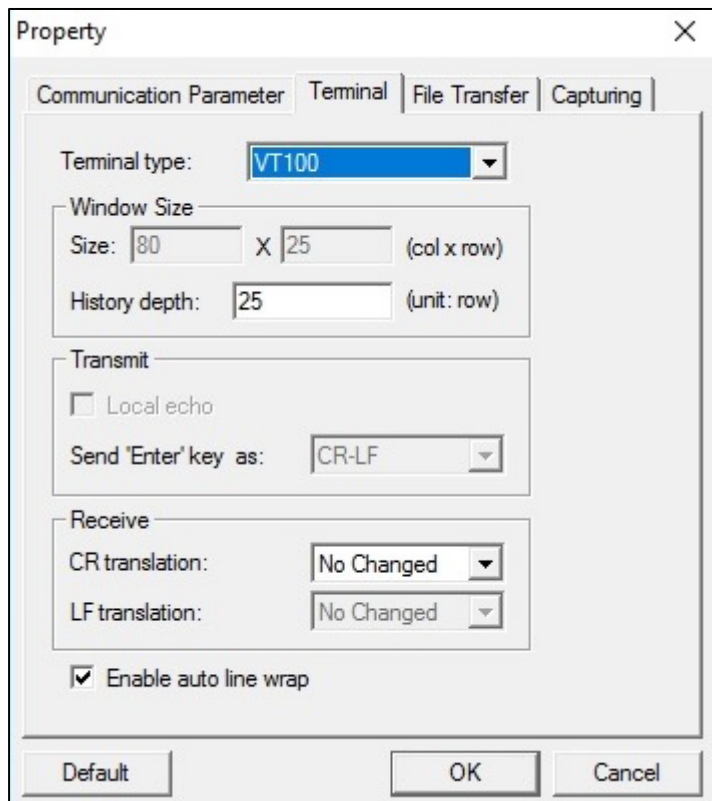
5. Click **Port Manager > Open** to establish a new connection.
The Property window will appear.



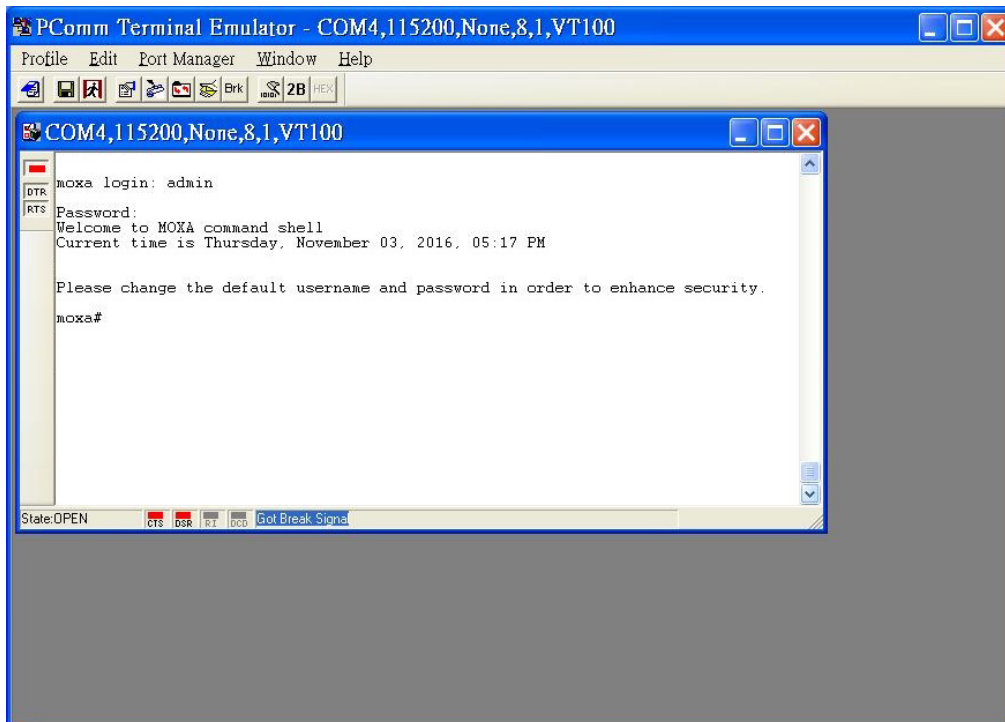
- On the **Communication Parameter** tab, select the COM port that will be used for the console connection. Configure the fields as follows: **115200** for **Baud rate**, **8** for **Data bits**, **None** for **Parity**, and **1** for **Stop bits**.



- 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 change 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 of the form 192.168.127.xxx and a subnet mask of 255.255.255.0.



NOTE

When connecting to the Moxa switch 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.

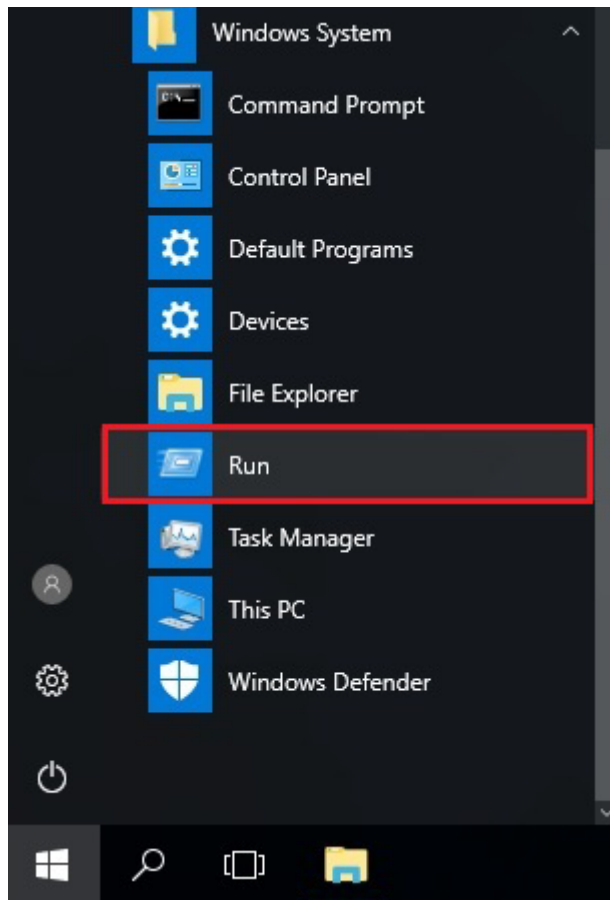


NOTE

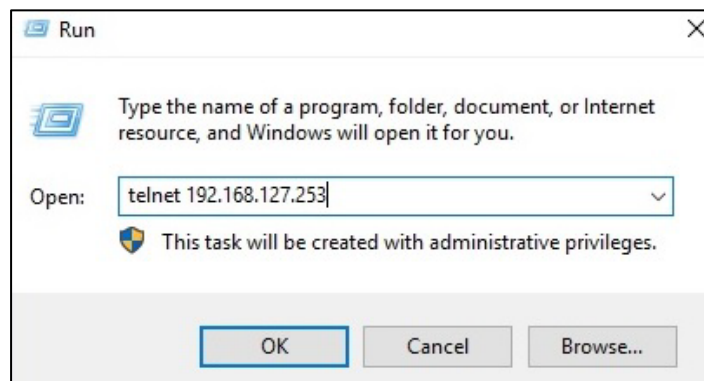
The Moxa switch's default IP address is 192.168.127.253 with subnet mask of 255.255.255.0.

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:

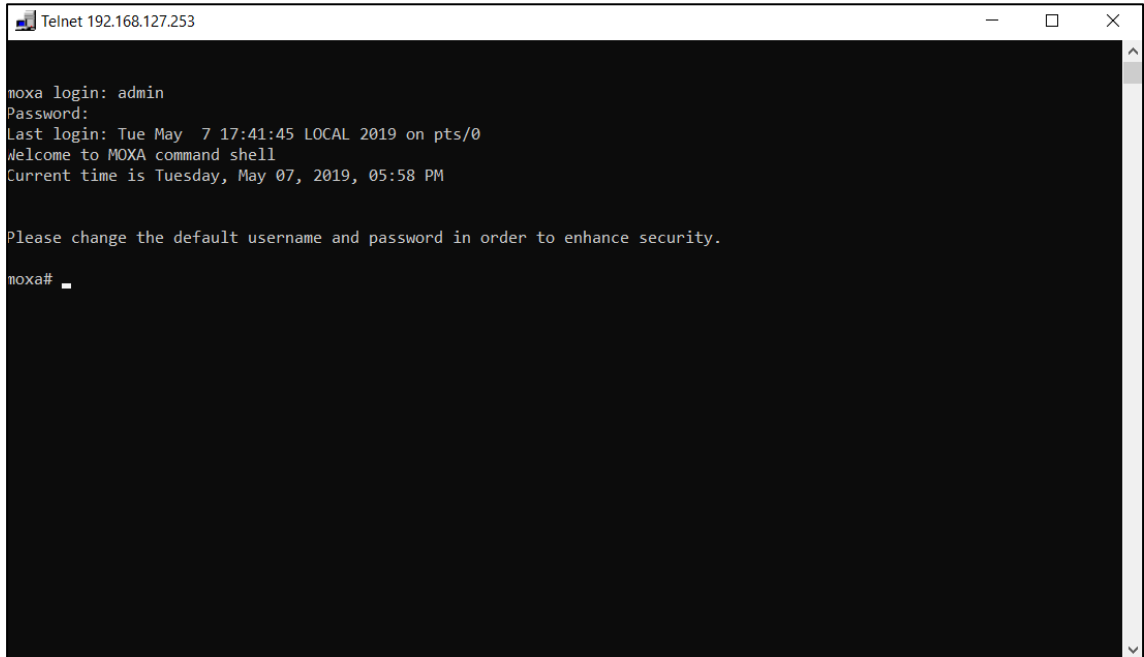
10. In Windows, click **Start > Run**.



11. 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.



12. 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).



```
Telnet 192.168.127.253
moxa login: admin
Password:
Last login: Tue May  7 17:41:45 LOCAL 2019 on pts/0
Welcome to MOXA command shell
Current time is Tuesday, May 07, 2019, 05:58 PM

Please change the default username and password in order to enhance security.
moxa#
```

13. 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 user .	moxa>	Enter the exit 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 admin .	moxa #	Enter the exit command. This will return you to the previous configuration mode.	Use this mode to verify commands that you have entered.
Global configuration	Enter the configure command while in Privileged EXEC mode.	moxa (config)#	Enter the exit 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 interface identification.	moxa (config-if)#	Enter the exit 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, if you 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> <interface-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>@server/filename} [included-default] [password <string(60)>]
copy startup-config {tftp://server/filename | sftp://<user-name>:<pass-word>@server/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 Settings

Configure Device Hostname

Commands

hostname device-name

no hostname

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

Configure Device Description

Commands

description text

no description

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

Configure Contact Information

Commands

contact text

no contact

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

Configure Location Information

Commands

location text

no location

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

Show System Information

Commands

show system information

Syntax Description	show	Display configuration/status information
	system	Display system information
	information	Display system information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	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	
Error Messages	N/A	
Related Commands	N/A	

Firmware Upgrade

Upgrade the Firmware

Commands

copy { <tftp_url> | <sftp_url> | **usb:** <filename> | **micro-sd:** <filename> } **device-firmware**

Syntax Description	copy	Perform copy operation
	device-firmware	Copy a device firmware file
	tftp_url	Specify the remote TFTP server address in the format "tftp://server/filename"
	sftp_url	Specify the remote SFTP server address in the format "sftp://username:password@server/filename"
	usb	Copy from an ABC-02 USB device under the /Moxa folder.
	micro-sd	Copy from a microSD device under the /Moxa folder.
filename	Specify the filename	
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	(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	
Error Messages	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	
Related Commands	N/A	

Configuration Backup and Restore

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**

Syntax Description	copy	Perform copy operation
	running-config	running-config to be copied
	tftp_url	File in remote location to be copied
	sftp_url	File in remote location to be copied
	usb	File in ABC-02 under /Moxa/config to be copied
	micro-sd	File in micro-SD under /Moxa/config to be copied
filename	File name	
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	(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	
Error Messages	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	
Related Commands	copy startup-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}	

Copy Startup Configuration

Commands

copy startup-config { <tftp_url> | <sftp_url> | **usb:** <filename> | **micro-sd:** <filename> }

Syntax Description	copy	Perform copy operation
	startup-config	Copy the startup configuration
	tftp_url	Specify the remote TFTP server address in the format "tftp://server/filename"
	sftp_url	Specify the remote SFTP server address in the format "sftp://username:password@server/filename"
	usb	Copy from an ABC-02 USB device under the /Moxa folder.
	micro-sd	Copy from a microSD device under the /Moxa folder.
	filename	Specify the filename
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>(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"</pre>	
Error Messages	<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>	
Related Commands	<pre>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}</pre>	

File Encryption

Configure File Encryption Password

Commands

config-file encryption password <password>

no config-file encryption

Syntax Description	config-file	Configure configuration file-related settings
	encryption	Configure configuration file encryption
	password	Configure the configuration file password
	<password>	Specify the encryption password
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	(config)# config-file encryption password 1234	
Error Messages	N/A	
Related Commands	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 Information

Commands

show config-file encryption

Syntax Description	show	Display running information for the function
	config-file	Display configuration file-related information
	encryption	Display the configuration file encryption information
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	# show config-file encryption	
Error Messages	N/A	
Related Commands	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}	

Enable/ Disable Configuration Auto Backup

Commands

auto-backup config { enable | disable }

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

Enable/ Disable Configuration Auto Restore

Commands

auto-restore config { enable | disable }

Syntax Description	auto-restore	Auto restore file from external storage
	config	Configuration file
	enable	Enable setting
	disable	Disable setting
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	(config)# auto-restore config enable (config)# auto-restore config enable	
Error Messages	N/A	
Related Commands	N/A	

Event Log Backup

Commands

copy event-log { <tftp_url> | <sftp_url> | **usb**: <filename> | **micro-sd**: <filename> }

Syntax Description	copy	Perform copy operation
	event-log	Copy the system event log
	tftp_url	Specify the remote TFTP server address in the format "tftp://server/filename"
	sftp_url	Specify the remote SFTP server address in the format "sftp://username:password@server/filename"
	usb	Copy from an ABC-02 USB device under the /Moxa folder.
	micro-sd	Copy from a microSD device under the /Moxa folder.
filename	Specify the filename	
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	(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	
Error Messages	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	
Related Commands	N/A	

Account Management

User Account

Configure User Account Setting

Commands

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

no username username

Syntax Description	no	Remove configuration/delete entry/reset to default value
	username	Configures username parameters
	username	The username to be used for login
	password	Configures password parameters
	password	The password to be entered by the user
	group	Configures the user privilege level
	group	Valid values are "admin", "supervisor", and "user" "admin" for admin group, "supervisor" for supervisor, and "user" for normal user group
	status	Configures user status parameters
	enable	Enable the user
	disable	Disable the user
	email	Configures the user email
email	The user's email address	
Defaults	N/A.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	(config)# username testuser password test123 group admin status enable email test@test.com	
Error Messages	% Max User Account Amount Reached % Invalid Username Format % Password doesn't 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	
Related Commands	Show user	

Show User Information

Commands

show user

Syntax Description	show	Display running information for the function
	user	Display user parameters
Defaults	N/A	
Command Modes	Global configuration/ User EXEC	
Usage Guidelines	N/A	
Examples	<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>	
Error Messages	N/A	
Related Commands	username	

Online Account

Show System Online Account

Commands

show system online-account

Syntax Description	show	Display running information for the function
	system	Display system related information
	online-account	Accounts already logged into this device
Defaults	N/A	
Command Modes	Privilege EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show system online-account Online Account Account Role IP Address Interface ID Idle Admin Admin 192.168.127.253 HTTP(S) 4a5d6d51 1 Chris Supervisor 192.168.127.252 HTTP(S) 19ad4348 10 User User 192.168.127.251 Telnet 86ac3734 20 Jason User 192.168.127.250 SSH 5c73d2a2 30 Tim User Local Console 5c73d2a2 50</pre>	
Error Messages	N/A	
Related Commands	N/A	

Remove System Online Account

Commands

remove system online-account id <id>

Syntax Description	remove	Remove an online account
	system	Display system related information
	online-account	Accounts already logged into this device
	id	Login account ID in the table
Defaults	N/A	
Command Modes	Privilege EXEC	
Usage Guidelines	N/A	
Examples	moxa# remove system online-account id 1a2b3c4d	
Error Messages	This ID is not valid.	
Related Commands	N/A	

Password Policy

Configure Password Maximum Lifetime

Commands

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

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

Configure Password Validation Rules

Commands

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

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

Configure Password Minimum Length

Commands

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

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

Show Password Minimum Length

Commands

show password minimum-length

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

Show Password Validation Rules

Commands

show password validate-rules

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

Management Interface

User Interface

Enable Network Server

Commands

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

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

Disable Network Server

Commands

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

Syntax Description	ip	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
	server	Configure management UI service server parameters
	disable	Disable the management UI service
Defaults	http: enabled https: enabled telnet: enabled ssh: enabled moxa-command: enabled	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# ip telnet server disable	
Error Messages	N/A	
Related Commands	N/A	

Configure Network Port Numbers

Commands

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

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

Configure SNMP Server Port Number

Commands

snmp-server port <port-number>

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

Configure Network Maximum Session Numbers

Commands

ip http max-session <session-number>

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

Configure Network Terminal Maximum Session Numbers

Commands

ip terminal max-session <session-number>

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

Show Network Service Information

Commands

show ip service information

Syntax Description	show	Display configuration/status information
	ip	Display IP information
	service	Display management UI service information
	information	Display the information for management UI services
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	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	
Error Messages	N/A	
Related Commands	N/A	

Hardware Interface

Enable/Disable USB Hardware Interface

Commands

hardware-interface usb {enable | disable}

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

Enable/Disable microSD Hardware Interface

Commands

hardware-interface micro-sd {enable | disable}

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

Enable/Disable DIP switch Hardware Interface

Commands

hardware-interface dip { enable | disable }

Syntax Description	hardware-interface	Configure hardware interface parameters
	dip	Configure dip switch parameters
	enable	Enable the hardware interface dip service
	disable	Disable the hardware interface dip service
Defaults	enable	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# hardware-interface dip enable	
Error Messages	N/A	
Related Commands	turbo-ring-v2 { enable disable }	

Display Hardware Interface Information

Commands

show hardware-interface

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

Display External Storage Information

Commands

show external-storage info

Syntax Description	Show	Display configuration information
	external-storage	Includes USB and microSD
	info	Information
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	(config)# show external-storage info External Storage info ----- Auto-backup event log Enable : YES Auto-backup configuration Enable : YES Auto-restore configuration Enable : YES	
Error Messages	N/A	
Related Commands	N/A	

SNMP

Configure SNMP Server Access Mode

Commands

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

Syntax Description	snmp-server	Configure SNMP server parameters
	access	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
Defaults	SNMP server access is disabled by default	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# snmp-server access enable moxa(config)# snmp-server access disable moxa(config)# snmp-server access read-only	
Error Messages	N/A	
Related Commands	snmp-server show snmp-server	

Configure SNMP Server Read-Only Community Settings

Commands

snmp-server community read-only <community-name(4-32)>

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

Delete SNMP Server Read-Only Community

Commands

no snmp-server community read-only

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

Configure SNMP Server Read-Write Community Settings

Commands

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

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

Configure SNMP Server Read-Write Community to Default Value

Commands

no snmp-server community read-write

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

Configure SNMP Server Version

Commands

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

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

Configure SNMP Server Version to Default Value

Commands

no snmp-server version

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

Syntax Description	snmp-server	Configure SNMP server parameters
	user	Configure SNMP server user accounts
	user-name(32)	The user name of the SNMP server user account
	authority	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
	auth-type	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
	encryption	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	
Defaults	There is no user account table by default	
Command Modes	Global configuration	
Usage Guidelines	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.	
Examples	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)#	

	<pre>moxa(config)# snmp-server user testAuthPriv authority read-write auth-type md5 auth-passwd 111111111 encryption des encryption-key 222222222 moxa(config)# moxa(config)#</pre>
Error Messages	<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>
Related Commands	<pre>snmp-server show snmp-server</pre>

Delete SNMP Server User Account

Commands

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

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	snmp-server	Configure SNMP server parameters
	user	Configure SNMP server user accounts
	user-name (32)	The user name of the SNMP server user account
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa(config)# no snmp-server user testNoAuthNoPriv moxa(config)# no snmp-server user testAuthNoPriv moxa(config)# no snmp-server user testAuthPriv</pre>	
Error Messages	<pre>% 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</pre>	
Related Commands	<pre>snmp-server show snmp-server</pre>	

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)>]
```

Syntax Description	snmp-trap	Configure SNMP trap parameters
	host	Configure the SNMP trap host address
	host-address(32)	The SNMP trap host address
	mode	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	
Defaults	There is no SNMP trap host entry by default	
Command Modes	Global configuration	
Usage Guidelines	A community name must be set when using trap-v1, trap-v2c, or infom-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.	
Examples	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	
Error Messages	% 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 infom-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	
Related Commands	snmp-trap show snmp-trap	

Delete SNMP Trap Host Entry

Commands

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

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	snmp-trap	Configure SNMP trap parameters
	host	Configure the SNMP trap host address
	host-address(32)	The SNMP trap host address
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# no snmp-trap host 192.168.127.254 moxa(config)# no snmp-trap host 192.168.127.253	
Error Messages	% 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	
Related Commands	snmp-trap show snmp-trap	

Configure SNMP Trap Inform Retry Setting

Commands

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

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

Reset SNMP Trap Inform Retry to Default Value

Commands

no snmp-trap inform-retries

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

Configure SNMP Trap Inform Timeout Setting

Commands

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

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

Reset SNMP Trap Inform Timeout to Default Value

Commands

no snmp-trap inform-timeout

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

Syntax Description	snmp-trap	Configures SNMP trap parameters
	user	Configure SNMP trap user accounts
	user-name(32)	The user name of the SNMP trap user account
	auth-type	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
	auth-passwd	Configure the authentication password for the SNMP trap user account
	authentication-password (64)	The authentication password
	encryption	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
	encryption-key	Configure the data encryption key for the SNMP trap user account
encryption-key (64)	The data encryption key	
Defaults	There is no user account table by default	
Command Modes	Global configuration	
Usage Guidelines	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.	
Examples	moxa# con t 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	
Error Messages	% 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	

Related Commands	snmp-trap show snmp-trap
-------------------------	-----------------------------

Delete SNMP Trap User Account

Commands

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

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	snmp-trap	Configures SNMP trap parameters
	user	Configure SNMP trap user accounts
	user-name (32)	The user name of the SNMP trap user account
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# no snmp-trap user test	
Error Messages	% 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	
Related Commands	snmp-trap show snmp-trap	

Show SNMP Server Information

Commands

show snmp-server information

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

Show SNMP Server User Account Information

Commands

show snmp-server user

Syntax Description	show	Displays the configuration/statistics/general information
	snmp-server	Displays SNMP server information
	user	Displays SNMP server user accounts
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	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	
Error Messages	% Can't get snmp-server user-account information % Can't get snmp-server user-account table	
Related Commands	snmp-server	

Show SNMP Server Engine ID Information

Commands

show snmp-server engine-id

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

Time

System Time

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	
clock		Configure system clock parameters
timezone		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
Defaults		N/A
Command Modes		Global Configuration
Usage Guidelines		N/A
Examples		moxa# configure terminal moxa(config)# clock timezone "8"
Error Messages		N/A
Related Commands		N/A

Configure Clock Source

Commands

clock source { local | ntp | sntp }

Syntax Description	clock	Configure system clock parameters
	source	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)
Defaults	clock source: local	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# clock source local	
Error Messages	N/A	
Related Commands	N/A	

Configure Clock Setting

Commands

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

Syntax Description	clock	Configure system clock parameters
	set	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
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# clock set 11:11:11 12 31 2019	
Error Messages	Invalid: Cannot modify clock time as the clock source is not Local	
Related Commands	N/A	

Enable Clock Summer Time

Commands

clock summer-time enable

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

Disable Clock Summertime

Commands

clock summer-time disable

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

Configure Clock Summertime Date

Commands

clock summer-time date <started-month> <started-week> <started-day> <started-hour:started-minute> <ended-month> <ended-week> <ended-day> <ended-hour:ended-minute> [<offset>]

Syntax Description	clock	Configure system clock parameters
	summer-time	Configure Daylight Savings Time parameters
	date	Configure the date of Daylight Savings Time
	started-month	Specify the Daylight Saving Time starting month <integer (1-12)> (Jan (1) to Dec (12))
	started-week	Specify the Daylight Saving Time starting week (1st-last)
	started-day	Specify the Daylight Saving Time starting day <integer (1-7)> (Mon (1) to Sun (7))
	<started-hour:started-minute>	Specify the Daylight Saving Time starting day (Hour <00-24>, Minute <00-59>)
	ended-month	Specify the Daylight Saving Time ending month <integer (1-12)> (Jan (1) to Dec (12))
	ended-week	Specify the Daylight Saving Time ending week (1st-last)
	ended-day	Specify the Daylight Saving Time ending day <integer (1-7)> (Mon (1) to Sun (7))
	<ended-hour:ended-minute>	Specify the Daylight Saving Time ending day (Hour <00-24>, Minute <00-59>)
	offset	Specify the offset time (HH:mm <00:00-23:59>)
	Defaults	daylight saving time date: Mar last Sun 01:00 Oct last Sun 01:00 01:00
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# clock summer-time date Mar 2nd 02:00 Nov 1st Sun 02:00 01:00	
Error Messages	N/A	
Related Commands	N/A	

Configure NTP Authentication Key

Commands

ntp auth-key key-id {md5 | aes128cmac} key-string

no ntp auth-key key-id

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ntp	Configure NTP/SNTP parameters
	authentication-key	Configure the NTP authentication key
	aes128cmac	Use AES128CMAC authentication
	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
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# ntp auth-key 1 md5 1a2b3c4d moxa(config)# ntp auth-key 1 aes128cmac 1a2b3c4d moxa(config)# no ntp auth-key 1	
Error Messages	Invalid: Authentication key ID key-id is duplicated.	
Related Commands	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]

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ntp	Configure NTP/SNTP parameters
	remote-server	Configure remote time server parameters
	ntp	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
Defaults	NTP time server: time.nist.gov	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	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	
Error Messages	Invalid: Authentication key ID key-id of NTP client server-index does not exist.	
Related Commands	N/A	

Configure SNTP Remote Server

Commands

ntp remote-server sntp server-index server-address

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

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

Enable NTP Server

Commands

ntp server enable

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

Disable NTP Server

Commands

ntp server disable

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

Configure NTP Server Authentication

Commands

ntp server authentication

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

Disable NTP Server Authentication

Commands

no ntp server authentication

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

Show Clock Information

Commands

show clock

Syntax Description	show	Display configuration/status information
	clock	Display system clock information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	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	
Error Messages	N/A	
Related Commands	N/A	

Show PTP Global Information/Status

Commands

show ptp

Syntax Description	show	Display configuration/status information
	ptp	Display PTP information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>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</pre>	
Error Messages	N/A	
Related Commands	N/A	

Show IEEE1588 PTP Information/Status

Commands

show ptp profile default

Syntax Description	show	Display configuration/status information
	ptp	Display PTP information
	profile	PTP profile selection
	default	1588v2 default profile
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ptp profile default 1588v2 CLOCK DATA SET PTP Clock Type : Peer-to-Peer Boundary Clock PTP Device Profile : 1588v2 Default Profile Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 28 Priority1 : 129 Priority2 : 128 Clock Quality: Class : 248 Accuracy : 254 Offset From Master(ns): 2.0 Mean Path Delay(ns) : 8.0 Steps Removed : 2 Maximum Steps Removed : 255 Slave Port : 5 Sync. Status : LOCKED Accuracy Alert(ns) : 1000 PTP Clock Time(TAI) : Wed Jan 20 19:10:20 2021 1588v2 PARENT DATA SET</pre>	

	<pre> Parent Clock: Parent Clock Identity : 00:90:e8:ff:fe:71:1e:a5 Parent Port Number : 10 Grandmaster Clock: Grandmaster Clock Identity : 00:50:c2:ff:fe:c2:db:ad Grandmaster Clock Quality: Class : 6 Accuracy : 254 Priority1 : 10 Priority2 : 128 ##### ##### For Transparent moxa# show ptp profile default 1588v2 CLOCK DATA SET PTP Clock Type : End-to-End Transparent Clock PTP Device Profile : 1588v2 Default Profile Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 4 Sync. Status : Syncing Accuracy Alert (ns) : 1000 1588v2 PARENT DATA SET No Parent Data Set in Transparent Clock </pre>
Error Messages	N/A
Related Commands	<pre> show ptp profile default parent show ptp profile default clock </pre>

Show PTP Profile Default Clock

Commands

show ptp profile default clock

Syntax Description	show	Display configuration/status information
	ptp	Display PTP information
	profile	PTP profile selection
	default	1588v2 default profile
	clock	Display clock information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre> 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 Two-Step Flag : True 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 Maximum Steps Removed: 254 Slave Port : Sync. Status : Syncing Accuracy Alert(ns) : 1000 PTP Clock Time(TAI) : Wed Jan 01 00:00:00 2020 ##### ##### For Transparent moxa# show ptp profile default clock 1588v2 CLOCK DATA SET PTP Clock Type : End-to-End Transparent Clock PTP Device Profile : 1588v2 Default Profile Clock Identity : Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 4 Sync. Status : Syncing Accuracy Alert (ns) : 1000 </pre>	
Error Messages	N/A	
Related Commands	show ptp profile default parent	

Show PTP Profile Default Parent

Commands

show ptp profile default parent

Syntax Description	show	Display configuration/status information
	ptp	Display PTP information
	profile	PTP profile selection
	default	1588v2 default profile
	parent	Display parent information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre> 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 ##### ##### For Transparent moxa# show ptp profile default parent 1588v2 PARENT DATA SET </pre>	
Error Messages	N/A	
Related Commands	N/A	

Show PTP Profile Default Port

Commands

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

Syntax Description	show	Display configuration/status information
	ptp	Display PTP information
	profile	PTP profile selection
	default	1588v2 default profile
	port	Display port information
	<interface-type>	Ethernet (interface-type)
	<interface-id>	Interface-id : <1-X>/<1-Y> slot number/port number
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ptp profile default port Ethernet 1/1 1588v2 PORT DATA SET: Port Identity : 00:90:E8:FF:FE:11:22:40-1 Port State : Master Announce Interval(log) : 1 Announce Receipt Timeout : 3 Sync Interval(log) : 0 Delay Req Interval(log) : 0 Pdelay Req Interval(log) : 0 Peer Mean Path Delay(ns) : 60 ##### ##### moxa# show ptp profile default port Ethernet 1/1 1588v2 PORT DATA SET: Port Identity : 00:90:E8:FF:FE:11:22:40-1 Pdelay Req Interval(log) : 0 Peer Mean Path Delay(ns) : 60</pre>	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable PTP Service

Commands

ptp enable

ptp disable

Syntax Description	ptp	Display PTP information
	enable	Enable PTP service
	disable	Disable PTP service
Defaults	Enabled	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa(config)# ptp enable moxa(config)# ptp disable</pre>	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Global Settings

Commands

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

Syntax Description	ptp	Configure PTP information
	profile	PTP profile selection
	default	1588v2 default profile
	mode	Mode related configuration of the PTP Clock
	boundary	PTP Clock is configured as boundary Clock
	transparent	PTP Clock is configured as transparent Clock
	delay-mechanism	Propagation delay mechanism configuration
e2e	End-to-end delay mechanism is applied	
p2p	Peer-to-peer delay mechanism is applied	
Defaults	End-to-End boundary clock	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# ptp profile default mode boundary delay-mechanism e2e	
Error Messages	N/A	
Related Commands	N/A	

Apply/Remove PTP Profile Default Priority1

Commands

ptp profile default priority1 <value>

no ptp profile default priority1

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Display PTP information
	profile	PTP profile selection
	default	1588v2 default profile
	priority1	Configure the Priority1 parameters
	<value>	0-255
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# ptp profile default priority1 128 moxa(config)# no ptp profile default priority1	
Error Messages	N/A	
Related Commands	N/A	

Apply/Remove PTP Profile Default Priority2

Commands

ptp profile default priority2 <value>

no ptp profile default priority2

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Display PTP information
	profile	PTP profile selection
	default	1588v2 default profile
	priority2	Configure the Priority2 parameters
	<value>	0-255
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# ptp profile default priority2 128 moxa(config)# no ptp profile default priority2	
Error Messages	N/A	
Related Commands	N/A	

Apply/Remove PTP Profile Default Domain

Commands

ptp profile default profile domain <domain-number>

no ptp profile default profile domain

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Display PTP information
	profile	PTP profile selection
	default	1588v2 default profile
	domain	PTP domain parameters
	<domain-number>	0-255
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# ptp profile default domain 0 moxa(config)# no ptp profile default domain	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile Default Network-transport Settings

Commands

ptp profile default network-transport {ethernet | ipv4 }

Syntax Description	ptp	Display PTP information
	profile	PTP profile selection
	default	1588v2 default profile
	network-transport	Network transport type related configuration
		ethernet
	ipv4	Internet Protocol version4 transport type
Defaults	802.3	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# ptp profile default network-transport 802.3	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable PTP Profile Default Two-Step Setting

Commands

ptp profile default two-step {enable | disable}

Syntax Description	ptp	Configure PTP parameters
	profile	PTP profile selection
	default	1588v2 default profile
	two-step	Generate follow-up message for synchronization event messages
	enable	Enable Two-Step mode
	disable	Disable Two-Step mode
Defaults	Two-step enabled	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# ptp profile default two-step enable	
Error Messages	N/A	
Related Commands	N/A	

Apply/Remove PTP Profile Default Maximum-step-removed Setting

Commands

ptp profile default maximum-step-removed <max step removed>

no ptp profile default maximum-step-removed

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Configure PTP parameters
	profile	PTP profile selection
	default	1588v2 default profile
	maximum-step-removed	Configure maximum step removed for PTP
Defaults	254	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# ptp profile default maximum-step-removed 50	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile Default Accuracy-alert Setting

Commands

ptp profile default accuracy-alert <nanosecond>

no ptp profile default accuracy-alert

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Configure PTP parameters
	profile	PTP profile selection
	default	1588v2 default profile
	accuracy-alert	Configure accuracy alert threshold for time synchronization status
	<nanosecond>	The value for the default accuracy alert
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# ptp profile default accuracy-alert 300	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable TC BMCA Mode on Default profile

Commands

ptp profile default tc-bmca enable

ptp profile default tc-bmca disable

Syntax Description	ptp	Configure PTP information
	profile	PTP profile selection
	default	Default profile
	tc-bmca	Enable or disable Best Master Clock Algorithm (BMCA) to prevent cyclical path looping when using Transparent Clock (recommend enabling)
	enable/disable	Enable TC BMCA mode/Disable TC BMCA mode
Defaults	ture	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	MSS (config)# ptp profile default tc-bmca enable	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Port Setting

Commands

ptp profile default

no ptp profile default

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Configure PTP parameters
	profile	PTP profile selection
	default	1588v2 default profile
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	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	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile Default Announcement Interval

Commands

ptp profile default announce interval <value>

no ptp profile default announce interval

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Configure PTP parameters
	profile	PTP profile selection
	default	1588v2 default profile
	announce	Configure the Announcement message
	interval	Configure the Announcement message interval
	<value>	Announcement: 0~4
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile default announce interval 0 moxa(config-if)# no ptp profile default announce interval	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile Default Synchronization Interval

Commands

ptp profile default sync interval <value>

no ptp profile default sync interval

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Configure PTP parameters
	profile	PTP profile selection
	default	1588v2 default profile
	sync	Configure the Synchronization message
	interval	Configure the Synchronization message interval
	<value>	Synchronization: -3~5
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile default sync interval -3 moxa(config-if)# no ptp profile default sync interval	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile Default Delay Request Interval

Commands

ptp profile default delay-req interval <value>

no ptp profile default delay-req interval

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Configure PTP parameters
	profile	PTP profile selection
	default	1588v2 default profile
	delay-req	Configure the Delay Request message
	interval	Configure the Delay Request message interval
	<value>	Delay Request: -3~5
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	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	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile Default PDelay Request Interval

Commands

ptp profile default pdelay-req interval <value>

no ptp profile default pdelay-req interval

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Configure PTP parameters
	profile	PTP profile selection
	default	1588v2 default profile
	pdelay-req	Configure the PDelay Request message
	interval	Configure the PDelay Request message interval
	<value>	PDelay Request: -3~5
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	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	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile Default Announcement Timeout

Commands

ptp profile default announce timeout <value>

no ptp profile default announce timeout

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ptp	Configure PTP parameters
	profile	PTP profile selection
	default	1588v2 default profile
	announce	Configure the Announcement message
	timeout	Configure the Announcement receipt timeout
	<value>	Announcement: 2-10
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa(config)# interface Ethernet 1/1 moxa(config-if)# ptp profile default announce timeout 3 moxa(config-if)# no ptp profile default announce timeout</pre>	
Error Messages	N/A	
Related Commands	N/A	

Show IEC 61850-9-3 2016 Profile Information

Commands

show ptp profile 61850-9-3

Syntax Description	ptp	Display PTP information
	profile	Show PTP profile information
	61850-9-3	Show IEC 61850-9-3 2016 profile details
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ptp profile 61850-9-3 1588v2 CLOCK DATA SET PTP Clock Type : Peer-to-Peer Boundary Clock PTP Device Profile : IEC 61850-9-3-2016 Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 28 Priority1 : 129 Priority2 : 128 Clock Quality: Class : 248 Accuracy : 254 Offset From Master(ns): 2.0 Mean Path Delay(ns) : 8.0 Steps Removed : 2 Maximum Steps Removed : 255 Slave Port : 5 Sync. Status : LOCKED Accuracy Alert(ns) : 1000 PTP Clock Time(TAI) : Wed Jan 20 19:10:20 2021 1588v2 PARENT DATA SET Parent Clock: Parent Clock Identity : 00:90:e8:ff:fe:71:1e:a5 Parent Port Number : 10</pre>	

	<pre> Grandmaster Clock: Grandmaster Clock Identity : 00:50:c2:ff:fe:c2:db:ad Grandmaster Clock Quality: Class : 6 Accuracy : 254 Priority1 : 10 Priority2 : 128 ##### ##### For Transparent moxa# show ptp profile 61850-9-3 1588v2 CLOCK DATA SET PTP Clock Type : Peer-to-Peer Transparent Clock PTP Device Profile : IEC 61850-9-3-2016 Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 4 Sync. Status : Syncing Accuracy Alert (ns) : 1000 1588v2 PARENT DATA SET No Parent Data Set in Transparent Clock </pre>
Error Messages	N/A
Related Commands	<pre> show ptp profile 61850-9-3 parent show ptp profile 61850-9-3 clock </pre>

Show PTP Profile 61850-9-3 Clock Information

Commands

show ptp profile 61850-9-3 clock

Syntax Description	ptp	Display PTP information
	profile	Show PTP profile information
	61850-9-3	Show IEC 61850-9-3 2016 profile details
	clock	Display the clock information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ptp profile 61850-9-3 clock 1588v2 CLOCK DATA SET PTP Clock Type : Peer-to-Peer Boundary Clock PTP Device Profile : IEC 61850-9-3-2016 Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 28 Priority1 : 129 Priority2 : 128 Clock Quality: Class : 248 Accuracy : 254 Offset From Master(ns): 2.0 Mean Path Delay(ns) : 8.0 Steps Removed : 2 Maximum Steps Removed : 255 Slave Port : 5 Sync. Status : LOCKED Accuracy Alert(ns) : 1000 PTP Clock Time(TAI) : Wed Jan 20 19:10:20 2021 ##### ##### For Transparent moxa# show ptp profile 61850-9-3 clock 1588v2 CLOCK DATA SET PTP Clock Type : Peer-to-Peer Transparent Clock PTP Device Profile : IEC 61850-9-3-2016 Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 4 Sync. Status : Syncing Accuracy Alert (ns) : 1000 </pre>	
Error Messages	N/A	
Related Commands	show ptp profile 61850-9-3 parent	

Show PTP Profile 61850-9-3 Parent Information

Commands

show ptp profile 61850-9-3 parent

Syntax Description	ptp	Display PTP information
	profile	Show PTP profile information
	61850-9-3	Show IEC 61850-9-3 2016 profile details
	parent	Display parent information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ptp profile 61850-9-3 parent 1588v2 PARENT DATA SET Parent Clock: Parent Clock Identity : 70:c9:c6:ff:fe:96:34:80 Parent Port Number : 1 Grandmaster Clock: Grandmaster Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Grandmaster Clock Quality: Class : 248 Accuracy : 254 Priority1 : 246 Priority2 : 248 ##### ##### For Transparent moxa# show ptp profile 61850-9-3 parent 1588v2 PARENT DATA SET No Parent Data Set in Transparent Clock </pre>	
Error Messages	N/A	
Related Commands	N/A	

Show PTP Profile 61850-9-3 Port Information

Commands

show ptp profile 61850-9-3 port [<interface-type> <interface-id>]

Syntax Description	ptp	Display PTP information
	profile	Show PTP profile information
	61850-9-3	Show IEC 61850-9-3 2016 profile details
	port	Display the port information
	<interface-type>	Specify the interface type (Ethernet)
	<interface-id>	Specify the interface ID in the format <1-X>/<1-Y> (Slot Number/Port Number)
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ptp profile 61850-9-3 port Ethernet 1/1 1588v2 PORT DATA SET: Port Identity : 00:90:e8:ff:fe:11:22:40-1 Port State : Master Announce Interval(log) : 1 Announce Receipt Timeout : 3 Sync Interval(log) : 0 Delay Req Interval(log) : 0 Pdelay Req Interval(log) : 0 Peer Mean Path Delay(ns) : 60 ##### ##### moxa# show ptp profile 61850-9-3 port Ethernet 1/1 1588v2 PORT DATA SET: Port Identity : 00:90:e8:ff:fe:11:22:40-1 Port State : TRANSMITTING_SYNCHRONIZED Pdelay Req Interval(log) : 0 Peer Mean Path Delay(ns) : 60 </pre>	
Error Messages	N/A	
Related Commands	N/A	

NTP Server

Enable NTP Server

Commands

ntp server enable

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

Disable NTP Server

Commands

ntp server disable

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

Enable NTP Server Authentication

Commands

ntp server authentication

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

Disable NTP Server Authentication

Commands

no ntp server authentication

Syntax Description	no	Disables the configuration / deletes the entry / resets to default value
	ntp	Configure NTP/SNTP parameters
	server	Configure NTP server parameters
	authentication	Disable the NTP authentication
Defaults	NTP server authentication: disable	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# no ntp server authentication	
Error Messages	N/A	
Related Commands	N/A	

IEC 61850-9-3 2016 Profile Configuration

Configure PTP Global Settings

Commands

ptp profile 61850-9-3 mode {boundary | transparent} delay-mechanism p2p}

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	61850-9-3	Configure IEC 61850-9-3 2016 profile parameters
	mode	Configure the PTP clock mode
	boundary	Set the PTP clock mode to Boundary Clock
	transparent	Set the PTP clock mode to Transparent Clock
	delay-mechanism	Configure the delay mechanism
	p2p	Apply the peer-to-peer delay mechanism
Defaults	Peer-to-peer boundary clock	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile 61850-9-3 mode boundary delay-mechanism p2p	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile 61850-9-3 Priority 1

Commands

ptp profile 61850-9-3 priority1 <value>

no ptp profile 61850-9-3 priority1

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	61850-9-3	Configure IEC 61850-9-3 2016 profile parameters
	priority1	Configure Priority 1 parameters
	<value>	Specify the priority (0-255)
Defaults	128	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile 61850-9-3 priority1 128 moxa (config)# no ptp profile 61850-9-3 priority1	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile 61850-9-3 Priority 2

Commands

ptp profile 61850-9-3 priority2 <value>

no ptp profile 61850-9-3 priority2

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	61850-9-3	Configure IEC 61850-9-3 2016 profile parameters
	priority2	Configure Priority 2 parameters
	<value>	Specify the priority (0-255)
Defaults	128	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile 61850-9-3 priority2 128 moxa (config)# no ptp profile 61850-9-3 priority2	
Error Messages	N/A	
Related Commands	N/A	

Configure the PTP Profile 61850-9-3 Domain Number

Commands

ptp profile 61850-9-3 domain <domain-number>

no ptp profile 61850-9-3 domain

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	61850-9-3	Configure IEC 61850-9-3 2016 profile parameters
	domain	Configure the PTP domain number
	<domain-number>	Specify the domain number (0-255)
Defaults	0	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile 61850-9-3 domain 0	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable PTP Profile 61850-9-3 Two-step Settings

Commands

ptp profile 61850-9-3 two-step enable

ptp profile 61850-9-3 two-step disable

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	61850-9-3	Configure IEC 61850-9-3 2016 profile parameters
	two-step	Configure the Two-step mode to generate follow-up message for synchronization event messages
	enable	Enable Two-step mode
disable	Disable Two-step mode	
Defaults	Enabled	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile 61850-9-3 two-step enable moxa (config)# ptp profile 61850-9-3 two-step disable	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile 61850-9-3 Maximum Step Removed

Commands

ptp profile 61850-9-3 maximum-step-removed <max step removed>

no ptp profile 61850-9-3 maximum-step-removed

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	61850-9-3	Configure IEC 61850-9-3 2016 profile parameters
	maximum-step-removed	Configure max steps removed parameters
	<max step removed>	Specify the maximum step removed for PTP (0-255)
Defaults	255	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile 61850-9-3 maximum-step-removed 50	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile 61850-9-3 Accuracy Alert Threshold

Commands

ptp profile 61850-9-3 accuracy-alert <nanosecond>

no ptp profile 61850-9-3 accuracy-alert

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	61850-9-3	Configure IEC 61850-9-3 2016 profile parameters
	accuracy-alert	Configure the accuracy alert threshold for Sync Status
	<nanosecond >	Specify the accuracy alert threshold in nanoseconds (50-250000000)
Defaults	1000	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile 61850-9-3 accuracy-alert 300	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable TC BMCA Mode on Profile 61850-9-3

Commands

ptp profile 61850-9-3 tc-bmca enable

ptp profile 61850-9-3 tc-bmca disable

Syntax Description	ptp	Configure PTP information
	profile	PTP profile selection
	61850-9-3	IEC61850-9-3 2016 profile
	tc-bmca	Enable or disable Best Master Clock Algorithm (BMCA) to prevent cyclical path looping when using Transparent Clock (recommend enabling)
	enable/disable	Enable TC BMCA mode/Disable TC BMCA mode
Defaults	ture	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	MSS (config)# ptp profile 61850-9-3 tc-bmca enable	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile 61850-9-3 Port Settings

Commands

ptp profile 61850-9-3

no ptp profile 61850-9-3

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	61850-9-3	Configure IEC 61850-9-3 2016 profile parameters
Defaults	N/A	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa (config)# interface Ethernet 1/1 /* Enable port ptp */ moxa (config-if)# ptp profile 61850-9-3 %note: Profile setting will be applied to all ports. /* Disable port ptp */ moxa (config-if)# no ptp profile 61850-9-3</pre>	
Error Messages	N/A	
Related Commands	N/A	

Show C37.238-2017 Profile Information

Commands

show ptp profile C37.238

Syntax Description	ptp	Display PTP information
	profile	Show PTP profile information
	c37.238	Show C37.238-2017 profile details
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ptp profile c37.238 1588v2 CLOCK DATA SET PTP Clock Type : Peer-to-Peer Boundary Clock PTP Device Profile : IEEE C37.238-2017 Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 28 Priority1 : 129 Priority2 : 128 Clock Quality: Class : 248 Accuracy : 254 Offset From Master(ns) : 2.0 Mean Path Delay(ns) : 8.0 Steps Removed : 2 Maximum Steps Removed : 255 Slave Port : 5 Sync. Status : LOCKED Accuracy Alert(ns) : 1000 PTP Clock Time(TAI) : Wed Jan 20 19:10:20 2021 1588v2 PARENT DATA SET Parent Clock: Parent Clock Identity : 00:90:e8:ff:fe:71:1e:a5 Parent Port Number : 10 Grandmaster Clock:</pre>	

	<pre> Grandmaster Clock Identity : 00:50:c2:ff:fe:c2:db:ad Grandmaster Clock Quality: Class : 6 Accuracy : 254 Priority1 : 10 Priority2 : 128 ##### ##### For Transparent moxa# show ptp profile c37.238 1588v2 CLOCK DATA SET PTP Clock Type : Peer-to-Peer Transparent Clock PTP Device Profile : IEEE C37.238-2017 Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 4 Sync. Status : Syncing Accuracy Alert (ns) : 1000 1588v2 PARENT DATA SET No Parent Data Set in Transparent Clock </pre>
Error Messages	N/A
Related Commands	<pre> show ptp profile c37.238 parent show ptp profile c37.238 clock </pre>

Show PTP Profile C37.238 Clock Information

Commands

show ptp profile c37.238 clock

Syntax Description	ptp	Display PTP information
	profile	Show PTP profile information
	c37.238	Show C37.238-2017 profile details
	clock	Display the clock information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ptp profile c37.238 clock 1588v2 CLOCK DATA SET PTP Clock Type : Peer-to-Peer Boundary Clock PTP Device Profile : IEEE C37.238-2017 Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 28 Priority1 : 129 Priority2 : 128 Clock Quality: Class : 248 Accuracy : 254 Offset From Master(ns): 2.0 Mean Path Delay(ns) : 8.0 Steps Removed : 2 Maximum Steps Removed : 255 Slave Port : 5 Sync. Status : LOCKED Accuracy Alert(ns) : 1000 PTP Clock Time(TAI) : Wed Jan 20 19:10:20 2021 ##### ##### For Transparent moxa# show ptp profile c37.238 clock 1588v2 CLOCK DATA SET PTP Clock Type : Peer-to-Peer Transparent Clock PTP Device Profile : IEEE C37.238-2017 Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Transport Type : 802.3 Ethernet Clock Domain : 0 Two-Step Flag : True Number of PTP Ports : 4 Sync. Status : Syncing Accuracy Alert (ns) : 1000 </pre>	
Error Messages	N/A	
Related Commands	show ptp profile c37.238 parent	

Show PTP Profile C37.238 Parent Information

Commands

show ptp profile c37.238 parent

Syntax Description	ptp	Display PTP information
	profile	Show PTP profile information
	c37.238	Show C37.238-2017 profile details
	parent	Display parent information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ptp profile c37.238 parent 1588v2 PARENT DATA SET Parent Clock: Parent Clock Identity : 70:c9:c6:ff:fe:96:34:80 Parent Port Number : 1 Grandmaster Clock: Grandmaster Clock Identity : 00:90:e8:ff:fe:d1:5a:53 Grandmaster Clock Quality: Class : 248 Accuracy : 254 Priority1 : 246 Priority2 : 248 ##### ##### For Transparent moxa# show ptp profile c37.238 parent 1588v2 PARENT DATA SET No Parent Data Set in Transparent Clock </pre>	
Error Messages	N/A	
Related Commands	N/A	

Show PTP Profile C37.238 Port Information

Commands

show ptp profile c37.238 port [<interface-type> <interface-id>]

Syntax Description	ptp	Display PTP information
	profile	Show PTP profile information
	c37.238	Show C37.238-2017 profile details
	port	Display the port information
	<interface-type>	Specify the interface type (Ethernet)
	<interface-id>	Specify the interface ID in the format <1-X>/<1-Y> (Slot Number/Port Number)
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ptp profile c37.238 port Ethernet 1/1 1588v2 PORT DATA SET: Port Identity : 00:90:e8:ff:fe:11:22:40-1 Port State : TRANSMITTING_SYNCHRONIZED Port State : Master Announce Interval(log) : 1 Announce Receipt Timeout : 3 Sync Interval(log) : 0 Delay Req Interval(log) : 0 Pdelay Req Interval(log) : 0 Peer Mean Path Delay(ns) : 60 ##### ##### moxa# show ptp profile c37.238 port Ethernet 1/1 1588v2 PORT DATA SET: Port Identity : 00:90:e8:ff:fe:11:22:40-1 Pdelay Req Interval(log) : 0 Peer Mean Path Delay(ns) : 60 </pre>	
Error Messages	N/A	
Related Commands	N/A	

Configure C37.238 2017 Profile Global Settings

Commands

ptp profile c37.238 mode {boundary | transparent} delay-mechanism p2p

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	c37.238	Configure C37.238-2017 profile parameters
	mode	Configure the PTP clock mode
	boundary	Set the PTP clock mode to Boundary Clock
	transparent	Set the PTP clock mode to Transparent Clock
	delay-mechanism	Configure the delay mechanism
	p2p	Apply the peer-to-peer delay mechanism
Defaults	Peer-to-peer boundary clock	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile c37.238 mode boundary delay-mechanism p2p	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile C37.237 Priority 1

Commands

ptp profile c37.238 priority1 <value>

no ptp profile c37.238 priority1

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	c37.238	Configure C37.238-2017 profile parameters
	priority1	Configure Priority 1 parameters
	value>	Specify the priority (0-255)
Defaults	128	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile c37.238 priority1 128 moxa (config)# no ptp profile c37.238 priority1	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile C37.237 Priority 2

Commands

ptp profile c37.238 priority2 <value>

no ptp profile c37.238 priority2

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	c37.238	Configure C37.238-2017 profile parameters
	priority2	Configure Priority 2 parameters
	<value>	Specify the priority (0-255)
Defaults	128	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile c37.238 priority2 128 moxa (config)# no ptp profile c37.238 priority2	
Error Messages	N/A	
Related Commands	N/A	

Configure the PTP Profile C37.238 Domain Number

Commands

ptp profile c37.238 domain <domain-number>

no ptp profile c37.238 domain

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	c37.238	Configure C37.238-2017 profile parameters
	domain	Configure the PTP domain number
	<domain-number>	Specify the domain number (0-127, 254)
Defaults	0	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile c37.238 domain 0	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable PTP Profile C37.238 Two-step Settings

Commands

ptp profile c37.238 two-step enable

ptp profile c37.238 two-step disable

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	c37.238	Configure C37.238-2017 profile parameters
	two-step	Configure the Two-step mode to generate follow-up message for synchronization event messages
	enable	Enable Two-step mode
	disable	Disable Two-step mode
Defaults	Two-step enabled	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile c37.238 two-step enable moxa (config)# ptp profile c37.238 two-step disable	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile C37.238 Maximum Step Removed

Commands

ptp profile c37.238 maximum-step-removed <max step removed>

no ptp profile c37.238 maximum-step-removed

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	c37.238	Configure C37.238-2017 profile parameters
	maximum-step-removed	Configure max steps removed parameters
	<max step removed>	Specify the maximum step removed for PTP
	Defaults	255
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile c37.238 maximum-step-removed 50	
Error Messages	N/A	
Related Commands	N/A	

Configure the PTP Profile C37.238 Accuracy Alert Threshold

Commands

ptp profile c37.238 accuracy-alert <nanosecond>

no ptp profile c37.238 accuracy-alert

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	c37.238	Configure C37.238-2017 profile parameters
	accuracy-alert	Configure the accuracy alert threshold for Sync Status
	<nanosecond>	Specify the accuracy alert threshold in nanoseconds (50-250000000)
	Defaults	1000
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile c37.238 accuracy-alert 300	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile C37.238 Grandmaster ID

Commands

ptp profile c37.238 grandmaster-id <grandmaster id>

no ptp profile c37.238 grandmaster-id

Syntax Description	ptp	Configure PTP parameters
	profile	Configure a PTP profile
	c37.238	Configure C37.238-2017 profile parameters
	grandmaster-id	Configure the Grandmaster ID
	<grandmaster id>	Specify the Grandmaster ID
Defaults	255	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# ptp profile c37.238 grandmaster-id 100	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable TC BMCA Mode on Profile c37.238

Commands

ptp profile c37.238 tc-bmca enable

ptp profile c37.238 tc-bmca disable

Syntax Description	ptp	Configure PTP information
	profile	PTP profile selection
	c37.238	C37.238 2017 profile
	tc-bmca	Enable or disable Best Master Clock Algorithm (BMCA) to prevent cyclical path looping when using Transparent Clock (recommend enabling)
	enable/disable	Enable TC BMCA mode/Disable TC BMCA mode
Defaults	ture	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	MSS (config)# ptp profile c37.238 tc-bmca enable	
Error Messages	N/A	
Related Commands	N/A	

Configure PTP Profile C37.238 Port Settings

Commands

ptp profile c37.238

no ptp profile c37.238

Syntax Description	ptp	Configure PTP information
	profile	PTP profile selection
	c37.238	C37.238 2017 profile
Defaults	N/A	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# interface Ethernet 1/1 /* Enable port ptp */ moxa (config-if)# ptp profile c37.238 %note: Profile setting will be applied to all ports. /* Disable port ptp */ moxa (config-if)# no ptp profile c37.238	
Error Messages	N/A	
Related Commands	N/A	

Port

Port Interface

Port Setting

Show Interface Status

Commands

show interface status

Syntax Description	show	Show running system information				
	interface	Display interface information				
	status	The status of the interface				
Defaults	N/A					
Command Modes	Privileged EXEC					
Usage Guidelines	N/A					
Examples	moxa# show interface status					
	Port	Status	Duplex	Speed	Negotiation	MDI/MDIX
	-----	-----	-----	-----	-----	-----
	Eth1/1	connected	Full	1 Gbps	Auto	MDIX(Auto)
	Eth1/2	connected	Full	1 Gbps	Auto	MDIX(Auto)
	Eth1/3	not connected	Half	-	Auto	-
	Eth1/4	not connected	Half	-	Auto	-
	Eth2/1	not present	-	-	-	-
	Eth2/2	not present	-	-	-	-
	Eth2/3	not present	-	-	-	-
	Eth2/4	not present	-	-	-	-
	Eth3/1	not connected	Half	-	Auto	-
	Eth3/2	not connected	Half	-	Auto	-
Eth3/3	not connected	Half	-	Auto	-	
Error Messages	N/A					
Related Commands	N/A					

Show Interface Type and ID

Commands

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

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

Syntax Description	show	Display configuration/statistics/general
	interfaces	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
	flowcontrol	Receive or send flow control value for an interface
	status	The status of the interface
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show interfaces ethernet 1/1 Eth1/1 up, line protocol is down (not connect) Bridge Port Type: Customer Bridge Port Interface SubType: gigabitEthernet Interface Alias: Slot1/1 Media Type: 1000TX,RJ45,PTP Hardware Address is 00:00:00:00:00:05 MTU 1522 bytes, Half duplex, 1 Gbps, Auto-Negotiation HOL Block Prevention enabled. CPU Controlled Learning disabled. Auto-MDIX invalid Input flow-control is off,output flow-control is off Port State: Discarding Link Up/Down Trap is enabled Reception Counters Octets : 0 Unicast Packets : 0 Multicast Packets : 0 Octets : 0 Unicast Packets : 0 Multicast Packets : 0 Broadcast Packets : 0 Discarded Packets : 0 Error Packets : 0 Unknown Protocol : 0 CRC Errors : 0 Symbol Errors : 0 Good CRC Frame Size Errors: 0 Oversized w/ Bad CRC : 0 Transmission Counters Octets : 0 Unicast Packets : 0 Multicast Packets : 0 Broadcast Packets : 0 Discarded Packets : 0 Error Packets : 0 </pre>	

	Bad CRC	: 0
	Error Drops	: 0
	Timeout Drops	: 0
	Error Packets	: 0
Error Messages	N/A	
Related Commands	N/A	

Show Port-channel Interface

Commands

show interfaces port-channel

Syntax Description	show	Display configuration/statistics/general information
	interfaces	Display interface information
	port-channel	Display the port-channel interface
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show interfaces port-channel Port : Eth1/2 ----- Port State = Down, Not in Bundle Reason for port-down : Oper status of the port is down Channel Group : 1 Mode : LACP Actual Port-channel = Null Configured port-channel = Po1 LACP port-priority = 128 LACP Wait-time = 2 secs LACP Port Identifier = 2 LACP Activity : Active LACP Timeout : Long LACP Error State : None Aggregation State : Aggregation, Defaulted LACP Port Admin Oper Port State Priority Key Key ----- Eth1/2 Down 128 1 1 Port-channel : Po1 ----- Number of Ports = 1 Protocol = LACP Aggregator-MAC 00:90:e8:72:56:2e Maximum number of Ports = 8 Port-Channel Speed = 0 Mbps </pre>	
Error Messages	N/A	
Related Commands	N/A	

Show Interface Description

Commands

show interface description

Syntax Description	show	Display configuration/statistics/general information	
	interface	Display interface information	
	description	Description about the interface	
Defaults	N/A		
Command Modes	Privileged EXEC		
Usage Guidelines	N/A		
Examples	moxa# show interfaces description		
	Interface	AdminStatus OperProtocol Description	
	-----	-----	-----
	Eth1/1	up down	
	Eth1/2	up down	
	Eth1/3	up down	
	Eth1/4	up down	
	Eth2/1	up down	
	Eth2/2	up down	
	Eth2/3	up down	
	Eth2/4	up down	
	Eth3/1	up down	
	Eth3/2	up down	
	Eth3/3	up down	
	Eth3/4	up down	
	Eth4/1	up down	
	Eth4/2	up down	
Eth4/3	up down		
Eth4/4	up down		
Eth5/1	up down		
Error Messages	N/A		
Related Commands	N/A		

Show Flow Control

Commands

show flow-control [interface [{ port-channel <port-channel-id> | ethernet <slot>/<port> }]]

Syntax Description	show	Display configuration/statistics/general information
	flow-control	Display flow-control information
	interface	Protocol-specific configuration of the interface
	port-channel	The port channel interface
	port-channel-id	The port channel ID
	ethernet	The Ethernet interface
	slot/port	The slot number or port number
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show flow-control	
	<pre> Port Admin Oper Tx Pause Rx Pause HC TxPause HC RxPause ----- Eth1/1 off off 0 0 0 0 Eth1/2 off off 0 0 0 0 Eth1/3 off off 0 0 0 0 Eth1/4 off off 0 0 0 0 Eth2/1 off off 0 0 0 0 Eth2/2 off off 0 0 0 0 Eth2/3 off off 0 0 0 0 Eth2/4 off off 0 0 0 0 Eth3/1 off off 0 0 0 0 Eth3/2 off off 0 0 0 0 Eth3/3 off off 0 0 0 0 Eth3/4 off off 0 0 0 0 Eth4/1 off off 0 0 0 0 Eth4/2 off off 0 0 0 0 Eth4/3 off off 0 0 0 0 Eth4/4 off off 0 0 0 0 Eth5/1 off off 0 0 0 0 Eth5/2 off off 0 0 0 0 Eth5/3 off off 0 0 0 0 </pre>	
Error Messages	N/A	
Related Commands	N/A	

Show Linkup Delay Status

Commands

show linkup-delay

show linkup-delay [interface <iftype> <ifnum>]

Syntax Description	show	Display configuration/statistics/general
	linkup-delay	Display linkup-delay information
	interface	Interface-related configuration
	iftype	The Ethernet type
	ifnum	The slot number or port number
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show linkup-delay LinkUp Delay Table ----- Interface Id : Eth1/1 Link Up Delay System Status : DISABLED Link Up Delay Port Status : DISABLED Link Up Delay Port Time : 2 Seconds Link Up Delay Remaining Time : 0 Seconds LinkUp Delay Table ----- Interface Id : Eth1/2 Link Up Delay System Status : DISABLED Link Up Delay Port Status : DISABLED Link Up Delay Port Time : 2 Seconds Link Up Delay Remaining Time : 0 Seconds</pre>	
Error Messages	N/A	
Related Commands	N/A	

Configure Shutdown Settings

Commands

shutdown

no shutdown

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

Configure Description Settings

Commands

description <description of this interface>

no description

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

Configure Duplex Settings

Commands

duplex { full | half }

Syntax Description	duplex	Configure duplex parameters
	full	Set the port to full-duplex mode
	half	Set the port to half-duplex mode
Defaults	The port is full-duplex without auto-negotiation by default	
Command Modes	Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config-if)# no auto-negotiation moxa(config-if)# duplex full	
Error Messages	% 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.	
Related Commands	speed { 10 100 }	

Configure Speed Settings

Commands

speed { 10 | 100 }

Syntax Description	speed	Configure port speed parameters
	10	Set the port to run at 10 Mbps
	100	Set the port to run at 100 Mbps
Defaults	The port is set to 100 Mbps by default if auto-negotiation is disabled on the port	
Command Modes	Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config-if)# no auto-negotiation moxa(config-if)# speed 100	
Error Messages	% 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.	
Related Commands	duplex { full half }	

Enable/Disable Flow Control Setting

Commands

flowcontrol { on | off }

Syntax Description	flowcontrol	Configure flow-control parameters
	on	Enable flow control
	off	Disable flow control
Defaults	Flow control is disabled by default	
Command Modes	Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config-if)# flowcontrol off	
Error Messages	N/A	
Related Commands	N/A	

Configure MDIX Setting

Commands

mdix { auto | mdi | mdix }

Syntax Description	mdix	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
Defaults	Auto-crossover is enabled by default	
Command Modes	Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config-if)# mdix auto	
Error Messages	% 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.	
Related Commands	N/A	

Linkup Delay

Enable/Disable Linkup Delay

Commands

linkup-delay { enable | disable }

no linkup-delay

Syntax Description	no	Remove configuration/delete entry/reset to default value
	linkup-delay	Configure linkup-delay parameters
	enable	Enable linkup-delay in the system
	disable	Disable linkup-delay in the system
Defaults	System-wide linkup-delay is disabled by default	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# linkup-delay disable	
Error Messages	N/A	
Related Commands	linkup-delay linkup-delay timer <integer (1-1000)>	

Configure Linkup Delay Timer

Commands

linkup-delay timer <integer (1-1000)>

Syntax Description	linkup-delay	Configure linkup-delay parameters
	timer	Set the timer for linkup-delay
	integer (1-1000)	Timer value ranger from 1 to 1000 seconds
Defaults	The linkup delay timer is 2 seconds by default	
Command Modes	Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config-if)# linkup-delay timer 2	
Error Messages	N/A	
Related Commands	linkup-delay [enable disable] linkup-delay	

Configure Auto-Negotiation Setting

Commands

auto-negotiation

no auto-negotiation

Syntax Description	no	Remove configuration/delete entry/reset to default value
	auto-negotiation	Configure auto-negotiation parameters
Defaults	Auto-negotiation is enabled by default	
Command Modes	Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config-if)# auto-negotiation	
Error Messages	N/A	
Related Commands	speed { 10 100 } duplex { full half }	

Link Aggregation

Port Channel

Configure Interface Port Channel

Commands

interface port-channel <port-channel-id>

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

Syntax Description	no	Remove configuration/delete entry/reset to default value
	interface	Configure interface parameters
	port-channel	The port-channel interface
	port-channel-id	Configure port-channel ID parameters
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	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	
Error Messages	'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.'	
Related Commands	show port-channel load-balance	

Configure Port Channel Shutdown Settings

Commands

shutdown

no shutdown

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

Configure Port Channel Load Balance

Commands

port-channel load-balance { src-mac | dest-mac | src-dest-mac | src-dest-mac-ip | src-dest-mac-ip-l4port | src-dest-ip } [<port-channel-id>]

no port-channel load-balance [<port-channel-id>]

Syntax Description	port-channel	Configure port-channel parameters
	load-balance	Configure load balancing policy parameters
	src-mac	Load distribution is based on the source MAC address
	dest-mac	Load distribution is based on the destination MAC address
	src-dest-mac	Load distribution is based on the source and destination MAC address
	src-dest-mac-ip	Load distribution based on the source and destination MAC address and IP address
	src-dest-mac-ip-l4port	Load distribution based on the source and destination MAC address, IP address, and Layer 4 port
	src-dest-ip	Load distribution is based on the source and destination IP address
	<port-channel-id>	It is going to configure all port-channels' load-balancing policy.
Defaults	src-dest-mac	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	MOXA# configure terminal MOXA(config)# interface port-channel 10 MOXA(config-if)# no shutdown MOXA(config-if)# exit MOXA(config)# port-channel load-balance src-mac MOXA(config)# no port-channel load-balance MOXA(config)# port-channel load-balance src-mac 10 MOXA(config)# no port-channel load-balance 10	
Error Messages	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.	
Related Commands	MOXA# show port-channel load-balance	

Configure Channel Group Mode

Commands

channel-group <port-channel-id> **mode** { on | active | passive }

no channel-group

Syntax Description	no	Remove configuration/delete entry/reset to default value
	channel-group	Configure port-channel parameters
	port-channel-id	Configure channel group number parameters
	mode	Configure mode for port-channel parameters
	on	Configure the interface to use static trunk channel without LACP
	active	Configure LACP negotiation to start unconditionally
	passive	Configure LACP negotiation to start only when a LACP packet is received from the peer
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# channel-group 10 mode on moxa(config-if)# channel-group 10 mode active moxa(config-if)# channel-group 10 mode passive moxa(config-if)# no channel-group</pre>	
Error Messages	<p>Invalid: Switch shall have at least 2 ports.</p> <p>Invalid: A maximum of eight ports can be selected.</p> <p>Invalid: A maximum of eight standby ports can be selected.</p> <p>Invalid: Interface index duplication.</p> <p>Invalid: Link Aggregation/Port-Channel group is out of range.'</p> <p>Invalid: When a port joins the port channel, the Interface Duplexity should be Full Duplex.'</p> <p>Invalid: Port-channel cannot be created when flow control on the port is enabled.'</p> <p>Invalid: This port-channel is used by Turbo Ring/Turbo Chain/Dual Homing, it could not be destroyed.'</p> <p>Invalid: The port-channel does not exist.</p> <p>Invalid: In the same port-channel, the member port mode should be the same.</p> <p>Invalid: Port-channel cannot be created when ports are operating at different speeds.</p> <p>Invalid: If the port has set to binding database setting, it cannot join the port channel.</p> <p>Invalid: If the port has enabled IP Source Guard, it cannot join the port channel.</p> <p>Invalid: To support HAST standby, LLDP should be enabled with chassis id subtype = MAC address, port-id subtype = MAC address and Dot3 link-aggregation TLV on this port</p> <p>Invalid: Redundant port can not be assigned to port channel member.</p> <p>Invalid: The port-channel group is used by Turbo Ring/Turbo Chain/Dual Homing. It cannot be deleted.</p> <p>Invalid: This port is an internal communication port. This function cannot be configured on this port.</p> <p>Invalid: If the port has enabled Access Control List, it can not join the port channel.</p>	
Related Commands	<pre>show port-channel [<channel-group-ID>] {detail load-balance port port-channel summary protocol } show interface [<interface-type> <interface-id>] port-channel</pre>	

Configure LACP Wait Time

Commands

lACP wait-time < wait-time-value >

no lACP wait-time

Syntax Description	no	Remove configuration/delete entry/reset to default value
	lACP	Configure LACP parameters
	wait-time	Configure LACP wait-time parameters
	wait-time-value	Configure the LACP wait-time value
Defaults	The default wait time is 2 seconds	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# lACP wait-time 5 moxa(config-if)# no lACP wait-time moxa(config-if)# end	
Error Messages	N/A	
Related Commands	N/A	

Configure LACP Timeout Settings

Commands

lACP timeout { long | short }

no lACP timeout

Syntax Description	no	Remove configuration/delete entry/reset to default value
	lACP	Configure LACP parameters
	timeout	Configure timeout parameters
	long	Configure the longest timeout of 90 seconds
	short	Configure the shortest timeout of 3 seconds
Defaults	LACP timeout is set to long be default	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# lACP timeout short moxa(config-if)# no lACP timeout moxa(config-if)# end	
Error Messages	N/A	
Related Commands	N/A	

Show Link Aggregation Information

Commands

show port-channel [<port-channel-id>] [{ detail | load-balance | port | port-channel | summary | protocol }]

Syntax Description	show	Display configuration / status information
	port-channel	Display port-channel information
	port-channel-id	Display channel group information
	detail	Display detailed information
	load-balance	Display load-balance scheme among ports in the port-channel
	port	Display port-channel port information
	port-channel	Display port-channel information
	summary	Display summary per channel group
protocol	Display protocol used in the port-channel	
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	MOXA# show port-channel 10 detail MOXA# show port-channel 10 load-balance MOXA# show port-channel 10 port MOXA# show port-channel 10 port-channel MOXA# show port-channel 10 summary MOXA# show port-channel load-balance Source MAC Address or Destination MAC Address or Source and Destination MAC Address or Source and destination MAC address and IP address or Source and destination MAC address, IP address, and Layer 4 ports MOXA# show port-channel protocol MOXA# show port-channel	
Error Messages	'Invalid: The port-channel does not exist.'	
Related Commands	interface port-channel channel-group <channel-group-id> mode { on active passive}	

Show Port Channel Interfaces

Commands

show interfaces { [{ <interface-type> <interface-id > }] port-channel }

Syntax Description	show	Display configuration / status information
	interfaces	Display interface specific information
	interface-type	Display interface type
	interface-id	Display interface id
	port-channel	Display port-channel information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show interfaces ethernet 0/1 port-channel	
Error Messages	N/A	
Related Commands	channel-group <channel-group-id> mode { on active passive} show port-channel [<port-channel-id>] [{ detail load-balance port port-channel summary protocol }]	

PoE

PoE General Settings

Enable/Disable PoE Output Setting

Commands

poe { enable | disable }

Syntax Description	poe	Configure PoE parameters
	enable	Enable PoE on the switch
	disable	Disable PoE on the switch
Defaults	PoE is enabled by default	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Enable global power output.	
Examples	moxa(config)# poe disable	
Error Messages	N/A	
Related Commands	show poe [interface <iftype> <ifnum>] {config status diagnosis}	

Configure Power Budget Setting

Commands

poe system-power-budget <watt: integer (30- maximum power budget value of product)>

Syntax Description	poe	Configure PoE parameters
	system-power-budget	The total power budget for all PDs connected to the switch
	watt: integer (30- maximum power budget value of product)	Set the power budget depending on the external power supply's (EPS) output ability
Defaults	The default power budget is set to 720 watts	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Data range: watt: 30- maximum power budget value of product	
Examples	moxa(config)# poe system-power-budget 90	
Error Messages	'Invalid: Sum of power allocation cannot exceed system power budget.'	
Related Commands	show poe [interface <iftype> <ifnum>] {config status diagnosis}	

Configure Auto Power Cutting Settings

Commands

poe auto-power-cutting

no poe auto-power-cutting

Syntax Description	poe	Configure PoE parameters
	auto-power-cutting	Enable auto power cutting to automatically cut power to specific PDs when the consumed PoE power exceeds the system power budget
Defaults	This feature is disabled by default.	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Enables auto power-cutting to lower priority PDs to ensure the PoE power supply of higher priority PDs. Use the no version of this command to disable the feature.	
Examples	moxa(config)# poe auto-power-cutting Are you sure you want to enable the auto-power-cutting? If so, the power-management-mode will become consumed-power mode. [y/N] y moxa(config)# no poe auto-power-cutting Are you sure you want to disable the auto-power-cutting? If so, the power-management-mode will become allocated-power mode. [y/N] y	
Error Messages	N/A	
Related Commands	show poe [interface <iftype> <ifnum>] {config status diagnosis} poe priority {critical high low}	

PD Failure Check

Configure Port PD Failure Check Setting

Commands

poE pd-failure-check [{ device-ip <uCast_addr> | check-frequency <seconds: integer(5-300)> | **no-response-times** <times: integer(1-10)> | **action** { no-action | restart-pd | **shutdown-pd** } }]

no poE pd-failure-check

Syntax Description	no	Remove configuration/delete entry/reset to default value
	poE	Configure PoE parameters
	pd-failure-check	Check the PD fail status
	device-ip	Check the device IP
	uCast_addr	The device IP address
	check-frequency	Check device frequency
	seconds: integer(5-300)	The check frequency in seconds
	no-response-times	The limit for the amount of no response checks the switch performs
	times: integer(1-10)	The amount of checks
	action	Trigger an action if the no response times reaches the set limit
	no-action	Perform no action
	restart-pd	Restart the PD
shutdown-pd	Shutdown the PD	
Defaults	device-ip: 0.0.0.0 seconds: 10 times: 3 action: no-action Data range: seconds: 5-300 times: 1-10	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	Set PoE PD Failure Check on ports. The switch pings device-ip every check-frequency second(s). The Action will be triggered if the no response times of ping reach no-response-times .	
Examples	moxa(config-if)# poE pd-failure-check device-ip 192.168.127.101 moxa(config-if)# no poE pd-failure-check	
Error Messages	'Invalid: Device IP is not a valid IP address.'	
Related Commands	show poE pd-failure-check	

PoE Scheduling

Configure Scheduling Rule Setting

Commands

poe scheduling <rule-name: string(63)> <start-date-year: integer(1970-2038)> <start-date-month: integer(1-12)> <start-date-day: integer(1-31)> <start-time-hour: integer(0-24)> <start-time-min: integer(0-59)> <end-time-hour: integer(0-24)> <end-time-min: integer(0-59)>

Syntax Description	poe	Configure PoE parameters
	scheduling	Schedule PoE availability with rules
	rule-name: string(63)	The scheduling rule name
	start-date-year: integer(1970-2038)	The scheduling rule starting year
	start-date-month: integer(1-12)	The scheduling rule starting month
	start-date-day: integer(1-31)	The scheduling rule starting day
	start-time-hour: integer(0-24)	The scheduling rule starting hour
	start-time-min: integer(0-59)	The scheduling rule starting minute
	end-time-hour: integer(0-24)	The scheduling rule ending hour
end-time-min: integer(0-59)	The scheduling rule ending minute	
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Add a scheduling rule or modify rule times of an existing rule. By default, a new rule is not activate and is non-repeating. Rules need to be applied to ports.	
Examples	moxa(config)# poe scheduling bt01 2036 10 5 23 0 23 50	
Error Messages	'Invalid: Schedule is not valid.' 'Invalid: Start Date is not valid.' 'Invalid: Start Time is not valid.' 'Invalid: End Time is not valid.' 'Invalid: The start time cannot exceed the end time.' 'Invalid: Schedule is conflict.'	
Related Commands	show poe scheduling [<rule-name: string(63)>] no poe scheduling <rule-name: string(63)> poe scheduling <rule-name: string(63)> activate no poe scheduling <rule-name: string(63)> activate poe scheduling <rule-name: string(63)> repeat {daily weekday weekend sunday monday tuesday wednesday thursday friday saturday} no poe scheduling <rule-name: string(63)> repeat {daily weekday weekend sunday monday tuesday wednesday thursday friday saturday} poe scheduling <rule-name: string(63)> no poe scheduling <rule-name: string(63)>	

Apply Port Scheduling Rule

Commands

poe scheduling <rule-name: string (63)>

no poe scheduling <rule-name: string (63)>

Syntax Description	no	Remove configuration/delete entry/reset to default value
	poe	Configure PoE parameters
	scheduling	Schedule PoE with rules
	rule-name: string (63)	The scheduling rule name as the index key
Defaults	Scheduling rules are not applied to ports by default	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	Apply PoE scheduling rules to ports.	
Examples	moxa(config-if)# poe scheduling bt01 moxa(config-if)# no poe scheduling bt01	
Error Messages	N/A	
Related Commands	show poe scheduling [<rule-name: string (63)>]	

Remove PoE Schedule Setting

Commands

no poe scheduling <rule-name: string (63)>

Syntax Description	no	Remove configuration/delete entry/reset to default value
	poe	Configure PoE parameters
	scheduling	Schedule PoE with rules
	rule-name: string (63)	The scheduling rule name as the index key
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Delete a scheduling rule.	
Examples	moxa(config)# no poe scheduling bt01	
Error Messages	N/A	
Related Commands	show poe scheduling [<rule-name: string(63)>] poe scheduling <rule-name: string(63)> <start-date-year: integer(1970-2038)> <start-date-month: integer(1-12)> <start-date-day: integer(1-31)> <start-time-hour: integer(0-24)> <start-time-min: integer(0-59)> <end-time-hour: integer(0-24)> <end-time-min: integer(0-59)>	

Configure Scheduling Rule Setting

Commands

poe scheduling <rule-name: string(63)> activate

no poe scheduling <rule-name: string(63)> activate

Syntax Description	no	Remove configuration/delete entry/reset to default value
	poe	Configure PoE parameters
	scheduling	Schedule PoE with rules
	rule-name: string(63)	The scheduling rule name as the index key
	activate	Activate the PoE scheduling rule
Defaults	The scheduling rule is not activated by default	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Activate a rule to apply the rule.	
Examples	moxa(config)# poe scheduling <rule-name: string (63)> activate moxa(config)# no poe scheduling <rule-name: string (63)> activate	
Error Messages	N/A	
Related Commands	show poe scheduling [<rule-name: string(63)>] poe scheduling <rule-name: string(63)> <start-date-year: integer(1970-2038)> <start-date-month: integer(1-12)> <start-date-day: integer(1-31)> <start-time-hour: integer(0-24)> <start-time-min: integer(0-59)> <end-time-hour: integer(0-24)> <end-time-min: integer(0-59)>	

Configure Scheduling Repeat Setting

Commands

poe scheduling <rule-name: string(63)> **repeat** { daily | weekday | weekend | sunday | monday | tuesday | wednesday | thursday | friday | saturday }

no poe scheduling <rule-name: string(63)> **repeat** { daily | weekday | weekend | sunday | monday | tuesday | wednesday | thursday | friday | saturday }

Syntax Description	no	Remove configuration/delete entry/reset to default value
	poe	Configure PoE parameters
	scheduling	Schedule PoE with rules
	rule-name: string(63)	The scheduling rule name as the index key
	repeat	Repeat PoE scheduling rules
	daily	Repeat daily
	weekday	Repeat on weekdays
	weekend	Repeat on weekends
	sunday	Repeat every Sunday
	monday	Repeat every Monday
	tuesday	Repeat every Tuesday
	wednesday	Repeat every Wednesday
	thursday	Repeat every Thursday
	friday	Repeat every Friday
	saturday	Repeat every Saturday
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Set PoE scheduling rules to repeat on the specified day(s).	
Examples	moxa(config)# poe scheduling <rule-name: string(63)> repeat {daily weekday weekend sunday monday tuesday wednesday thursday friday saturday}	
Error Messages	N/A	
Related Commands	moxa(config)# poe scheduling bt01 repeat daily moxa(config)# no poe scheduling bt01 repeat daily	

Configure Port Power Output Setting

Commands

poe
no poe

Syntax Description	no	Remove configuration/delete entry/reset to default value
	poe	Configure PoE parameters
Defaults	Port PoE power output is enabled by default	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config-if)# poe moxa(config-if)# no poe	
Error Messages	N/A	
Related Commands	show poe [interface <iftyp> <ifnum>] {config status diagnosis}	

Configure Port Power Output Mode Settings

Commands

poe output-mode { auto | force power-allocation <watt: integer(Minimum - Maximum power output limit value of product)> }

Syntax Description	poe	Configure PoE parameters
	output-mode	Configure the PoE power output mode
	auto	Set the PoE output mode to Standard
	force	Set the PoE output mode to Force, for non-standard or legacy PDs
	power-allocation	Configure the PoE power output limit for Force mode
	<watt: integer (Minimum - Maximum power output limit value of product)>	Specify the PoE power output limit (in Watts), available output range depends on the product specifications
Defaults	The output-mode is set to Auto by default.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	Auto mode is suitable for 802.3bt standard PDs. Power allocation value is 0. Force mode suitable for non-standard and legacy PDs. Power output range: The minimum and maximum power output limit of the product depends on the product specifications	
Examples	moxa(config-if)# poe output-mode force power-allocation 30	
Error Messages	'Invalid: In PoE Output Auto Mode, the Power Allocation value is not valid.' 'Invalid: Sum of power allocation cannot exceed system power budget.'	
Related Commands	show poe [interface <iftype> <ifnum>] {config status diagnosis}	

Reset PoE Output Mode

Commands

no poe output-mode

Syntax Description	no	Remove configuration/delete entry/reset to default value
	poe	Configure PoE parameters
	output-mode	The power output mode depending on the connected PD
Defaults	The output-mode is set to auto by default	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config-if)# no poe output-mode	
Error Messages	'Invalid: In PoE Output Auto Mode, the Power Allocation value is not valid.'	
Related Commands	show poe [interface <iftype> <ifnum>] {config status diagnosis}	

Configure Port Legacy PD Detection Settings

Commands

poe legacy-pd-detection
no poe legacy-pd-detection

Syntax Description	no	Remove configuration/delete entry/reset to default value
	poe	Configure PoE parameters
	legacy-pd-detection	Use legacy PD detection to power PDs if the capacitance of the PD is higher than 2.7 μ F or less than 10 μ F
Defaults	Legacy PD detection is disabled by default.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	Enable legacy PD detection on ports to power PDs within the 2.7 to 10 μ F capacitance range	
Examples	moxa(config-if)# poe legacy-pd-detection moxa(config-if)# no poe legacy-pd-detection	
Error Messages	N/A	
Related Commands	show poe [interface <iftype> <ifnum>] {config status diagnosis}	

Configure Port Auto Power Cutting Priority Setting

Commands

poe priority { critical | high | low }
no poe priority

Syntax Description	no	Remove configuration/delete entry/reset to default value
	poe	Configure PoE parameters
	priority	The priority for automatically PoE cutting power
	critical	Critical priority
	high	High priority
	low	Low priority
Defaults	The priority is set to low by default	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	Set the port priority for automatically cutting PoE power. Lower priority devices will be cut off first.	
Examples	moxa(config-if)# poe priority critical moxa(config-if)# no poe priority	
Error Messages	N/A	
Related Commands	show poe [interface <iftype> <ifnum>] {config status diagnosis} poe auto-power-cutting no poe auto-power-cutting	

PoE Status

Show System and Port Settings, Status, and Diagnosis

Commands

show poe [interface <iftyp> <ifnum>] { **config** | **status** | **diagnosis** }

Syntax Description	show	Display configuration/status information
	poe	Display PoE information
	interface	Display interface information
	<iftyp>	Specify the interface type
	<ifnum>	Specify the interface number
	config	Display the PoE configuration
	status	Display PoE status
	diagnosis	Display the PoE diagnosis
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	<p>For bt PoE (RKS/EDS Series):</p> <ol style="list-style-type: none"> If the PoE Power Management Mode is "Allocated Power", the Remaining Available Power is the "Power Budget Limit" minus "Allocated Power". If the PoE Power Management Mode is "Consumed Power", the Remaining Available Power is the "Power Budget Limit" minus "Consumed Power". <p>For PoE (MDS Series):</p> <ol style="list-style-type: none"> If the PoE Power Management Mode is "Allocated Power", the "Remaining Available Power" is the "Maximum Input Power" minus "Allocated Power". If the PoE Power Management Mode is "Consumed Power", the Remaining Available Power is the "Maximum Input Power" minus "Consumed Power". 	
Examples	<pre>moxa# show poe diagnosis SS - Single Signature, DS - Dual Signature Port Device Type Config Suggestion ----- Eth1/1 Not present No suggestion Eth1/2 Not present No suggestion Eth1/3 Not present No suggestion Eth1/4 Not present No suggestion Eth1/5 Not present No suggestion Eth1/6 Not present No suggestion Eth1/7 Not present No suggestion Eth1/8 802.3 bt DS Select PoE output mode to Auto moxa# show poe status Power Budget Limit: 180 Allocated Power: 46 Consumed Power: 1 Remaining Available Power: 134 Port Power Output Classification Current Voltage Consumption ----- Eth1/1 Off Unknown 0.00 0.00 0.00 Eth1/2 Off Unknown 0.00 0.00 0.00 Eth1/3 Off Unknown 0.00 0.00 0.00 Eth1/4 Off Unknown 0.00 0.00 0.00 Eth1/5 Off 0 0.00 0.00 0.00 Eth1/6 Off 0 0.00 0.00 0.00 Eth1/7 Off 0 0.00 0.00 0.00 Eth1/8 On 3,4 14.65 48.59 0.71</pre>	
Error Messages	N/A	
Related Commands	<p>poe {enable disable}</p> <p>poe system-power-budget <watt: integer (30-Maximum value of actual power budget*)></p>	

	<pre> poe auto-power-cutting no poe auto-power-cutting poe no poe poe output-mode { auto force power-allocation <watt: integer(0-90)> } poe legacy-pd-detection no poe legacy-pd-detection poe priority { critical high low } no poe priority </pre>
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* The system power budget value depends on the product specifications.

Show Port PD Failure Check Setting and Status

Commands

show poe pd-failure-check [interface <iftype> <ifnum>] { config | status }

Syntax Description	show	Display configuration/status information
	poe	Display PoE information
	pd-failure-check	Check the PD failure status
	interface	Interface information
	iftype	The interface type
	ifnum	The interface number
	config	The current PoE configuration applied to the port
	status	PoE status
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show poe pd-failure-check interface ethernet 2/4 config Enable: Enabled Device IP: 192.168.127.101 Check Frequency (sec): 5 No Response Times: 1 Action: Restart PD </pre>	
Error Messages	N/A	
Related Commands	<pre> poe pd-failure-check [{ device-ip <ucast_addr> check-frequency <seconds: integer(5-300)> no-response-times <times: integer(1-10)> action { no-action restart-pd shutdown-pd } }] no poe pd-failure-check </pre>	

Show Scheduling Rule Setting

Commands

show poe scheduling [<rule-name: string(63)>]

Syntax Description	show	Display configuration/status information
	poe	Display PoE information
	scheduling	Schedule PoE availability with rules
	rule-name:string(63)	The scheduling rule name
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show poe scheduling rule1 Rule Name: test Enable: Enabled Start Date (YYYY/MM/DD): 2020/05/29 Schedule Time: 08:00-15:00, None Apply the same setting to port: Eth1/4</pre>	
Error Messages	N/A	
Related Commands	<pre>poe scheduling <rule-name: string(63)> <start-date-year: integer(1970-2038)> <start-date-month: integer(1-12)> <start-date-day: integer(1-31)> <start-time- hour: integer(0-24)> <start-time-min: integer(0-59)> <end-time-hour: integer(0- 24)> <end-time-min: integer(0-59)> poe scheduling <rule-name: string(63)> activate no poe scheduling <rule-name: string(63)> activate poe scheduling <rule-name: string(63)> repeat { daily weekday weekend sunday monday tuesday wednesday thursday friday saturday } no poe scheduling <rule-name: string(63)> repeat { daily weekday weekend sunday monday tuesday wednesday thursday friday saturday } poe scheduling <rule-name: string(63)> no poe scheduling <rule-name: string(63)></pre>	

Configure Power Management Mode Settings

Commands

poe power-management-mode { allocated-power | consumed-power }

Syntax Description	poe	Configure PoE parameters
	power-management-mode	Power management mode depends on power usage of all ports
	allocated-power	Calculate power budget of all ports
	consumed-power	Calculate real-time power consumption of all ports
Defaults	The default value of power-management-mode depends on Product Spec	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	<p>In allocated-power mode, the PoE system will calculate power budget of all ports. In consumed-power mode, the PoE system will calculate real-time power consumption of all ports.</p> <p>Hint:</p> <p>Are you sure you want to select the allocated-power mode? If so, the auto-power-cutting will be disabled. [y/N]</p> <p>Are you sure you want to select the consumed-power mode? If so, the auto-power-cutting will be enabled. [y/N]</p>	
Examples	<pre>moxa(config)# poe power-management-mode allocated-power Are you sure you want to select the allocated-power mode? If so, the auto-power- cutting will be disabled. [y/N] y moxa(config)# poe power-management-mode consumed-power Are you sure you want to select the consumed-power mode? If so, the auto-power- cutting will be enabled. [y/N] y</pre>	
Error Messages	N/A	

Layer 2 Switching

VLAN

IEEE 802.1Q

Show VLAN Device Information

Commands

show vlan device info

Syntax Description	vlan	Display VLAN bridge status and information
	device	The VLAN device
	info	Information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show vlan device info vlan device configurations ----- vlan Status : Enabled vlan Oper status : Enabled gvrp status : Enabled gmrp status : Enabled gvrp Oper status : Enabled gmrp Oper status : Enabled Bridge Mode : Customer Bridge Base-Bridge Mode : Vlan Aware Bridge vlan Operational Learning Mode : IVL Hybrid Default Learning Mode : IVL Version number : 1 Max vlan id : 4094 Max supported vlans : 256	
Error Messages	N/A	
Related Commands	gvrp gmrp bridge-mode	

Show VLAN Interface Status

Commands

show vlan [{brief | id <vlan-range> | summary | ascending}]

Syntax Description	show	Display configuration/statistics/general information
	vlan	Display the VLAN interface status
	brief	Display the VLAN entry related information of all active VLANs and VLANs (that are not active) for which the port details are configured.
	id	The VLAN index
	vlan-range	The VLAN index range (ex: 1-10 means the VID 1 to VID 10)
	summary	Display the total number of VLANs
	ascending	Display information for all VLANs in ascending order
	Defaults	N/A
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show vlan brief 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 Forbidden Ports : None Name : Status : Permanent Egress Ethertype : 0x8100 -----</pre>	
Error Messages	N/A	
Related Commands	<pre>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</pre>	

Show VLAN Port Configuration

Commands

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

Syntax Description	show	Display configuration/statistics/general information
	vlan	Display VLAN interface status
	port	The port interface
	config	The port's configuration
	port	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	Interface-id : <1-X>/<1-Y> Slot Number/Port Number ; Integer : <1-Z> Port Channel ID Note: X,Y,Z are project dependent values. X means the numbers of max slot.

	Y means the number of max module port Z means the number of max trunk group ID
Defaults	N/A
Command Modes	Privileged EXEC/ User EXEC
Usage Guidelines	N/A
Examples	<pre>moxa# show vlan port config port ethernet 1/3</pre> <ul style="list-style-type: none"> Do not enable IEEE802.1x or MAB or is not managed by VLAN Assignment: moxa# show vlan port config port ethernet 2/7 <pre>Vlan Port configuration table ----- Port Eth 2/7 Bridge Port Type : Customer Bridge Port Port vlan ID : 1 Port Acceptable Frame Type : Admit Only Untagged and Priority Tagged Port Ingress Filtering : Enabled Port Mode : Access Port Gvrp Status : Enabled Port Gmrp Status : Enabled Port Gvrp Failed Registrations : 0 Gvrp last pdu origin : 00:00:00:00:00:00 Port Restricted Vlan Registration : Disabled Port Restricted Group Registration : Disabled Default Priority : 3 Filtering Criteria : Default -----</pre> <ul style="list-style-type: none"> Managed by VLAN Assignment: moxa# show vlan port config port ethernet 2/8 <pre>Vlan Port configuration table ----- Port Eth 2/8 Bridge Port Type : Customer Bridge Port Port Vlan ID: 4091 (Vlan Assignment) Port vlan ID : 1 Port Acceptable Frame Type : Admit Only Untagged and Priority Tagged Port Ingress Filtering : Enabled Port Mode : Access Port Gvrp Status : Enabled Port Gmrp Status : Enabled Port Gvrp Failed Registrations : 0 Gvrp last pdu origin : 00:00:00:00:00:00 Port Restricted Vlan Registration : Disabled Port Restricted Group Registration : Disabled Default Priority : 3 Filtering Criteria : Default -----</pre>
Error Messages	N/A
Related Commands	<pre>Switchport pvid Switchport acceptable-frame-type Switchport ingress-filter Switchport mode gvrp gmrp vlan restricted group restricted switchport filtering-utility-criteria</pre>

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 multicast [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] [interface {port-channel <integer> | <interface-type> <interface-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> }]

Syntax Description	show	Display configuration/statistics/general information																				
	mac-address-table	Display MAC address information																				
	address	MAC address entry																				
	aging-time	Maximum age of a Mac address table entry																				
	count	Number of MAC addresses present on all the VLANs or on a specified VLAN																				
	dynamic	Dynamic learned MAC address																				
	static	Static configured MAC address																				
	multicast	Multicast MAC address																				
	unicast	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	The Ethernet type																				
	port-channel	The port-channel																				
	interface-id	<1-X>/<1-Y> Slot Number/Port Number ; <1~Z> Port-Channel ID Note: X,Y,Z are project dependent values. X means the numbers of max slot. Y means the number of max module port Z means the number of max trunk group ID																				
Defaults	N/A																					
Command Modes	Privileged EXEC/ User EXEC																					
Usage Guidelines	N/A																					
Examples	<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																		
Error Messages	N/A																					
Related Commands	mac-address-table																					

Show MAC Address Table for Dynamic Multicast and Unicast

Commands

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

Syntax Description	show	Display configuration/statistics/general information
	mac-address-table	Display MAC address information
	dynamic	Display dynamically learned MAC addresses
	multicast	The multicast MAC addresses
	unicast	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	<1-X>/<1-Y> Slot Number/Port Number ; <1~Z> Port-Channel ID Note: X,Y,Z are project dependent values. X means the numbers of max slot. Y means the number of max module port Z means the number of max trunk group ID
	Defaults	N/A
Command Modes	Privileged EXEC/User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show mac-address-table dynamic unicast	
	<pre> 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 Total Mac Addresses displayed: 44 iss# show mac-address-table dynamic multicast vlan Mac Address Type ConnectionId Ports ---- - Total Mac Addresses displayed: 0 </pre>	
Error Messages	N/A	
Related Commands	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> }]

Syntax Description	show	Display configuration/statistics/general information
	mac-address-table	Display MAC address information
	static	Static entry
	multicast	The multicast MAC address
	unicast	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	The Ethernet type
	port-channel	The port-channel
	interface-id	<1-X>/<1-Y> Slot Number/Port Number ; <1~Z> Port-Channel ID Note: X,Y,Z are project dependent values. X means the numbers of max slot. Y means the number of max module port Z means the number of max trunk group ID
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show mac-address-table static multicast vlan 1 Static Multicast Table ----- Vlan : 1 Mac Address : 01:00:00:00:11:22 Receive Port : Eth1/3 Member Ports : Eth1/1 Forbidden Ports : Status : Permanent ----- Vlan : 1 Mac Address : 01:00:00:11:22:33 Receive Port : Member Ports : Eth1/1, Eth1/2, Eth1/3, Eth1/4, Eth1/5, Eth1/6 Eth1/7, Eth1/8, Eth1/9, Eth1/10, Eth1/11, Eth1/12 Forbidden Ports : Status : Permanent ----- Total Mac Addresses displayed: 2 iss# show mac-address-table static unicast vlan Mac Address RecvPort Status ConnectionId Ports ---- - 1 00:12:23:34:45:56 Permanent Eth1/3 1 00:31:13:31:13:13 DeleteOnReset Eth1/3 1 00:44:33:44:33:44 Permanent Eth1/4 Total Mac Addresses displayed: 3</pre>	
Error Messages	N/A	
Related Commands	mac-address-table	

Show GVRP Statistics

Commands

show gvrp statistics [{port {port-channel <integer> | <interface-type> <interface-id>}]

Syntax Description	show	Display configuration/statistics/general information
	gvrp statistics	Display GVRP statistics
	interface-type	The Ethernet type
	port-channel	The port-channel
	interface-id	The slot number/port number
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show gvrp statistics port ethernet 1/3 GVRP Statistics for Port Eth1/3 ----- Total valid GVRP Packets Received: 18 Join Empty 0 Join In 1 Leave In 0 Leave All 17 Leave Empty 0 Empty 0 Total valid GVRP Packets Transmitted: 324 Join Empty 0 Join In 324 Leave In 0 Leave All 0 Leave Empty 0 Empty 0 moxa# show gmrp statistics port ethernet 1/3 GMRP Statistics for Port Eth1/3 ----- Total valid GMRP Packets Received 0: Join Empty 0 Join In 0 Leave In 0 Leave All 0 Leave Empty 0 Empty 0 Total valid GMRP Packets Transmitted:358 Join Empty 0 Join In 358 Leave In 0 Leave All 0 Leave Empty 0 Empty 0 </pre>	
Error Messages	N/A	
Related Commands	vlan active	

Show Management VLAN

Commands

show management vlan

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

Create/Delete a VLAN

Commands

vlan <vlan-id>

no vlan <vlan-id>

vlan active

vlan name < vlan name string >

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

Configure VLAN Mode

Commands

ports add {member ([<iftype> <iface_list>][port-channel <integer>]) | untagged ([<iftype> <iface_list>][port-channel <integer>]) | forbidden ([<iftype> <iface_list>][port-channel <integer>])}

vlan ports set member ([<iftype> <iface_list>][port-channel <integer>]) [untagged ([<iftype> <iface_list>][port-channel <integer>])] [forbidden ([<iftype> <iface_list>][port-channel <integer>])]

vlan ports add {member | untagged | forbidden} [<interface-type> <slot/port-port,slot/port,...>] [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>])] [forbidden ([<interface-type> <slot/port-port,slot/port,...>] [port-channel <integer>])]

Syntax Description	ports/no ports	Set/delete member/untagged/forbidden port
	add	Add member/untag/forbidden port
	set	Overwrite member/untagged/forbidden port
	slot/port-port	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.
	forbidden	Configures the ports to never receive packets from the VLAN
Defaults	N/A	
Command Modes	Config VLAN mode	
Usage Guidelines	This command can only be executed from within VLAN configuration mode. From Configuration mode, enter <code>vlan <vlan-id></code> to enter VLAN config mode.	
Examples	<pre>moxa(config)# vlan 10 moxa(config-vlan)#ports add member ethernet 1/3 untagged all moxa(config-vlan)#ports add member ethernet 1/3 untagged ethernet 1/3 forbidden ethernet 1/2</pre>	
Error Messages	<p>"Invalid: If the port is in Egress Ports, then the port can not be in Forbidden Ports."</p> <p>"Invalid: The untagged port must be a member of the VLAN."</p> <p>"Invalid: If Forbidden Ports exist, Egress Ports should not be empty."</p> <p>"Invalid: Port {!s}/{!s} must be at least one VLAN member port."</p> <p>"Invalid: Port-Channel {!s} must be at least one VLAN member port."</p> <p>"Invalid: If a port is in Forbidden Ports, then the port can not be in Egress Ports or Untagged Ports."</p> <p>"Invalid: Duplicated VID {!s}."</p> <p>"Invalid: The port-channel does not exist."</p> <p>"Invalid: In Trunk mode, the non-PVID VID should be a tagged VLAN member."</p>	
Related Commands	<pre>vlan active switchport mode show vlan show mac-address-table count</pre>	

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,...>] [port-channel <a,b,c-d>])] [status { permanent }]

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

Syntax Description	mac-address-table	Configure mac-address-table parameters
	static	The statically configured MAC address
	unicast	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	<1-X>/<1-Y> Slot Number/Port Number ; <1~Z> Port-Channel ID Note: X,Y,Z are project dependent values. X means the numbers of max slot. Y means the number of max module port Z means the number of max trunk group ID
	status	Specifies the status of the static unicast entry <ul style="list-style-type: none"> permanent - entry remains even after the next reset of the bridge deleteonreset - entry remains until the next reset of the bridge deleteontimeout - entry remains it is aged out
Defaults	N/A	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)#mac-address-table static unicast 00:11:22:33:22:11 vlan 1 set ethernet 1/2 status permanent	
Error Messages	"Invalid: Unicast MAC address is allowed." "Invalid: Repetitive MAC Address." "Invalid: Invalid Forward Ports." "Invalid: Configuration fail." "Invalid: The interface is not a member of Egress Port of VLAN."	
Related Commands	mac-address-table static multicast vlan vlan ports add show mac-address-table static unicast	

Globally Enable/Disable GVRP on All Ports

Commands

gvrp {enable | disable}

Syntax Description	gvrp	Configure GVRP parameters
	enable	Enable on all ports and start the GVRP on the switch
	disable	Disable GVRP on all ports.
Defaults	GVRP is disabled by default	
Command Modes	Configuration	
Usage Guidelines	Configure the whole system GVRP status	
Examples	moxa(config)# gvrp enable	
Error Messages	Invalid: GVRP should be disabled when port 4 is in access mode.	
Related Commands	bridge-mode show vlan device info show gvrp statistics	

Enable/Disable GVRP on Specific Ports

Commands

gvrp

no gvrp

Syntax Description	no	Remove configuration/delete entry/reset to default value
	gvrp	Configure GVRP parameters GVRP: Enable GVRP on the specific port(s) No GVRP: Disable GVRP on the specific port(s)
Defaults	GVRP is disabled by default	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa# interface Ethernet 1/1 moxa(config-if)# gvrp	
Error Messages	N/A	
Related Commands	show vlan port config show gvrp statistics	

Configure MAC Address Table Aging Time

Commands

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

no mac-address-table aging-time

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

Configure PVID on a Specified Port

Commands

switchport pvid <vlan-id>

no switchport pvid

Syntax Description	switchport	Configure the switch port
	no	Remove configuration/delete entry/reset to default value
	pvid	Configure port-based VLAN parameters
	vlan-id	The VLAN ID, ranging from 1 to 4094.
Defaults	1	
Command Modes	Configuration	
Usage Guidelines	<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>	
Examples	moxa(config-if)# switchport pvid 1	
Error Messages	N/A	
Related Commands	switchport vlan vlan active switchport acceptable-frame-type	

Configure VLAN-dependent BPDU Frames

Commands

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

Syntax Description	switchport	Configure the switch port
	acceptable-frame-type	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.
Defaults	all	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa(config-if)# switchport acceptable-frame-type untaggedAndPrioritytagged	
Error Messages	N/A	
Related Commands	switchport switchport pvid switchport ingress-filter switchport mode show vlan port config	

Enable/Disable Ingress Filter

Commands

switchport ingress-filter

no switchport ingress-filtering

Syntax Description	no	Remove configuration/delete entry/reset to default value
	switchport	The switch port
	ingress-filtering	Enable ingress-filtering
Defaults	disable	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa (config-if)# switchport ingress-filter moxa (config-if)# no switchport ingress-filter	
Error Messages	N/A	
Related Commands	switchport switchport acceptable-frame-type show vlan port config	

Configure Switch Port Operation Mode

Commands

switchport mode {access | trunk | hybrid}

Syntax Description	switchport	Configure the switch port
	mode	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 4 conditions are met: GVRP is disabled for that port. 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	
Defaults	The default port operation mode is set to Access	
Command Modes	Configuration	
Usage Guidelines	When changing from trunk or hybrid to access mode, the following changes will be automatically applied: Forces the port to become an untagged member of the PVID domain If the port exists in another VLAN, it will be removed Forces the accept frame type to be set to "Admit untagged and pri-tagged" When changing from access or hybrid to trunk mode, the following changes will be automatically applied: Forces the port to become a tagged member of the PVID domain If the port was an untagged member in another VLAN, it will change into a tagged member. Forces the accept frame type to be set to "Admit tagged only" When changing from access or trunk to hybrid mode, there will be no changes	
Examples	moxa (config-if)# switchport mode hybrid	
Error Messages	"Invalid: Acceptable-frame-type of VLAN trunk port should not be untagged." "Invalid: Access port only join one VLAN with untagged member."	

	"Invalid: In access mode, port PVID should be the same with the only joined VLAN id." "Invalid: Acceptable Frame Type is invalid in {} {!s}." "Invalid: GVRP should be disabled when {} {!s} is in access mode."
Related Commands	switchport port gvrp vlan ports switchport acceptable-frame-type show vlan port config

Configure Restricted VLAN Registration

Commands

vlan restricted

Syntax Description	vlan restricted	Configure restricted VLAN parameters Enable or disable the restricted VLAN registration feature on the port. Enabled means the creation or modification of a dynamic VLAN entry is permitted only for VLANs for which static VLAN registration entries exist. Disabled means the creation or modification of a dynamic VLAN entry is permitted for all VLANs.
Defaults	Restricted VLAN registration is disabled by default	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa(config-if)# vlan restricted	
Error Messages	N/A	
Related Commands	show vlan port config	

Create Filtering Utility Criteria

Commands

switchport filtering-utility-criteria {default | enhanced}

Syntax Description	switchport	Configure the switch port
	filtering-utility-criteria	Configure VLAN filtering utility criteria
	default	Only allow the learning of a source MAC from a packet received on the port if there is at least one member port for a VLAN mentioned in the packet.
	enhanced	Only allow the learning of source MAC from a packet received on the port if the following conditions are met: At least one VLAN that uses the FID indicates the reception port and at least one other port with a port state of learning or forwarding in its member set Ingress to the VLAN is permitted through a port other than the source and reception ports. This port can be or not be a member of the VLAN.
Defaults	By default, the VLAN filtering utility criteria is set to default	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa(config-if)# switchport filtering-utility-criteria default	
Error Messages	N/A	
Related Commands	show vlan port config	

Set VLAN Access Port

Commands

switchport access vlan <vlan-id>

Syntax Description	switchport access	Configure the port as an access port
	vlan <vlan-id>	The specified VLAN ID for which this access port will carry traffic, ranging from 1 to 4094.
Defaults	The port mode is set to access port by default	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	Disgarding 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 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	
Examples	moxa(config-if)# switchport access vlan 10	
Error Messages	N/A	
Related Commands	show vlan port config show vlan	

Configure VLAN Management

Commands

management vlan <vlan-id>

no management vlan

Syntax Description	no	Remove configuration/delete entry/reset to default value
	management	Configure management
	vlan	Configure the management VLAN
	vlan-id	The management VLAN ID (1-4096)
Defaults	The default management VLAN ID is set to 1	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	Configure L2 switch management interface	
Examples	moxa(config)# management vlan 1	
Error Messages	"Invalid: Management VLAN" + {!s} does not exist." "Invalid: Device only support single management VLAN."	
Related Commands	No management vlan	

GARP

Show GARP Timer

Commands

show garp timer [port {port-channel <integer> | <interface-type> <interface-id>}]

Syntax Description	show	Display configuration/statistics/general information
	garp timer	Display GARP timer information
	interface-type	The Ethernet type
	port-channel	The port-channel
	interface-id	The slot number/port number
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show garp timer Garp Port Timer Info (in milli seconds) ----- Port Join-time Leave-time Leave-all-time ----- Eth1/1 200 600 10000 Eth1/2 200 600 10000 Eth1/3 200 600 10000 Eth1/4 200 600 10000 Eth2/1 200 600 10000 Eth2/2 200 600 10000 Eth2/3 200 600 10000 Eth2/4 200 600 10000</pre>	
Error Messages	N/A	
Related Commands	garp timer no shutdown garp	

Configure GARP Timer on a Specified Port

Commends

garp timer {join | leave | leaveall} <time in milli seconds>

Syntax Description	join	Configure the time (ms) interval which a GARP participant should wait for its join message to be acknowledged before re-sending the join message. The join message is retransmitted only once. This countdown starts once the initial join message is sent. The join message is sent by a GARP participant to another GARP participant for registering.
	leave	Configures the time (ms) interval a GARP participant should wait for any join message before removing attribute details.
	leaveall	Configures the time (ms) interval for which the details of the registered attributes are maintained.
Defaults	join - 200ms leave - 600ms leaveall - 10000ms	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# garp timer join 250	
Error Messages	N/A	
Related Commands	show garp timer	

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,...>] [port-channel <a,b,c-d>])] [status { permanent }]

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

Syntax Description	no	Remove configuration/delete entry/reset to default value
	mac-address-table	Configure MAC address table parameters
	static	Statically configured MAC address
	unicast	The unicast MAC address
	set	Overwrite port
	interface-type	The Ethernet type The port-channel
	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
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa(config)# mac-address-table static unicast aa:aa:aa:bb:bb:cc vlan 168 set interface ethernet 2/4 status permanent	
Error Messages	N/A	
Related Commands	mac-address-table static multicast vlan vlan ports add show mac-address-table static unicast	

MAC Address Table

Show MAC Address Table Information

Commands

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

mac-address-table aging-time

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

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

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

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

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

Syntax Description	mac-address-table	Display MAC address information																				
	address	The MAC address entry																				
	aging-time	The maximum age of a MAC address table entry																				
	count	The number of MAC addresses present on all VLANs or on a specified VLAN																				
	dynamic	Dynamically learned MAC address																				
	static	Statically configured MAC address																				
	multicast	The multicast MAC address																				
	unicast	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	The Ethernet type																				
	port-channel	The port-channel																				
	interface-id	The slot number/port number																				
Defaults	N/A																					
Command Modes	Privileged EXEC/ User EXEC																					
Usage Guidelines	N/A																					
Examples	<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																		
Error Messages	N/A																					
Related Commands	mac-address-table																					

QoS

Classification

Configure Mapping Rule for DSCP Priority

Commands

qos ip-dscp-mapping dscp-priority <dscp-priority(0-63)> cos-priority <cos-priority(0-7)>

Syntax Description	qos	Configure QoS parameters
	ip-dscp-mapping	Configure mapping rules for DSCP priority
	dscp-priority	The DSCP priority
	dscp-priority(0-63)	The Differentiated Services Code Point (DSCP) value
	cos-priority	The CoS priority
	cos-priority(0-7)	The Class of Service (CoS) value
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# qos ip-dscp-mapping dscp-priority 0 cos-priority 1	
Error Messages	N/A	
Related Commands	moxa # show qos ip-dscp-mapping [dscp-priority <integer (0-63)>]	

Configure COS Mapping Rule

Commands

qos cos-mapping cos-priority <cos-priority(0-7)> queue-id <queue-id(1-8)>

Syntax Description	qos	Configure QoS parameters
	cos-mapping	Configure mapping rules for CoS priority
	cos-priority	The CoS priority
	cos-priority(0-7)	The VLAN priority
	queue-id	The queue index
	queue-id(1-8)	The queue index value, ranging from 1 to 8
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa (config)# qos cos-mapping cos-priority 1 queue-id 2	
Error Messages	N/A	
Related Commands	moxa# show qos cos-mapping [cos-priority <integer (0-7)>]	

Configure QoS Default Priority Setting

Commands

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

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

Configure QoS P-bit Preference

Commands

qos pbit-preference {dscp | cos}

Syntax Description	qos	Configure QoS parameters
	pbit-preference	Configure pbit preference parameters
	dscp	Use DSCP priority
	cos	Use CoS priority
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)#qos pbit-preference dscp	
Error Messages	N/A	
Related Commands	moxa # show qos pbit-preference [interface <iftyp> <ifnum>]	

Show QoS DSCP Mapping Rule

Commands

show qos ip-dscp-mapping [dscp-priority <integer (0-63)>]

Syntax Description	show	Display configuration/status information
	qos	Display QoS information
	ip-dscp-mapping	Display the QoS DSCP mapping table
	dscp-priority	The DSCP priority
	dscp-priority (0-63)	The Differentiated Services Code Point (DSCP) value
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa # show qos ip-dscp-mapping dscp-priority 1 QoS DSCP Priority Mapping ----- Dscp Priority 1 mapping to CoS Priority 0 moxa# show qos ip-dscp-mapping QoS DSCP Priority Mapping ----- Dscp Priority 0 mapping to CoS Priority 0 Dscp Priority 1 mapping to CoS Priority 0 Dscp Priority 2 mapping to CoS Priority 0 Dscp Priority 3 mapping to CoS Priority 0 Dscp Priority 4 mapping to CoS Priority 0 Dscp Priority 5 mapping to CoS Priority 0 Dscp Priority 6 mapping to CoS Priority 0 Dscp Priority 63 mapping to CoS Priority 7</pre>	
Error Messages	N/A	
Related Commands	moxa (config)# qos ip-dscp-mapping dscp-priority <dscp-priority(0-63)> cos-priority <cos-priority(0-7)>	

Show QoS COS Mapping Rule

Commands

show qos cos-mapping [cos-priority <integer (0-7)>]

Syntax Description	show	Display configuration/status information
	qos	Display QoS information
	cos-mapping	Display the QoS CoS mapping table
	cos-priority	The CoS priority
	(0-7)	The VLAN priority value
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# show qos cos-mapping cos-priority 1 QoS CoS Priority Mapping ----- CoS Priority 1 mapping to Queue ID 2 moxa # show qos cos-mapping QoS CoS Priority Mapping ----- CoS Priority 0 mapping to Queue ID 1 CoS Priority 1 mapping to Queue ID 2 CoS Priority 2 mapping to Queue ID 3 CoS Priority 3 mapping to Queue ID 4 CoS Priority 4 mapping to Queue ID 5 CoS Priority 5 mapping to Queue ID 6 CoS Priority 6 mapping to Queue ID 7 CoS Priority 7 mapping to Queue ID 8</pre>	
Error Messages	N/A	
Related Commands	moxa (config)# qos cos-mapping cos-priority <cos-priority(0-7)> queue-id <queue-id(1-8)>	

Show QoS Default Priority Setting

Commands

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

Syntax Description	show	Display configuration/status information
	qos	Display QoS information
	default-priority	Display the QoS default user priority
	interface	Interface information
	iftype	The interface type
	ifnum	The interface index
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre>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</pre>	
Error Messages	N/A	
Related Commands	moxa (config)# qos default-priority <default-priority(0-7)>	

Show QoS P-bit Preference

Commands

show qos pbit-preference [interface <iftype> <ifnum>]

Syntax Description	show	Display configuration/status information
	qos	Display QoS information
	pbit-preference	Display the pbit preference
	interface	Interface information
	iftype	The interface type
	ifnum	The interface index
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	If no interface is entered, the QoS pbit preference is shown for all ports.	
Examples	<pre>moxa # show qos pbit-preference interface ethernet 1/1 QoS P-bit Preference Status ----- Interface Ethernet 1/1 P-bit Preference is CoS moxa # show qos pbit-preference QoS P-bit Preference Status ----- Interface Ethernet 1/1 P-bit Preference is CoS Interface Ethernet 1/2 P-bit Preference is CoS Interface Ethernet 1/3 P-bit Preference is CoS Interface Ethernet 1/4 P-bit Preference is CoS Interface Ethernet 2/1 P-bit Preference is CoS Interface Ethernet 2/2 P-bit Preference is CoS Interface Ethernet 2/3 P-bit Preference is CoS Interface Ethernet 2/4 P-bit Preference is CoS Interface Ethernet 7/4 P-bit Preference is CoS</pre>	
Error Messages	N/A	
Related Commands	moxa (config)# qos pbit-preference {dscp cos}	

Ingress Rate Limit

Configure Ingress Rate Limit Simple Token Bucket Conform Action: None

Commands

qos rate-limit-type simple-token-bucket cir <cir(1-1000)> [**cbs** <cbs(10-10240)>] **conform-action do-nothing violate-action drop**

Syntax Description	qos	Configure QoS parameters
	rate-limit-type	Configure QoS rate limit parameters
	simple-token-bucket	Simple Token Bucket
	cir	Committed Information Rate
	cir(1-1000)	Committed information rate in Mbps
	cbs	Committed Burst Size
	cbs(10-10240)	Committed Burst Size in Kbytes
	conform-action	Configure the conform action parameter
	do-nothing	Do not perform any action
	violate-action	Configure the violate action parameter
drop	Drop the packet	
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)# qos rate-limit-type simple-token-bucket cir 100 cbs 2000 conform-action do-nothing violate-action drop	
Error Messages	'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['meterCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['shaperCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {} {}`.format(pre_m_obj['shaperCbsValue'], max_size) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj[key], max_size) 'Invalid: In Simple token bucket mode, when violation action is not drop, conform action and violate action should be the same.'	
Related Commands	moxa # show qos rate-limit [interface <iftype> <ifnum>	

Configure Ingress Rate Limit Simple Token Bucket Conform Action: Remark-cos

Commands

qos rate-limit-type simple-token-bucket cir <cir(1-1000)> [**cbs** <cbs(10-10240)>] **conform-action remark-cos** <cos-priority(0-7)> **violate-action** {drop | remark-cos <cos-priority(0-7)>}

Syntax Description	qos	Configure QoS parameters
	rate-limit-type	Configure QoS rate limit parameters
	simple-token-bucket	Simple Token Bucket
	cir	Committed Information Rate
	cir(1-1000)	Committed information rate in Mbps
	cbs	Committed Burst Size
	cbs(10-10240)	Committed Burst Size in Kbytes
	conform-action	Configure the conform action parameter
	remark-cos	Remark packet CoS priority
	cos-priority(0-7)	The VLAN priority value
	violate-action	Configure the violate action parameter
	drop	Drop the packet
	remark-cos	Remark the packet CoS priority
	cos-priority(0-7)	The VLAN priority value
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)# qos rate-limit-type simple-token-bucket cir 500 cbs 2000 conform-action remark-cos 6 violate-action drop	
Error Messages	'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['meterCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['shaperCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}`.format(pre_m_obj['shaperCbsValue'], max_size) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj[key], max_size) 'Invalid: In Simple token bucket mode, when violation action is not drop, conform action and violate action should be the same.'	
Related Commands	moxa # show qos rate-limit [interface <iftype> <ifnum>]	

Configure Ingress Rate Limit Simple Token Bucket Conform Action: Remark-dscp

Commands

qos rate-limit-type simple-token-bucket cir <cir(1-1000)> [**cbs** <cbs(10-10240)>] **conform-action remark-dscp** <dscp-priority(0-63)> **violate-action** {drop | remark-dscp <dscp-priority(0-63)>}

Syntax Description	qos	Configure QoS parameters
	rate-limit-type	Configure QoS rate limit parameters
	simple-token-bucket	Simple Token Bucket
	cir	Committed Information Rate
	cir(1-1000)	Committed information rate in Mbps
	cbs	Committed Burst Size
	cbs(10-10240)	Committed Burst Size in Kbytes
	conform-action	Configure the conform action parameter
	remark-dscp	Remark the packet DSCP priority
	dscp-priority(0-63)	The Differentiated Services Code Point (DSCP) value
	violate-action	Configure the violate action parameter
	drop	Drop the packet
	remark-dscp	Remark the packet DSCP priority
dscp-priority(0-63)	The Differentiated Services Code Point (DSCP) value	
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)# qos rate-limit-type simple-token-bucket cir 500 cbs 2000 conform-action remark-dscp 50 violate-action drop	
Error Messages	'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['meterCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['shaperCirValue'], max_rate) 'Invalid: {} is greater than the maximum of { {}'.format(pre_m_obj['shaperCbsValue'], max_size) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj[key], max_size) 'Invalid: In Simple token bucket mode, when violation action is not drop, conform action and violate action should be the same.'	
Related Commands	moxa # show qos rate-limit [interface <iftyp> <ifnum>]	

Configure Ingress Rate Limit srTCM Conform Action: None

Commands

qos rate-limit-type srtcm cir <cir(1-1000)> [cbs <cbs(1-10240)>] [ebs <ebs(1-10240)>] **conform-action none exceed-action drop violate-action drop**

Syntax Description	qos	Configure QoS parameters
	rate-limit-type	Configure QoS rate limit parameters
	srtcm	Single Rate Three Color Marker
	cir	Committed Information Rate
	cir(1-1000)	Committed information rate in Mbps
	cbs	Committed Burst Size
	cbs(10-10240)	Committed Burst Size in Kbytes
	ebs	Excess Burst Size (or PBS)
	ebs(10-10240)	Excess burst size that unit of KByte
	conform-action	Configure the conform action parameter
	none	Do not perform any action
	exceed-action	Configure the exceed action parameter
	drop	Drop the packet
	violate-action	Configure the violate action parameter
drop	Drop the packet	
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)# qos rate-limit-type srtcm cir 500 cbs 2000 ebs 2500 conform-action none exceed-action drop violate-action drop	
Error Messages	'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['meterCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['shaperCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['shaperCbsValue'], max_size) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj[key], max_size) 'Invalid: In srTCM mode, when exceed action is remark-cos, conform action should be remark-cos and violate action should not be remark-dscp.' 'Invalid: In srTCM mode, when exceed action is remark-dscp, conform action should be remark-dscp and violate action should not be remark-cos.'	
Related Commands	moxa # show qos rate-limit [interface <iftype> <ifnum>]	

Configure Ingress Rate Limit srTCM Conform Action: Remark-cos

Commands

qos rate-limit-type srtcm cir <cir(1-1000)> [**cbs** <cbs(10-10240)>] [**ebs** <ebs(10-10240)>] **conform-action remark-cos** <cos-priority(0-7)> **exceed-action** {drop | remark-cos <cos-priority(0-7)>} **violate-action** {drop | remark-cos <cos-priority(0-7)>}

Syntax Description	qos	Configure QoS parameters
	rate-limit-type	Configure QoS rate limit parameters
	srtcm	Single Rate Three Color Marker
	cir	Committed Information Rate
	cir(1-1000)	Committed information rate in Mbps
	cbs	Committed Burst Size
	cbs(10-10240)	Committed burst size that in KByte
	ebs	Excess Burst Size (or PBS)
	ebs(10-10240)	Excess burst size in KByte
	conform-action	Configure the conform action parameter
	remark-cos	Remark the packet CoS priority
	cos-priority(0-7)	The VLAN priority value
	exceed-action	Configure the exceed action parameter
	drop	Drop the packet
	remark-cos	Remark the packet CoS priority
	cos-priority(0-7)	The VLAN priority value
	violate-action	Configure the violate action parameter
drop	Drop the packet	
remark-cos	Remark the packet CoS priority	
cos-priority(0-7)	The VLAN priority value	
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)# qos rate-limit-type srtcm cir 500 cbs 2000 ebs 2500 conform-action remark-cos 7 exceed-action drop violate-action drop	
Error Messages	'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['meterCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['shaperCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['shaperCbsValue'], max_size) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj[key], max_size) 'Invalid: In srTCM mode, when exceed action is remark-cos, conform action should be remark-cos and violate action should not be remark-dscp.' 'Invalid: In srTCM mode, when exceed action is remark-dscp, conform action should be remark-dscp and violate action should not be remark-cos.'	
Related Commands	moxa # show qos rate-limit [interface <iftype> <ifnum>]	

Configure Ingress Rate Limit srTCM Conform Action: Remark-dscp

Commands

```
qos rate-limit-type srtcm cir <cir(1-1000)> [cbs <cbs(10-10240)>] [ebs <ebs(10-10240)>] conform-action remark-dscp <dscp-priority(0-63)> exceed-action {drop | remark-dscp <dscp-priority(0-63)>} violate-action {drop | remark-dscp <dscp-priority(0-63)>}
```

Syntax Description	qos	Configure QoS parameters
	rate-limit-type	Configure QoS rate limit parameters
	srtcm	Single Rate Three Color Marker
	cir	Committed Information Rate
	cir(1-1000)	Committed information rate in Mbps
	cbs	Committed Burst Size
	cbs(10-10240)	Committed Burst Size in Kbytes
	ebs	Excess Burst Size (or PBS)
	ebs(10-10240)	Excess burst size that in KByte
	conform-action	Configure the conform action parameter
	remark-dscp	Remark the packet CoS priority
	dscp-priority(0-63)	Differentiated Services Code Point(DSCP) value
	exceed-action	Configure the exceed action parameter
	drop	Drop the packet
	remark-dscp	Remark the packet CoS priority
	dscp-priority(0-63)	The Differentiated Services Code Point (DSCP) value
	violate-action	Configure the violate action parameter
drop	Drop the packet	
remark-dscp	Remark the packet CoS priority	
<dscp-priority(0-63)>	The Differentiated Services Code Point (DSCP) value	
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)# qos rate-limit-type srtcm cir 500 cbs 2000 ebs 2500 conform-action remark-dscp 63 exceed-action drop violate-action drop	
Error Messages	'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['meterCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj['shaperCirValue'], max_rate) 'Invalid: {} is greater than the maximum of {}`.format(pre_m_obj['shaperCbsValue'], max_size) 'Invalid: {} is greater than the maximum of {}'.format(pre_m_obj[key], max_size) 'Invalid: In srTCM mode, when exceed action is remark-cos, conform action should be remark-cos and violate action should not be remark-dscp.' 'Invalid: In srTCM mode, when exceed action is remark-dscp, conform action should be remark-dscp and violate action should not be remark-cos.'	
Related Commands	moxa # show qos rate-limit [interface <iftype> <ifnum>]	

Show Ingress Rate Limit Parameters

Commands

show qos rate-limit [**interface** <iftype> <ifnum>]

Syntax Description	show	Display configuration/status information
	qos	Display QoS information
	rate-limit	Display QoS rate limit information
	interface	Interface information
	iftype	The interface type
	ifnum	The interface index
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre> moxa # show qos rate-limit interface ethernet 1/1 QoS Rate Limit Statue of Interface Ethernet 1/1 ----- Meter Type : Simple Token Bucket CIR : Disable CBS : Disable EBS : Disable Color Mode : Blind Confirm Action : None Remark CoS Value : None Remark DSCP Value : None Exceed Action : Drop Remark CoS Value : None Remark DSCP Value : None Violate Action : Drop Remark CoS Value : None Remark DSCP Value : None moxa # show qos rate-limit QoS Rate Limit Statue of Interface Ethernet 1/1 ----- Meter Type : Simple Token Bucket CIR : Disable CBS : Disable EBS : Disable Color Mode : Blind Confirm Action : None Remark CoS Value : None Remark DSCP Value : None Exceed Action : Drop Remark CoS Value : None Remark DSCP Value : None Violate Action : Drop Remark CoS Value : None Remark DSCP Value : None QoS Rate Limit Statue of Interface Ethernet 1/2 ----- Meter Type : Simple Token Bucket CIR : Disable CBS : Disable EBS : Disable Color Mode : Blind </pre>	
Error Messages	N/A	

Related Commands	moxa(config-if)# qos rate-limit-type {simple-token-bucket srtcm} [cir <cir(1-1000)>] [cbs <cbs(1-10240)>] [ebs <ebs(1-10240)>] [conform-action {none remark-cos <cos-priority(0-7)> remark-dscp <dscp-priority(0-63)>}] [exceed-action {drop remark-cos <cos-priority(0-7)> remark-dscp <dscp-priority(0-63)>}] [violate-action {drop remark-cos <cos-priority(0-7)> remark-dscp <dscp-priority(0-63)>}]
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Scheduler

Configure Qos Scheduler Type Setting

Commands

qos scheduler-type {strict-priority | wrr | one-sp-seven-wrr | two-sp-six-wrr}

Syntax Description	qos	Configure QoS parameters
	scheduler-type	Configure the QoS scheduling type.
	strict-priority	Use strict priority queuing.
	wrr	Use weighted round robin.
	one-sp-seven-wrr	Use a combination of 1 strict priority queue and 7 weighted round robin queues.
	two-sp-six-wrr	Use a combination of 2 strict priority queues and 6 weighted round robin queues.
Defaults	scheduler-type = strict-priority	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)# qos scheduler-type wrr	
Error Messages	N/A	
Related Commands	moxa # show qos scheduler [interface <iftype> <ifnum>]	

Configure QoS Queue Setting

Commands

qos queue <queue(1-8)> weight <weight(1-100)>

Syntax Description	qos	Configure QoS parameters
	queue	Configure QoS queue parameters.
	<queue(1-8)>	Configure a QoS queue by index (1-8).
	weight	Configure the queue weight.
	<weight(1-100)>	Specify the queue weight (1-100).
Defaults	From highest priority queue to lowest priority queue is 8, 8, 4, 4, 2, 2, 1 and 1	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)# qos queue 1 weight 1	
Error Messages	Invalid: The weight assigned to higher index queues must be greater than or equal to the weight assigned to the preceding lower index queue.	
Related Commands	moxa # show qos scheduler [interface <iftype> <ifnum>]	

Show QoS Scheduler Setting

Commands

show qos scheduler [interface <iftype> <ifnum>]

Syntax Description	show	Display configuration/status information
	qos	Display QoS information
	scheduler	Display QoS scheduler
	interface	The interface information
	iftype	The interface type
	ifnum	The interface index
Defaults	N/A	
Command Modes	Privileged EXEC mode	
Usage Guidelines	N/A	
Examples	<pre>moxa # show qos scheduler interface ethernet 1/1 QoS Scheduler Algorithm ----- Interface Ethernet 1/1 Scheduler Algorithm is : Strict Priority moxa# show qos scheduler QoS Scheduler Algorithm ----- Interface Ethernet 1/1 Scheduler Algorithm is : Strict Priority Interface Ethernet 1/2 Scheduler Algorithm is : Strict Priority Interface Ethernet 1/3 Scheduler Algorithm is : Strict Priority Interface Ethernet 1/4 Scheduler Algorithm is : Strict Priority Interface Ethernet 2/1 Scheduler Algorithm is : Strict Priority Interface Ethernet 2/2 Scheduler Algorithm is : Strict Priority Interface Ethernet 2/3 Scheduler Algorithm is : Strict Priority Interface Ethernet 2/4 Scheduler Algorithm is : Strict Priority Interface Ethernet 3/1 Scheduler Algorithm is : Strict Priority</pre>	
Error Messages	N/A	
Related Commands	moxa (config-if)# qos scheduler-type {strict-priority wrr}	

Egress Shaper

Configure Shaper Setting

Commands

qos shaper cir <cir(1-1000)> **cbs** <cbs(10-10240)>

Syntax Description	qos	Configure QoS parameters
	shaper	Configure QoS shaper parameters
	cir	Committed Information Rate
	cir(1-1000)	The Committed Information Rate in Kbps
	cbs	Committed Burst Size
	cbs(10-10240)	The Committed Burst Size in Kbytes
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa (config-if)# qos shaper cir 500 cbs 2000	
Error Messages	N/A	
Related Commands	moxa# show qos shaper [interface <iftype> <ifnum>]	

Show Shaper Setting

Commands

show qos shaper [interface <iftype> <ifnum>]

Syntax Description	show	Display configuration/status information
	qos	Display QoS information
	shaper	Display QoS shaper information
	interface	The interface information
	iftype	The interface type
	ifnum	The interface index
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# show qos shaper interface ethernet 1/1 QoS Shaper Statue of Interface Ethernet 1/1 ----- CIR : 1000 CBS : 2000 ----- - moxa# show qos shaper QoS Shaper Statue of Interface Ethernet 1/1 ----- CIR : Disable CBS : Disable QoS Shaper Statue of Interface Ethernet 1/2 ----- CIR : Disable CBS : Disable</pre>	
Error Messages	N/A	
Related Commands	moxa(config-if)# qos shaper cir <cir(1-1000)> cbs <cbs(10-10240)>	

Multicast

IGMP Snooping

Enable/disable System-based IGMP Snooping

Commands

igmp-snooping {enable | disable}

Syntax Description	igmp-snooping	Configure IGMP Snooping parameters
	enable	Enable system-based IGMP Snooping
	disable	Disable system-based IGMP Snooping
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	GMRP has to be disabled in order to enable IGMP snooping	
Examples	<pre>moxa# configure terminal moxa(config)# igmp-snooping enable moxa# configure terminal moxa(config)# igmp-snooping disable</pre>	
Error Messages	<pre>'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.' 'Invalid: VLAN ID cannot have duplicated data.' 'Invalid: VLAN ID must exist in the VLAN configuration.' 'Invalid: The port-channel does not exist.' 'Invalid: this port is a member port of port-channel.' 'Invalid: this port is not a member port of VLAN.'</pre>	
Related Commands	moxa# show igmp-snooping globals	

Configure VLAN-based IGMP Snooping

Commands

igmp-snooping

no igmp-snooping

Syntax Description	no	Remove configuration/delete entry/reset to default value
	igmp-snooping	Configure IGMP Snooping parameters
	querier	Configure the IGMP Snooping role
Defaults	VLAN-based IGMP Snooping is disabled by default	
Command Modes	Config-VLAN Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# configure terminal moxa(config)# vlan 2 moxa(config-vlan)# igmp-snooping moxa# configure terminal moxa(config)# vlan 2 moxa(config-vlan)# no igmp-snooping</pre>	
Error Messages	<pre>'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.'</pre> <pre>'Invalid: VLAN ID cannot have duplicated data.'</pre> <pre>'Invalid: VLAN ID must exist in the VLAN configuration.'</pre> <pre>'Invalid: The port-channel does not exist.'</pre> <pre>'Invalid: this port is a member port of port-channel.'</pre> <pre>'Invalid: this port is not a member port of VLAN.'</pre>	
Related Commands	moxa# show igmp snooping [vlan < vlanid>]	

Configure IGMP Querier Role

Commands

igmp-snooping querier

no igmp-snooping querier

Syntax Description	no	Remove configuration/delete entry/reset to default value
	igmp-snooping	Configure IGMP Snooping parameters
	querier	Configure the IGMP Snooping role
Defaults	By default, the switch is configured as a non-querier	
Command Modes	Config-VLAN Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# configure terminal moxa(config)# vlan 2 moxa(config-vlan)# igmp-snooping moxa(config-vlan)# igmp-snooping querier moxa# configure terminal moxa(config)# vlan 2 moxa(config-vlan)# igmp-snooping moxa(config-vlan)# no igmp-snooping querier</pre>	
Error Messages	<pre>'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.'</pre> <pre>'Invalid: VLAN ID ca not have duplicated data.'</pre> <pre>'Invalid: VLAN ID must exist in the VLAN configuration.'</pre> <pre>'Invalid: The port-channel does not exist.'</pre> <pre>'Invalid: this port is a member port of port-channel.'</pre> <pre>'Invalid: this port is not a member port of VLAN.'</pre>	
Related Commands	moxa# show igmp-snooping [vlan < vlanid>]	

Configure IGMP Snooping Version

Commands

igmp-snooping version {v1 | v2 | v3}

Syntax Description	igmp-snooping	Configure IGMP Snooping parameters
	version	The operating version of the IGMP Snooping switch for a specific VLAN
	v1	Configure IGMP Snooping to Version 1
	v2	Configure IGMP Snooping to Version 2
	v3	Configure IGMP Snooping to Version 3
Defaults	The default IGMP Snooping version is v2	
Command Modes	Config-VLAN Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# configure terminal moxa(config)# vlan 2 moxa(config-vlan)# igmp-snooping moxa(config-vlan)# igmp-snooping version v3</pre>	
Error Messages	<pre>'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.'</pre> <pre>'Invalid: VLAN ID cannot have duplicated data.'</pre> <pre>'Invalid: VLAN ID must exist in the VLAN configuration.'</pre> <pre>'Invalid: The port-channel does not exist.'</pre> <pre>'Invalid: this port is a member port of port-channel.'</pre> <pre>'Invalid: this port is not a member port of VLAN.'</pre>	
Related Commands	moxa# show igmp-snooping [vlan < vlanid>]	

Configure IGMP Snooping General Query Interval

Commands

igmp-snooping query-interval <integer (20 - 600) second>

no igmp-snooping query-interval

Syntax Description	no	Remove configuration/delete entry/reset to default value
	igmp-snooping	Configure IGMP Snooping parameters
	query-interval	The interval in which the general queries are sent by the IGMP Snooping switch when configured as a querier
	integer (20-600)	The general query interval period in seconds
Defaults	The default IGMP Snooping general query interval is set to 125 seconds	
Command Modes	Config-VLAN Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# configure terminal moxa(config)# vlan 2 moxa(config-vlan)# igmp-snooping query-interval 200</pre> <pre>moxa# configure terminal moxa(config)# vlan 2 moxa(config-vlan)# no igmp-snooping query-interval</pre>	
Error Messages	<pre>'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.'</pre> <pre>'Invalid: VLAN ID cannot have duplicated data.'</pre> <pre>'Invalid: VLAN ID must exist in the VLAN configuration.'</pre> <pre>'Invalid: The port-channel does not exist.'</pre> <pre>'Invalid: this port is a member port of port-channel.'</pre> <pre>'Invalid: this port is not a member port of VLAN.'</pre>	
Related Commands	moxa# show igmp-snooping [vlan < vlanid>]	

Assign IGMP Snooping Router Port

Commands

igmp-snooping router-port [<interface-type> <slot/port-port,slot/port,...>] [port-channel <integer>]

no igmp-snooping router-port [<interface-type> <slot/port-port,slot/port,...>] [port-channel <integer>]

Syntax Description	no	Remove configuration/delete entry/reset to default value
	igmp-snooping	Configure IGMP Snooping parameters
	router-port	The IGMP Snooping router port status
	interface-type	The interface type
	slot/port-port, slot/port,	The interface list (slot number/port ID, slot number/port ID-port ID....)
	port-channel	The port-channel interface
	integer	The port-channel index
Defaults	N/A	
Command Modes	Config-VLAN Mode	
Usage Guidelines	IGMP snooping of VLAN must enabled	
Examples	<pre>moxa# configure terminal moxa(config)# vlan 2 moxa(config-vlan)# igmp-snooping moxa(config-vlan)# igmp-snooping router-port ethernet 1/1-3 ----- moxa# configure terminal moxa(config)# vlan 2 moxa(config-vlan)# igmp-snooping moxa(config-vlan)# no igmp-snooping router-port ethernet 1/1-3</pre>	
	<pre>'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.'</pre> <pre>'Invalid: VLAN ID cannot have duplicated data.'</pre> <pre>'Invalid: VLAN ID must exist in the VLAN configuration.'</pre> <pre>'Invalid: The port-channel does not exist.'</pre> <pre>'Invalid: this port is a member port of port-channel.'</pre> <pre>'Invalid: this port is not a member port of VLAN.'</pre>	
Related Commands	moxa# show igmp-snooping router-port [Vlan <vlan-id/vfi-id>]	

Show System IGMP Snooping Information

Commands

show igmp-snooping globals

Syntax Description	show	Display configuration/status information
	igmp-snooping	Display IGMP Snooping information
	globals	IGMP Snooping system-based information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show igmp-snooping globals IGMP Snooping global status is enabled</pre>	
Error Messages	<pre>'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.'</pre> <pre>'Invalid: VLAN ID cannot have duplicated data.'</pre> <pre>'Invalid: VLAN ID must exist in the VLAN configuration.'</pre> <pre>'Invalid: The port-channel does not exist.'</pre> <pre>'Invalid: this port is a member port of port-channel.'</pre> <pre>'Invalid: this port is not a member port of VLAN.'</pre>	
Related Commands	moxa(config)# igmp-snooping {enable disable}	

Show IGMP Information of VLAN

Commands

show igmp-snooping [vlan <vlan-id/vfi-id>]

Syntax Description	show	Display configuration/status information
	igmp-snooping	Display IGMP Snooping information
	vlan	Protocol specific information for the VLAN
	vlan-id/vfi-id	The VLAN ID range between 1-4094 and the VFI ID range between 4096-65535
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show igmp-snooping vlan 1 IGMP Snooping VLAN Configuration for the VLAN 1 IGMP Snooping enabled IGMP Snooping configured version V2 IGMP Snooping is configured as Non-Querier IGMP Snooping is acting as Non-Querier General Query Interval is 125 seconds Startup Query Interval is 31 seconds Startup Query Count is 2 Other Querier Present Interval is 255 seconds</pre>	
Error Messages	<pre>'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.'</pre> <pre>'Invalid: VLAN ID cannot have duplicated data.'</pre> <pre>'Invalid: VLAN ID must exist in the VLAN configuration.'</pre> <pre>'Invalid: The port-channel does not exist.'</pre> <pre>'Invalid: this port is a member port of port-channel.'</pre> <pre>'Invalid: this port is not a member port of VLAN.'</pre>	
Related Commands	<pre>moxa(config-vlan)# igmp-snooping moxa(config-vlan)# igmp-snooping querier moxa(config-vlan)# igmp-snooping version {v1 v2 v3} moxa(config-vlan)# igmp-snooping query-interval <(20 - 600) second></pre>	

Show IGMP Information of Forwarding Database

Commands

show igmp-snooping forwarding-database [vlan <vlan-id/vfi-id>]

Syntax Description	show	Display configuration/status information																
	igmp-snooping	Display IGMP Snooping information																
	forwarding-database	Display the forwarding database																
	vlan	Protocol specific information for the VLAN																
	vlan-id/vfi-id	The VLAN ID range between 1-4094 and the VFI ID range between 4096-65535																
Defaults	N/A																	
Command Modes	User EXEC Privileged EXEC																	
Usage Guidelines	N/A																	
Examples	<pre>moxa# show igmp-snooping forwarding-database vlan1</pre> <table border="1"> <thead> <tr> <th>VLAN</th> <th>Group Address</th> <th>Source Address</th> <th>Port List</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12.0.0.10</td> <td>227.1.1.1</td> <td>Eth1/1, Eth1/3, Eth1/4</td> </tr> <tr> <td>1</td> <td>12.0.0.20</td> <td>227.1.1.1</td> <td>Eth1/1, Eth1/3, Eth1/4</td> </tr> <tr> <td>1</td> <td>12.0.0.30</td> <td>227.1.1.1</td> <td>Eth1/1, Eth1/2, Eth1/4</td> </tr> </tbody> </table>		VLAN	Group Address	Source Address	Port List	1	12.0.0.10	227.1.1.1	Eth1/1, Eth1/3, Eth1/4	1	12.0.0.20	227.1.1.1	Eth1/1, Eth1/3, Eth1/4	1	12.0.0.30	227.1.1.1	Eth1/1, Eth1/2, Eth1/4
VLAN	Group Address	Source Address	Port List															
1	12.0.0.10	227.1.1.1	Eth1/1, Eth1/3, Eth1/4															
1	12.0.0.20	227.1.1.1	Eth1/1, Eth1/3, Eth1/4															
1	12.0.0.30	227.1.1.1	Eth1/1, Eth1/2, Eth1/4															
Error Messages	'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.' 'Invalid: VLAN ID cannot have duplicated data.' 'Invalid: VLAN ID must exist in the VLAN configuration.' 'Invalid: The port-channel does not exist.' 'Invalid: this port is a member port of port-channel.' 'Invalid: this port is not a member port of VLAN.'																	
Related Commands	N/A																	

Show IGMP Information of Group Membership Table

Commands

show igmp-snooping groups [vlan <vlan-id/vfi-id>]

Syntax Description	show	Display configuration/status information										
	igmp-snooping	Display IGMP Snooping information										
	groups	The group table information										
	vlan	Protocol specific information for the VLAN										
	vlan-id/vfi-id	The VLAN ID range between 1-4094 and the VFI ID range between 4096-65535										
Defaults	N/A											
Command Modes	User EXEC Privileged EXEC											
Usage Guidelines	N/A											
Examples	<pre>moxa# show igmp-snooping groups vlan 1</pre> <table border="1"> <thead> <tr> <th>VLAN</th> <th>Group Address</th> <th>Filter Mode</th> <th>Port List</th> <th>Source Address</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>224.1.1.1</td> <td>EXCLUDE</td> <td>Eth 1/1</td> <td>192.168.127.251</td> </tr> </tbody> </table>		VLAN	Group Address	Filter Mode	Port List	Source Address	1	224.1.1.1	EXCLUDE	Eth 1/1	192.168.127.251
VLAN	Group Address	Filter Mode	Port List	Source Address								
1	224.1.1.1	EXCLUDE	Eth 1/1	192.168.127.251								
Error Messages	'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.' 'Invalid: VLAN ID cannot have duplicated data.' 'Invalid: VLAN ID must exist in the VLAN configuration.' 'Invalid: The port-channel does not exist.' 'Invalid: this port is a member port of port-channel.' 'Invalid: this port is not a member port of VLAN.'											
Related Commands	N/A											

Show IGMP Information of Router Port

Commands

show igmp-snooping router-port [vlan <vlan-id/vfi-id>]

Syntax Description	show	Display configuration/status information
	igmp-snooping	Display IGMP Snooping information
	router-port	The IGMP Snooping router port status
	vlan	Protocol specific information for the VLAN
	vlan-id/vfi-id	The VLAN ID range between 1-4094 and the VFI ID range between 4096-65535
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show igmp-snooping router-port VLAN Static Router Port List ----- 1 Eth 1/1 VLAN Dynamic Router Port List ----- 1 Eth 1/3</pre>	
Error Messages	'Invalid: If IGMP snooping is enabled, then GMRP must be disabled.' 'Invalid: VLAN ID cannot have duplicated data.' 'Invalid: VLAN ID must exist in the VLAN configuration.' 'Invalid: The port-channel does not exist.' 'Invalid: this port is a member port of port-channel.' 'Invalid: this port is not a member port of VLAN.'	
Related Commands	<pre>moxa(config-vlan)# igmp-snooping router-port [<interface-type> <slot/port- port,slot/port,...>] [port-channel <integer>]</pre>	

GMRP

Show Global GMRP information

Commands

show vlan device info

Syntax Description	show	Display configuration/statistics/general information
	show vlan device info	Display the VLAN device information
Defaults	N/A	
Command Modes	Privileged EXEC Mode.	
Usage Guidelines	N/A	
Examples	moxa# show vlan device info vlan device configurations ----- vlan Status : Enabled vlan Oper status : Enabled gvrp status : Disabled gmrp status : Disabled gvrp Oper status : Disabled gmrp Oper status : Disabled Mac-vlan Status : Disabled Subnet-vlan Status : Disabled Protocol-Vlan Status : Enabled Bridge Mode : Provider Edge Bridge Base-Bridge Mode : Vlan Aware Bridge Traffic Classes : Enabled vlan Operational Learning Mode : IVL Hybrid Default Learning Mode : IVL Version number : 1 Max Vlan id : 4158 Max supported vlans : 4160 Global mac learning status : Enabled Filtering Utility Criteria : Enabled Unicast mac learning limit : 768	
Error Messages	N/A	
Related Commands	moxa(config)# set gmrp enable	

Show Port GMRP Information

Commands

show vlan port config [{port <interface-id> }]

Syntax Description	show	Display configuration/statistics/general information
	show vlan port config	Display VLAN port configuration
	port interface-id	The input port number
Defaults	N/A	
Command Modes	Privileged EXEC Mode.	
Usage Guidelines	N/A	
Examples	<pre> moxa# show vlan port config 1/1 vlan Port configuration table ----- Port 1-1 Bridge Port Type : Customer Bridge Port Port Vlan ID : 1 Port Acceptable Frame Type : Admit All Port Mac Learning Status : Enabled Port Ingress Filtering : Disabled Port Mode : Hybrid Port Gvrp Status : Enabled Port Gmrp Status : Disabled Port Gvrp Failed Registrations : 0 Gvrp last pdu origin : 00:00:00:00:00:00 Port Restricted Vlan Registration : Disabled Port Restricted Group Registration : Enabled Mac Based Support : Disabled Subnet Based Support : Disabled Port-and-Protocol Based Support : Enabled Default Priority : 0 Filtering Utility Criteria : Default Port Protected Status : Disabled Ingress EtherType : 0x8100 Egress EtherType : 0x8100 Egress TPID Type : Portbased Allowable TPID 1 : 0x0 Allowable TPID 2 : 0x0 Allowable TPID 3 : 0x0 Reflection Status : Disabled </pre>	
Error Messages	N/A	
Related Commands	<pre> moxa(config)# set port gmrp enable moxa(config-if)# group restrict enable </pre>	

Configure GMRP Global Setting

Commands

gmrp { enable | disable }

Syntax Description	gmrp	Configure the GMRP parameters
	enable	Enable GMRP on all switch ports and automatically start the GARP on the switch if the GARP is disabled.
	disable	Disable GMRP on all switch ports.
Defaults	Global GMRP is disabled by default	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# gmrp enable	
Error Messages	N/A	
Related Commands	moxa# show vlan device info	

Configure GMRP Port Setting

Commands

gmrp

no gmrp

Syntax Description	gmrp	Configure the GMRP parameters
Defaults	GMRP is enabled by default	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# interface ethernet 1/1 moxa(config-if)# no gmrp	
Error Messages	N/A	
Related Commands	moxa# show vlan port config	

Configure GMRP Group Restricted Setting

Commands

group restricted {enable | disable }

Syntax Description	group restricted	Configure the restricted group registration on a specified port
	enable	Enable restricted group registration on the port
	disable	Disable restricted group registration on the port
Defaults	GMRP group restriction is disabled by default	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# group restricted	
Error Messages	Wrong interface type for port	
Related Commands	moxa# show vlan port config	

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 {port-channel <integer> | <interface-type> <interface-id>}]

Syntax Description	mac-address-table	Display the MAC address table information
	static multicast	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:aa>	Display the specified multicast MAC address in the FDB table
	interface <interface-type> <interface-id> / Port-channel <integer>	Display all specified interface entries in the FDB table
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	Display static multicast address table	
Examples	moxa# show mac-address-table static multicast Static Multicast Table ----- Vlan : 1 Mac Address : 01:02:03:04:05:06 Member Ports : Eth1/1 Forbidden Ports : Eth1/2 Status : Permanent ----- Total Mac Addresses displayed: 1	
Error Messages	N/A	
Related Commands	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 I <integer>] [forbidden-ports [<interface-type> <slot/port-port,slot/port,...>] [port-channel <integer>]] [status permanent]

Syntax Description	mac-address-table	Configure the MAC address table
	static multicast	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 and forbidden port.
	set	Overwrite the new interface port and forbidden port
	interface	Configure member ports details.
	forbidden-ports	Configure the set of ports to which frames destined for a specific multicast MAC address must not be forwarded, such as from GMRP.
	status	The status of the static multicast entry.
	permanent	Entry remains even after the next reset of the bridge
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Configure the static multicast address	
Examples	moxa(config)# mac-address-table static multicast 01:02:03:04:05:06 vlan 1 add interface ethernet 1/1-2 forbidden-ports ethernet 2/1-2	
Error Messages	"Invalid: Duplicate MAC Address." "Invalid: Configuration fail." "Invalid: The port is not included in VLAN egress ports." "Invalid: The MAC+VID entry must be removed from Port Security first." "Invalid: The port must remove from port security." "Invalid: Reserved multicast address (01:80:C2) is not allowed to set static multicast." "Invalid: Egress Ports and Forbidden Ports are overlapping."	
Related Commands	show mac-address-table static multicast	

IP Configuration (L2)

Configure IP Management Address

Commands

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

Syntax Description	ip	Configure IP parameters
	management	Configure IPv4 management address parameters
	address	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
Defaults	ipv4-address: 192.168.127.253 ipv4-netmask: 255.255.255.0 ipv4-gateway: 0.0.0.0	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	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	
Error Messages	Invalid: Invalid IPv4 Management Address ipv4-address/ipv4-netmask. Invalid: Gateway ipv4-gateway is not reachable.	
Related Commands	N/A	

Network Interface (L3)

Configure the Interface Settings

Commands

interface vlan <vlanid>

no interface vlan <vlan_id>

Syntax Description	no	Remove configuration/delete entry/reset to default value
	interface	Configure interface parameters
	vlan	VLAN interface
	vlanid	VLAN ID
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 10	
Error Messages	Invalid: Invalid IPv4 Address ipv4_config['ipAddress']/ ipv4_config['netmask'] Invalid: This IPv4 address overlaps with other Interface IPv4 address. Invalid: [data.l3VlanIfTable] must contain less than or equal to 256 items. Invalid: Interface name is duplicated. Invalid: No such interface.	
Related Commands	N/A	

Configure Interface Alias Description

Commands

description <string(63)>

no description

Syntax Description	no	Remove configuration/delete entry/reset to default value
	description	Set the mnemonic name of this interface
	<string(63)>	The specific mnemonic name for the interface
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface 10 moxa(config-if)# description "Switch interface 10"	
Error Messages	Invalid: Invalid IPv4 Address ipv4_config['ipAddress']/ ipv4_config['netmask'] Invalid: This IPv4 address overlaps with other Interface IPv4 address. Invalid: [data.l3VlanIfTable] must contain less than or equal to 256 items. Invalid: Interface name is duplicated. Invalid: No such interface.	
Related Commands	N/A	

Enable/Disable the Interface

Commands

shutdown

no shutdown

Syntax Description	no	Remove configuration/delete entry/reset to default value
	shutdown	Shutdown the interface
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 10 moxa(config-if)# shutdown	
Error Messages	Invalid: Invalid IPv4 Address ipv4_config['ipAddress']/ ipv4_config['netmask'] Invalid: This IPv4 address overlaps with other Interface IPv4 address. Invalid: [data.l3VlanIfTable] must contain less than or equal to 256 items. Invalid: Interface name is duplicated. Invalid: No such interface.	
Related Commands	N/A	

Configure the IPv4 Address for the Interface

Commands

ip address <ip-address> <subnet-mask>

no ip address <ip-address>

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ip address	Configure the interface IPv4 address
	<ip-address>	IPv4 address string
	<subnet-mask>	Should be 255.255.255.255.
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa(config)# interface vlan 10 moxa(config-if)# ip address 10.10.10.10 255.255.255.255 moxa(config-if)# no ip address 10.10.1.2</pre>	
Error Messages	<p>Invalid: Invalid IPv4 Address ipv4_config['ipAddress']/ ipv4_config['netmask']</p> <p>Invalid: This IPv4 address overlaps with other Interface IPv4 address.</p> <p>Invalid: [data.l3VlanIfTable] must contain less than or equal to 256 items.</p> <p>Invalid: Interface name is duplicated.</p> <p>Invalid: No such interface.</p>	
Related Commands	N/A	

Show Interface Information

Commands

show ip interface [vlan <vlan-id>]

Syntax Description	show	Display configuration/statistics/general information
	ip	IP related information
	interface	Interface related information
	vlan	VLAN related information
	<vlan-id>	Specified vlan ID
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ip interface vlan1 is up, line protocol is up Internet Address is 192.168.127.250/24 Broadcast Address 192.168.127.255 vlan40 is up, line protocol is up Internet Address is 192.168.40.253/24 Broadcast Address 192.168.40.255 vlan30 is up, line protocol is down Internet Address is 30.100.1.253/24 Broadcast Address 30.100.1.2550</pre>	
Error Messages	% Invalid interface Index	
Related Commands	N/A	

Configure Interface MTU

Commands

ip mtu <mtu size>

Syntax Description	ip	Configure IP related configuration
	mtu	Maximum transmission unit
	mtu size	The size of the allowable MTU in bytes; the legitimate range is 1400 to 3000.
Defaults	N/A	
Command Modes	Interface VLAN Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 10 moxa(config-if)# ip mtu 2000	
Error Messages	Invalid input detected	
Related Commands	N/A	

Show MTU Settings of the Existing Interfaces

Commands

show interfaces mtu [vlan <vlan_id>]

Syntax Description	show	Display configuration/statistics/general information
	interfaces	Display interface information
	mtu	Maximum transmission unit size
	vlan	VLAN related information
	<vlan id>	Specified VLAN ID
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	# show interfaces mtu vlan1 MTU size is 1500 vlan40 MTU size is 1518	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable Proxy ARP

Commands

ip proxy-arp

no ip proxy-arp

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ip	Configure IP related configuration
	proxy-arp	Proxy ARP related configuration
Defaults	N/A	
Command Modes	Interface VLAN Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 10 moxa(config-if)# ip proxy-arp	
Error Messages	N/A	
Related Commands	N/A	

Show ARP Status for the Existing Interfaces

Commands

show ip proxy-arp

Syntax Description	show	Display configuration/statistics/general information
	ip	IP related configuration
	proxy-arp	Proxy-arp status
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip proxy-arp PROXY ARP Status ----- vlan1 : Disabled vlan2 : Disabled vlan3 : Disabled	
Error Messages	N/A	
Related Commands	N/A	

Configure DNS Server Settings

Commands

ip management name-server server-index server-address

no ip management name-server server-index

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ip	Configure IP parameters
	management	Configure IPv4 management address parameters
	name-server	Configure the IPv4 DNS address of the device
	server-index	Index of DNS, range from 1 to 2
	server-address	IPv4 address of DNS
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# ip management name-server 1 1.1.1.1 moxa(config)# no ip management name-server 1	
Error Messages	N/A	
Related Commands	N/A	

Redundancy

Layer 2 Redundancy

Spanning Tree

Enable/Disable Spanning Tree

Commands

spanning-tree

no spanning-tree

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	spanning-tree	Configure Spanning Tree Protocol parameters
Defaults	Spanning Tree Protocol is disabled by default	
Command Modes	Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree moxa(config-if)# no spanning-tree	
Error Messages	Invalid: Port channel member port cannot be assigned to a redundant protocol. Invalid: Redundant Protocol and Port Security cannot be enabled on the same port. Invalid: Redundant Protocol and 802.1x/MAB cannot be enabled on the same port. Invalid: The port-channel group does not exist.	
Related Commands	show spanning-tree detail show spanning-tree summary	

Configure Spanning Tree Compatibility

Commands

spanning-tree compatibility { stp | rstp }

no spanning-tree compatibility

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

Enable/disable SWIFT mode on Spanning Tree

Commands

spanning-tree swift { disable | enable }

Syntax Description	spanning-tree	Configures spanning tree related protocol
	swift	Swift mode
	enable	Enable BPDU filter on specific spanning port

	disable	Disable BPDU filter on specific spanning port
Defaults	disable	
Command Modes	Global Configuration	
Usage Guidelines	Global configuration	
Examples	moxa(config)# spanning-tree swift enable	
Error Messages	Invalid: RSTP priority is 0, swift mode can't enable.	
Related Commands	show spanning-tree swift	

Enable/Disable SWIFT Preempt Mode of Spanning Tree

Commands

spanning-tree swift preempt { enable | disable }

Syntax Description	spanning-tree	Configures spanning tree related protocol
	swift	Swift mode
	preempt	Preempt mode related configuration
	enable	Enable preempt mode
	default	Disable preempt mode
Defaults	disabled	
Command Modes	Global Configuration	
Usage Guidelines	Global configuration	
Examples	moxa(config)# spanning-tree swift preempt enable	
Error Messages	N/A	
Related Commands	show spanning-tree swift	

Display SWIFT of Spanning Tree Status

Commands

show spanning-tree swift status

Syntax Description	show	Displays the Configuration /statistics/General Information
	spanning-tree	Spanning-tree related information
	swift	swift spanning-tree information
	status	status swift related information
Defaults	N/A	
Command Modes	User EXEC Mode	
Usage Guidelines	N/A	
Examples	moxa# show spanning-tree swift status operation status : inactive (Secondary) inactive reason : Two physical links required between Primary and Secondary switch. preempt : Enable	
Error Messages	N/A	
Related Commands	N/A	

Configure Spanning Tree Priority

Commands

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

no spanning-tree priority

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

Syntax Description	no	Disable the configuration/deletes the entry/resets to default value
	spanning-tree	Configure Spanning Tree Protocol parameters
	forward-time	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
Defaults	The default forwarding time is 15 seconds	
Command Modes	Global Configuration	
Usage Guidelines	Command "no spanning-tree forward-time" will reset to default value $2 * (\text{ForwardDelay} - 1) \geq \text{MaxAge} \geq 2 * (\text{Hello Time} + 1)$	
Examples	moxa# configure terminal moxa(config)# spanning-tree forward-time 16 moxa(config)# no spanning-tree forward-time	
Error Messages	% RSTP: $2 * (\text{Forward time} - 1) \geq \text{Max age time} \geq 2 * (\text{Hello time} + 1)$	
Related Commands	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

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

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

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

Configure Spanning Tree Auto-edge

Commands

spanning-tree auto-edge

no spanning-tree auto-edge

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

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	spanning-tree	Configure Spanning Tree Protocol
	cost	Configure the path cost
	value	The Spanning Tree cost ranging from 0 to 200000000
Defaults	The default path cost is set to 0	
Command Modes	Interface Configuration	
Usage Guidelines	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	
Examples	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree cost 20000 moxa(config-if)# no spanning-tree cost	
Error Messages	N/A	
Related Commands	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

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	spanning-tree	Configure Spanning Tree Protocol parameters
	link-type	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 a a point-to-point link
	shared	Set the link as a shared link
Defaults	The default Spanning Tree link-type is set to auto-detect	
Command Modes	Interface Configuration	
Usage Guidelines	The "no spanning-tree link-type" command will auto-detect the interface link type based on the port duplex mode	
Examples	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	
Error Messages	N/A	
Related Commands	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

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

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	spanning-tree	Configure Spanning Tree Protocol parameters
	port-priority	Configure the port priority value
	value	The Spanning Tree port priority ranging from 0 to 240
Defaults	The default Spanning Tree port priority is set to 128	
Command Modes	Interface Configuration	
Usage Guidelines	The "no spanning-tree port-priority" command will restore the default value	
Examples	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	
Error Messages	N/A	
Related Commands	show spanning-tree detail show spanning-tree interface ethernet 1/1 show spanning-tree interface ethernet 1/1 detail	

Enable/Disable MSTP

Commands

mstp { enable | disable }

Syntax Description	mstp	Configure MSTP related parameters
	enable	Enable MSTP
	disable	Disable MSTP
Defaults	Disabled	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# mstp enable moxa# configure moxa(config)# mstp disable	
Error Messages	N/A	
Related Commands	N/A	

Configure the Compatibility Version for Multiple Spanning Tree Protocol

Commands

spanning-tree mst compatibility { stp | rstp | mstp }

Syntax Description	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	compatibility	Spanning tree compatibility version
	stp	Spanning Tree Protocol configuration
	rstp	Rapid Spanning Tree configuration
	mstp	Multiple Spanning Tree
Defaults	Disabled	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# spanning-tree mst compatibility mstp	
Error Messages	N/A	
Related Commands	N/A	

Remove Multiple Spanning Tree Protocol Compatibility

Commands

no spanning-tree mst compatibility

Syntax Description	no	Remove configuration/delete entry/reset to default value
	mst	Multiple Spanning Tree
	spanning-tree	Configure the related spanning tree parameters
	compatibility	Spanning tree compatibility version
Defaults	mstp (if MSTP enabled) or rstp (if MSTP disabled)	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# no spanning-tree compatibility	
Error Messages	N/A	
Related Commands	N/A	

Configure the Maximum Number of Hops Permitted in MST

Commands

spanning-tree mst max-hops <short(6-40)>

Syntax Description	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	max-hops	Maximum number of hops allowed
	short(6-40)	Value for maximum hops
Defaults	20	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# spanning-tree mst max-hops 40	
Error Messages	N/A	
Related Commands	N/A	

Map VLANs to an MST Instance

Commands

spanning-tree mst instance <short(1-16)> **vlan** <vlan_range> [**priority** <short(0 -61440)>]

Syntax Description	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Value for maximum hops
	vlan	VLAN range associated with a spanning tree instance
	vlan_range	Range (1-4094) of VLANs separated by a hyphen, or a series of VLANs separated by a comma
	priority	Switch priority configuration for spanning tree instance
short(0-61440)	Priority value	
Defaults	20	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# spanning-tree mst instance 2 vlan 5-10 moxa(config)# spanning tree mst instance 3 vlan 15-50 priority 4096	
Error Messages	N/A	
Related Commands	N/A	

Delete the MST Instance or Remove VLANs from MST Instance

Commands

no spanning-tree mst instance <short(1-16)> [**vlan** <vlan_range >]

Syntax Description	no	Remove configuration/delete entry/reset to default value
	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Instance ID
	vlan	VLAN range associated with a spanning tree instance
	vlan_range	Range (1-4094) of VLANs separated by a hyphen, or a series of VLANs separated by a comma
Defaults	No	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# no spanning-tree mst instance 2 moxa(config)# no spanning tree mst instance 1 vlan 5	
Error Messages	N/A	
Related Commands	N/A	

Configure Bridge Priority for Spanning Tree

Commands

spanning-tree mst {**instance** <short(1-16)> | **cist**} **priority** <short(0 -61440)>

Syntax Description	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Instance ID
	Cist	Common Internal Spanning Tree
	priority	Switch priority configuration for spanning tree instance
	short(0-61440)	Priority value
Defaults	Priority: 32768	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# spanning-tree mst instance 1 priority 28672	
Error Messages	N/A	
Related Commands	N/A	

Reset Bridge Priority for the Spanning Tree to Its Default Value

Commands

no spanning-tree mst {instance <short(1-16)> | cist} priority

Syntax Description	no	Remove configuration/delete entry/reset to default value
	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Instance ID
	cist	Common Internal Spanning Tree
	priority	Switch priority configuration for spanning tree instance
Defaults	Priority: 32768	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# no spanning-tree mst instance 1 priority	
Error Messages	N/A	
Related Commands	N/A	

Set Up Spanning Tree MST Region Name

Commands

spanning-tree mst { name <string(32)> | revision <short(0-65535)> }

Syntax Description	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	name	Configure name for the MST region
	string(32)	Configuration name
	revision	Configure revision number for the MST region
short(0-65535)	Revision number for the MST region	
Defaults	Name: MAC address, Revision: 0	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# spanning-tree mst name MSTP moxa(config)# spanning-tree mst revision 20	
Error Messages	N/A	
Related Commands	N/A	

Delete Spanning Tree MST Region Name

Commands

no spanning-tree mst { name | revision }

Syntax Description	no	Remove configuration/delete entry/reset to default value
	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	name	Configuration name
	revision	Configure revision number for the MST region
Defaults	Name: MAC address, Revision: 0	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# no spanning-tree mst name moxa(config)# no spanning-tree mst revision	
Error Messages	N/A	
Related Commands	N/A	

Configure MSTP Timer

Commands

```
spanning-tree mst { forward-time <seconds(4-30)> | hello-time <seconds(1-2)> | max-age <seconds(6-40)> }
```

Syntax Description	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	forward-time	Interval (in seconds) until which a port stays in a state before moving to next state
	seconds(4-30)	Forward delay value
	hello-time	Interval (in seconds) between the transmission of configuration BPDUs
	seconds(1-2)	Hello time value
	max-age	Maximum age (in seconds) for learnt STP information before discarding
seconds(6-40)	Value representing maximum age	
Defaults	forward time: 15, hello-time: 2, max-age: 20	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa-(config)# spanning-tree mst forward-time 16 moxa-(config)# spanning-tree mst hello-time 1 moxa-(config)# spanning-tree mst max-age 30	
Error Messages	N/A	
Related Commands	N/A	

Reset the MSTP Timer to the Default Value

Commands

```
no spanning-tree mst { forward-time | hello-time | max-age }
```

Syntax Description	no	Remove configuration/delete entry/reset to default value
	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	forward-time	Interval (in seconds) until which a port stays in a state before moving to next state
	hello-time	Interval (in seconds) between the transmission of configuration BPDUs
	max-age	Maximum age (in seconds) for learnt STP information before discarding
Defaults	forward time: 15, hello-time: 2, max-age: 20	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa-(config)# no spanning-tree mst forward-time moxa-(config)# no spanning-tree mst hello-time moxa-(config)# no spanning-tree mst max-age	
Error Messages	N/A	
Related Commands	N/A	

Enable Spanning Tree MST Instance on This Port

Commands

```
spanning-tree mst { instance <short(1-16)> | cist | all }
```

Syntax Description	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Instance ID
	cist	Common Internal Spanning Tree
	all	All instances on the device including CIST
Defaults	Disabled	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree mst instance 1	
Error Messages	N/A	
Related Commands	N/A	

Disable Spanning Tree MST Instance on This Port

Commands

```
no spanning-tree mst { instance <short(1-16)> | cist | all }
```

Syntax Description	no	Remove configuration/delete entry/reset to default value
	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Instance ID
	cist	Common Internal Spanning Tree
all	All instances on the device including CIST	
Defaults	Disabled	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# no spanning-tree mst instance 1	
Error Messages	N/A	
Related Commands	N/A	

Configure Spanning Tree Properties of an Interface for MSTP

Commands

```
spanning-tree mst {instance <short(1-16)> | cist } { cost <integer(1-200000000)> | port-priority <short(0-240)> }
```

Syntax Description	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Instance ID
	cist	Common Internal Spanning Tree
	cost	The cost associate with the port
	integer(1-200000000)	The cost value associated with the port
	port-priority	Port priority
short(0-240)	Port priority value	
Defaults	cost: 0, port-priority: 128	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree mst instance 1 cost 200 moxa(config-if)# spanning-tree mst instance 1 port-priority 144	
Error Messages	N/A	
Related Commands	N/A	

Reset Spanning Tree Properties of an Interface to Default Value

Commands

```
no spanning-tree mst { instance <short(1-16)> | cist } { cost | port-priority }
```

Syntax Description	no	Remove configuration/delete entry/reset to default value
	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Instance ID
	cist	Common Internal Spanning Tree
	cost	The cost associate with the port
	port-priority	Port priority
Defaults	cost: 0, port-priority: 128	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# no spanning-tree mst instance 1 cost moxa(config-if)# no spanning-tree mst instance 1 port-priority	
Error Messages	N/A	
Related Commands	N/A	

Show Multiple Spanning Tree Information

Commands

show spanning-tree mst [**instance** <short(1-16)>] [**detail**]

Syntax Description	show	Display configuration/status information
	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Instance ID
detail	Detailed information for the spanning tree mst instance	
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	moxa# show spanning-tree mst moxa# show spanning-tree mst detail moxa# show spanning-tree mst instance 1 moxa# show spanning-tree mst instance 1 detail	
Error Messages	N/A	
Related Commands	N/A	

Show Multiple Spanning Tree Instance Configuration

Commands

show spanning-tree mst configuration

Syntax Description	show	Display configuration/status information
	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple spanning tree instance
	configuration	Multiple spanning tree instance configuration
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	moxa# show spanning-tree mst configuration	
Error Messages	N/A	
Related Commands	N/A	

Show Multiple Spanning Tree Port Specific Configuration

Commands

show spanning-tree mst [**instance** <short(1-16)>] **interface** { <iftype> <ifnum> | **port-channel** <integer> } [{ **stats** | **detail** }]

Syntax Description	show	Display configuration/status information
	spanning-tree	Configure the related spanning tree parameters
	mst	Multiple Spanning Tree
	instance	An MST instance
	short(1-16)	Instance ID
	interface	Detailed information for the spanning tree mst instance
	iftype	Interface type
	ifnum	Interface ID
	port-channel	Port channel interface
	integer	Port channel ID
	stats	Input and output packets by switching path for the interface
	detail	Detailed multiple spanning tree port specific configuration
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# show spanning-tree mst interface ethernet 1/1 moxa# show spanning-tree mst interface port-channel 1 moxa# show spanning-tree mst instance 1 interface ethernet 1/1 moxa# show spanning-tree mst instance 1 interface port-channel 1 moxa# show spanning-tree mst interface ethernet 1/1 stats moxa# show spanning-tree mst interface port-channel 1 detail moxa# show spanning-tree mst instance 1 interface ethernet 1/1 stats moxa# show spanning-tree mst instance 1 interface port-channel 1 detail</pre>	
Error Messages	N/A	
Related Commands	N/A	

Configure Spanning Tree BPDU Guard

Commands

spanning-tree bpduguard

no spanning-tree bpduguard

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	spanning-tree	Configure Spanning Tree Protocol parameters
	bpduguard	Configures an interface to transition into the error-disabled state when it receives a BPDU
Defaults	Spanning Tree BPDU guard is disabled by default	
Command Modes	Interface Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree bpduguard moxa(config-if)# no spanning-tree bpduguard</pre>	
Error Messages	N/A	
Related Commands	<pre>show spanning-tree detail show spanning-tree interface gigabitethernet 0/1 bpduguard show spanning-tree interface gigabitethernet 0/1 detail</pre>	

Configure Spanning Tree BPDU Filter

Commands

spanning-tree bpdudfilter

no spanning-tree bpdudfilter

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

Configure Spanning Tree Root Guard

Commands

spanning-tree rootguard

no spanning-tree rootguard

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	spanning-tree	Configure Spanning Tree Protocol parameters
	rootguard	Configure Root Guard
Defaults	Spanning Tree root guard is disabled by default	
Command Modes	Interface Configuration	
Usage Guidelines	The Root guard function cannot be enabled on a port that has loop guard enabled	
Examples	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree rootguard moxa(config-if)# no spanning-tree rootguard	
Error Messages	% RSTP: loopGuard and rootGuard should be exclusive	
Related Commands	show spanning-tree detail show spanning-tree interface ethernet 1/1 show spanning-tree interface ethernet 1/1 detail	

Configure Spanning Tree Loop Guard

Commands

spanning-tree loopguard

no spanning-tree loopguard

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	spanning-tree	Configure Spanning Tree Protocol parameters
	loopguard	Configure Loop Guard
Defaults	Spanning Tree loop guard is disabled by default	
Command Modes	Interface Configuration	
Usage Guidelines	The loop guard function cannot be enabled on a port that has portfast enabled The loop guard function cannot be enabled on a port that has root guard enabled	
Examples	moxa# configure terminal moxa(config)# interface ethernet 1/1 moxa(config-if)# spanning-tree loopguard moxa(config-if)# no spanning-tree loopguard	
Error Messages	% RSTP: loopGuard and rootGuard should be exclusive	
Related Commands	show spanning-tree detail show spanning-tree interface ethernet 1/1 show spanning-tree interface ethernet 1/1 detail	

Configure Spanning Tree Errordisable Recovery Interval

Commands

spanning-tree errordisable recovery-interval <second (30-65535)>

no spanning-tree errordisable recovery-interval

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	spanning-tree	Configure Spanning Tree Protocol
	errordisable	Configure the error-disable timer
	recovery-interval	The interval (in seconds) for a port to recover from error-disabled state
	second	The errordisable recovery interval ranging from 30 to 65535 seconds
Defaults	The default error-disabled recovery interval is set to 300 seconds	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# spanning-tree errordisable recovery-interval 30	
Error Messages	N/A	
Related Commands	show spanning-tree detail	

Clear Spanning Tree Detected Protocols

Commands

clear spanning-tree detected protocols interface { <interface-id> | port-channel <integer> }

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

Show Spanning Tree Bridge Information

Commands

show spanning-tree bridge

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

Show Spanning Tree Root Information

Commands

show spanning-tree root

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

Show Spanning Tree Interface Information

Commands

show spanning-tree interface { ethernet <slot/port> | port-channel <id> }

show spanning-tree interface { ethernet <slot/port> | port-channel <id> } detail

show spanning-tree interface { ethernet <slot/port> | port-channel <id> } inconsistency

Syntax Description	show	Display the configuration/statistics/general information
	spanning-tree	Spanning Tree-related information
	interface	Spanning Tree interface information
	ethernet <slot/port>	The Ethernet slot or port number
	port-channel <id>	The port channel ID
	detail	Detailed information about the port and bridge
	inconsistency	Spanning Tree inconsistent state information
Defaults	N/A	
Command Modes	User EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# show spanning-tree interface ethernet 1/2 moxa# show spanning-tree interface ethernet 1/2 inconsistency moxa# show span in eth 1/1</pre>	
	<pre>Root State Cost Prio Type ----- ----- ----- ----- ----- Disabled Disable 200000000 128 SharedLAN moxa# show span in eth 1/1 incon BPDU Inconsist: False Root Inconsist: False Loop Inconsist: False moxa#</pre>	
Error Messages	N/A	
Related Commands	N/A	

Show Spanning Tree Details

Commands

show spanning-tree [detail]

show spanning-tree active [detail]

Syntax Description	show	Display the configuration/statistics/general information
	spanning-tree	Spanning Tree related information
	detail	Detailed Spanning Tree information
	active	Spanning Tree information of active ports
Defaults	N/A	
Command Modes	User EXEC Mode	
Usage Guidelines	N/A	
Examples	<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 00:01:02:03:04:05 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Port Enable Role State Cost Prio Type Eth1/1 Disabled Disabled Disabled 200000000 128 SharedLan Eth1/2 Disabled Disabled Disabled 200000000 128 SharedLan Eth1/3 Disabled Disabled Disabled 200000000 128 SharedLan Eth1/4 Disabled Disabled Disabled 200000000 128 SharedLan moxa# show spanning-tree detail Spanning tree Protocol has been disabled Bridge Identifier has priority 32768, Address 00:01:02:03:04:05 Configured Hello time 2 sec, Max Age 20 sec Forward Delay 15 sec Number of Topology Changes 0 Time since topology Change 0 seconds ago Transmit Hold-Count 6 Root Times:Max Age 20 sec Forward Delay 15 sec Hello Time 2 sec Port 1 [Eth1/1] is Disabled, Disabled Port PathCost 200000000, Port Priority 128, Port Identifier 128.1 Designated Root has priority 0, address 00:00:00:00:00:00 Designated Port Id is 0.0, Designated PathCost 0 No of Transition to forwarding State :0 Auto-Edge is disabled PortFast is enabled, Oper-Edge is disabled BPDU Filtering is disabled. BPDU Guard is enabled. Root Guard is disabled. Loop Guard is disabled. Admin LinkType is Auto, Oper LinkType is Shared-Lan BPDUs : sent 0 , received 0 Timers: Hello - 0, Forward Delay - 0, Topology Change - 0, Error Disabled Recovery Interval 300 sec </pre>	
Error Messages	N/A	
Related Commands	N/A	

Turbo Ring v2

Show Turbo Ring v2 Status

Commands

show turbo-ring-v2 { config | status }

Syntax Description	show	Display configuration/statistics/general information
	turbo-ring-v2	Display Turbo Ring v2 information
	config	Ring configuration information
	status	Ring status information
Defaults	N/A	
Command Modes	User EXEC/Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show turbo-ring-v2 config Turbo Ring V2 Module is enabled Ring 1: Enable: enabled Set as master: disabled 1st port: Eth1/1 2nd port: Eth1/2 Ring 2: Enable: disabled Set as master: disabled 1st port: Eth1/3 2nd port: Eth1/4 Coupling: Enable: disabled Mode: Ring coupling(primary) Coupling Port: Eth2/1 moxa# show turbo-ring-v2 status Turbo Ring V2 status: Ring 1: Status: Healthy Master/Slave: Master Master ID: 00:90:e8:00:bb:cc 1st Ring Port Status: Eth1/1 Forwarding 2nd Ring Port Status: Eth1/2 Blocked Ring 2: Status: Master/Slave:--- Master ID: 00:00:00:00:00:00 1st Ring Port Status:--- 2nd Ring Port Status:--- Coupling: Mode:--- Coupling Port: ---</pre>	
Error Messages	N/A	
Related Commands	turbo-ring-v2	

Configure Redundancy Mode Setting

Commands

turbo-ring-v2 { enable | disable }

Syntax Description	turbo-ring-v2	Configure Turbo Ring V2 parameters
	enable	Enable Turbo Ring V2
	disable	Disable Turbo Ring V2
Defaults	Turbo Ring V2 is disabled by default	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# turbo-ring-v2 enable	
Error Messages	Invalid: A maximum of two redundant protocols can be enabled. Invalid: Turbo Chain and Turbo Ring V2 cannot be enabled at the same time. Invalid: Two redundant protocols cannot use the same port. Invalid: Turbo Ring V2 and STP/RSTP cannot be enabled at the same time.	
Related Commands	show turbo-ring-v2 config	

Configure Ring Settings

Commands

turbo-ring-v2 ring-id **primary interface** { port-channel <integer (1-65535)> | <interface-type> <interface-id> } **secondary interface** { port-channel <integer (1-65535)> | <interface-type> <interface-id> }

no turbo-ring-v2 ring-id

Syntax Description	no	Remove configuration/delete entry/reset to default value
	turbo-ring-v2	Configure Turbo Ring V2 parameters
	ring-id	Configure the ring ID (1-2)
	primary	The first ring port
	interface	The port interface
	interface-type	Ethernet
	interface-id	The slot number/port number <1-7>/<1-4>
	port-channel	The port channel interface
	secondary	The second ring port
	interface	The port interface
	interface-type	Ethernet
	interface-id	The slot number/port number <1-7>/<1-4>
	port-channel	The port channel interface
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	At least one turbo ring domain or coupling must be enabled. Two turbo ring domains and coupling cannot be enabled at the same time.	
Examples	moxa(config)# turbo-ring-v2 1 primary interface ethernet 2/1 secondary interface ethernet 2/2	
Error Messages	Invalid: The first and second ring ports cannot be on the same port. Invalid: A ring port cannot belong to both rings. Invalid: A port channel must be created first to be able to assign to a ring port.	
Related Commands	show turbo-ring-v2 { config status }	

Configure the Switch as the Ring Master

Commands

turbo-ring-v2 ring-id master

no turbo-ring-v2 ring-id master

Syntax Description	no	Remove configuration/delete entry/reset to default value
	turbo-ring-v2	Configure Turbo Ring V2 parameters
	ring-id	Configure the ring ID (1-2)
	master	Enable ring master
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# turbo-ring-v2 1 master master - Set turbo ring v2 ring id as master	
Error Messages	N/A	
Related Commands	show turbo-ring-v2 { config status }	

Configure the Primary Port of Ring Coupling

Commands

turbo-ring-v2 coupling primary interface <interface-type> <interface-id>

no turbo-ring-v2 coupling

Syntax Description	no	Remove configuration/delete entry/reset to default value
	turbo-ring-v2	Configure Turbo Ring V2 parameters
	coupling	Configure ring coupling parameters
	primary	Coupling primary mode
	interface	The port interface
	interface-type	Ethernet
	interface-id	The slot number/port number <1-7>/<1-4>
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	At least one turbo ring domain or coupling must be enabled. Two turbo ring domains and coupling cannot be enabled at the same time.	
Examples	moxa(config)# turbo-ring-v2 coupling primary interface ethernet 2/1	
Error Messages	Invalid: Ring coupling cannot be enabled when both rings are enabled. Invalid: There can be one ring enabled if you want to enable ring coupling. Invalid: A ring coupling port cannot be an active ring port.	
Related Commands	show turbo-ring-v2	

Configure Backup Port of Ring Coupling

Commands

turbo-ring-v2 coupling backup interface <interface-type> <interface-id>

no turbo-ring-v2 coupling

Syntax Description	turbo-ring-v2	Configure Turbo Ring V2 parameters
	coupling	Configure ring coupling parameters
	backup	Coupling backup mode
	interface	The port interface
	interface-type	Ethernet
	interface-id	The slot number/port number <1-7>/<1-4>
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	At least one turbo ring domain or coupling must be enabled. Two turbo ring domains and coupling cannot be enabled at the same time.	
Examples	moxa(config)# turbo-ring-v2 coupling backup interface ethernet 2/1	
Error Messages	Invalid: Ring coupling cannot be enabled when both rings are enabled. Invalid: There can be one ring enabled if you want to enable ring coupling. Invalid: A ring coupling port cannot be an active ring port.	
Related Commands	show turbo-ring-v2 { config status }	

Configure Turbo Ring v2 Protection

Commands

turbo-ring-v2 protection action { drop | disable-port}

no turbo-ring-v2 protection action

Syntax Description	turbo-ring-v2	Configure Turbo Ring V2 parameters
	protection	Ring protection related configuration
	action	Configure Ring protection action
	drop	Drop incoming redundant protocol packet
	disable-port	Disable admin status of redundant protocol packet ingress ports
Defaults	No Action	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# turbo-ring-v2 protection action drop	
Error Messages	N/A	
Related Commands	show turbo-ring-v2 { config status }	

Configure Turbo Ring v2 Protection Release Interval

Commands

turbo-ring-v2 protection release interval < release_interval >

Syntax Description	turbo-ring-v2	Configure Turbo Ring V2 parameters
	protection	Ring protection related configuration
	release	Configure the Ring protection release time
	interval	Configure the Ring protection release time
	release_interval	Configure release time in seconds
Defaults	Release interval is default 60	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# turbo-ring-v2 protection release interval 120	
Error Messages	N/A	
Related Commands	show turbo-ring-v2 { config status }	

Turbo Chain

Show Turbo Chain Information

Commands

show turbo-chain

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

Syntax Description	turbo-chain	Configure Turbo Chain parameters
	enable	Enable Turbo Chain
	disable	Disable Turbo Chain
	role	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
	primary interface	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
	secondary interface	Configure the Turbo Chain secondary port
	The interface of Turbo Chain	
Defaults	Turbo Chain is disabled by default	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa(config)# turbo-chain disable moxa(config)# turbo-chain role member primary interface ethernet 1/1 secondary interface ethernet 1/2</pre>	
Error Messages	<p>% Turbo Chain: Invalid: Two Identical Turbo Chain Ports.</p> <p>% Turbo Chain: Invalid: The port-channel does not exist.</p> <p>% Turbo Chain: Invalid: The port-channel does not exist.</p> <p>% L2 Redundancy: Invalid: Two redundant protocols cannot use the same port.</p> <p>% L2 Redundancy: Invalid: Port channel member port cannot be assigned to a redundant protocol.</p> <p>% L2 Redundancy: Invalid: Redundant Protocol and Port Security cannot be enabled on the same port.</p> <p>% L2 Redundancy: Invalid: Redundant Protocol and 802.1x/MAB cannot be enabled on the same port.</p> <p>% L2 Redundancy: Invalid: The port-channel group does not exist.</p> <p>% L2 Redundancy: Invalid: The port-channel group is used by Turbo Ring/Turbo Chain/Dual Homing. It cannot be deleted.</p> <p>% L2 Redundancy: Invalid: A maximum of two redundant protocols can be enabled.</p> <p>% L2 Redundancy: Invalid: Turbo Chain and Turbo Ring V2 cannot be enabled at the same time.</p> <p>% L2 Redundancy: Invalid: Turbo Chain and STP/RSTP cannot be enabled at the same time.</p>	
Related Commands	show turbo-chain	

Configure Turbo Chain Protection

Commands

turbo-chain protection action { drop | disable-port }

no turbo-chain protection action

Syntax Description	turbo-chain	Configure Turbo Chain parameters
	protection	Chain protection related configuration
	action	Configure Chain protection action
	drop	Drop incoming redundant protocol packet
	disable-port	Disable admin status of redundant protocol packet ingress ports
Defaults	No Action	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# turbo-chain protection action drop	
Error Messages	N/A	
Related Commands	show turbo-chain	

Configure Turbo Chain Protection Release Interval

Commands

turbo-chain protection release interval < release_interval >

Syntax Description	turbo-chain	Configure Turbo Chain parameters
	protection	Chain protection related configuration
	release	Configure the Chain protection release time
	interval	Configure the Chain protection release time
	release_interval	Specify release time in seconds
Defaults	Release interval is default 60	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# turbo-chain protection release interval 120	
Error Messages	N/A	
Related Commands	show turbo-chain	

MRP

Show MRP Information

Commands

show mrp

Syntax Description	show	Display configuration/statistics/general information
	mrp	Display MRP information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	MOXA# show mrp MRP Ring : Enabled Role : Ring Manager Ring State Machine : Primary Ring Port Link Up React on link Change : Enabled VLAN ID : 1 Domain ID : C3D687FE-789E-03A1-ACDB-E5BFCBBC27B6 ----- Interface Port Number Port Status ----- Ring Port 1 Eth1/3 Forwarding Ring Port 2 Eth1/4 Link down MRP Interconnection : Enabled Interconnection State : Interconnection Port Idle Interconnection Role : Client Interconnection Mode : RC-Mode Interconnection ID : 0 ----- Interface Port Number Port Status ----- Interconnection Port Eth2/1 Forwarding	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable the MRP Ring

Commands

mrp ring { enable | disable }

Syntax Description	mrp	Configure MRP settings
	ring	Configure MRP ring settings
	enable	Enable the MRP ring
	disable	Disable the MRP ring
Defaults	The MRP ring is disabled by default.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp ring enable	
Error Messages	% L2 Redundancy: Invalid: A maximum of two redundant protocols can be enabled. % L2 Redundancy: Invalid: Turbo Ring V2 and MRP can not be enabled at the same time. % L2 Redundancy: Invalid: Turbo Chain and MRP can not be enabled at the same time. % L2 Redundancy: Invalid: STP/RSTP/MSTP and MRP can not be enabled at the same time.	
Related Commands	show mrp	

Configure MRP Role Settings

Commands

mrp role { manager | client }

Syntax Description	mrp	Configure MRP settings
	role	Configure MRP role settings
	manager	Set the MRP role to Manager
	client	Set the MRP role to Client
Defaults	The default MRP role is Client.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp role manager	
Error Messages	N/A	
Related Commands	show mrp	

Configure MRP Ring VLAN ID

Commands

mrp ring vlan-id <integer(1-4094)>

Syntax Description	mrp	Configure MRP settings
	ring	Configure MRP ring settings
	vlan-id	Configure the MRP VLAN ID
	<integer(1-4094)>	Specify the MRP VLAN ID (1-4094)
Defaults	The default MRP VLAN ID is 1.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp ring vlan-id 10	
Error Messages	N/A	
Related Commands	show mrp	

Configure MRP Ring Domain Settings

Commands

mrp ring domain { default | profinet }

Syntax Description	mrp	Configure MRP settings
	ring	Configure the MRP ring settings
	domain	Configure domain UUID settings
	default	Set the domain UUID to the default UUID
	profinet	Set the domain UUID to the PROFINET UUID
Defaults	The default Domain UUID is the Default UUID.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp ring domain profinet	
Error Messages	N/A	
Related Commands	show mrp	

Enable/Disable MRP React-on-Link Change

Commands

mrp react-on-lnk-chg { enable | disable }

Syntax Description	mrp	Configure MRP settings
	react-on-lnk-chg	Configure MRP react on MRC link change settings
	enable	Enable MRP react on link change
	disable	Disable MRP react on link change
Defaults	Enabled	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp react-on-lnk-chg enable	
Error Messages	N/A	
Related Commands	show mrp	

Configure MRP Primary/Secondary Interface Settings

Commands

mrp primary interface <iftype> <ifnum> **secondary interface** <iftype> <ifnum>

Syntax Description	mrp	Configure MRP settings
	primary interface	Configure MRP primary interface settings
	<iftype> <ifnum>	Specify the interface type and number (Ethernet, 1/1)
	secondary interface	Configure MRP secondary interface settings
<iftype> <ifnum>	Specify the interface type and number (Ethernet, 1/1)	
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp primary interface 1/1 secondary interface 1/2	
Error Messages	N/A	
Related Commands	show mrp	

Enable/Disable MRP Interconnection

Commands

mrp interconnection { enable | disable }

Syntax Description	mrp	Configure MRP settings
	interconnection	MRP interconnection
	enable	Enable MRP interconnection
	disable	Disable MRP interconnection
Defaults	MRP interconnection is disabled by default.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp interconnection enable	
Error Messages	N/A	
Related Commands	show mrp	

Configure MRP Interconnection ID

Commands

mrp interconnection IID <integer(0-65535)>

Syntax Description	mrp	Configure MRP settings
	interconnection	MRP interconnection
	IID	Interconnection ID
	<integer(0-65535)>	Interconnection ID
Defaults	The default MRP interconnection ID is 0.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp interconnection IID 1	
Error Messages	N/A	
Related Commands	show mrp	

Configure MRP Interconnection Role

Commands

mrp interconnection role { manager | client }

Syntax Description	mrp	Configure MRP settings
	interconnection	MRP interconnection
	role	Interconnection role
	manager	Configure Interconnection role as manager
	client	Configure Interconnection role as client
Defaults	The default MRP interconnection role is client.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp interconnection role manager	
Error Messages	N/A	
Related Commands	show mrp	

Configure MRP Interconnection Mode

Commands

mrp interconnection mode {lc-mode | rc-mode}

Syntax Description	mrp	Configure MRP settings
	interconnection	MRP interconnection
	mode	Interconnection mode
	lc-mode	Configure Interconnection mode as LC mode
	rc-mode	Configure Interconnection mode as RC mode
Defaults	The default MRP interconnection mode is RC mode.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp interconnection mode rc-mode	
Error Messages	N/A	
Related Commands	show mrp	

Configure MRP Interconnection Port

Commands

mrp interconnection interface <iftype> <ifnum>

Syntax Description	mrp	Configure MRP settings
	interconnection	Configure MRP interconnection
	interface	Configure MRP interconnection port interface
	<iftype> <ifnum>	Specify the interface type and number (Ethernet, 1/1)
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# mrp interconnection interface ethernet 2/1	
Error Messages	% MRP: Invalid: Port Channel port couldn't be set as MRP interconnection port simultaneously !!! % MRP: Invalid: Dual Homing port couldn't be set as MRP interconnection port simultaneously !!! % MRP: Invalid: The MRP interconnection port couldn't be set as MRP ring ports simultaneously !!!	
Related Commands	show mrp	

Multiple Dual Homing

Display Dual Homing Information

Commands

show dual-homing

Syntax Description	show	Show running system information		
	dual-homing	Display dual homing configurations and status		
Defaults	N/A			
Command Modes	Privileged EXEC/User EXEC			
Usage Guidelines	N/A			
Examples	<pre>moxa# show dual-homing Dual-homing: Disabled Path mode: Primary path always first Session 1: Port Roles and States Path Port-Index Link-Status Port-State ----- Primary Eth2/4 Unknown Disabled Secondary Eth3/3 Unknown Disabled Session 2: Port Roles and States Path Port-Index Link-Status Port-State ----- Primary N/A -- -- Secondary N/A -- --</pre>			
Error Messages	N/A			
Related Commands	dual-homing			

Enable/Disable Dual Homing Setting

Commands

dual-homing {enable | disable}

Syntax Description	dual-homing	Dual Homing
	enable	Enable the feature
	disable	Disable the feature
Defaults	disable	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa (config)# dual-homing enable	
Error Messages	Invalid: Port channel member port can not be assigned to a redundant protocol.	
Related Commands	show dual-homing	

Configure Dual Homing Path Mode

Commands

dual-homing path-mode {primary-first | maintain-current | sensing-recovery}

Syntax Description	dual-homing	Configure dual-homing
	path-mode	Dual homing path switching mode setting
	primary-first	Primary path always first
	maintain-current	Maintain current path
	sensing-recovery	Primary path sensing recovery
Defaults	primary-first	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# dual-homing path-mode primary-first	
Error Messages	N/A	
Command Modes	show dual-homing	
Related Commands	primary-first	

Configure the redundancy port on a certain session

Commands

```
dual-homing primary interface {port-channel <integer (1-65535)> | <interface-type>
<interface-id>} secondary interface {port-channel <integer (1-65535)> | <interface-type>
<interface-id>} [{session <session number>} {enable | disable}]
```

Syntax Description	dual-homing	Configure dual homing
	primary	Dual homing primary port setting
	interface	Dual homing port interface setting
	secondary	Dual homing secondary port setting
	port-channel	Port Channel
	integer (1-65535)	Port Channel group ID
	<interface-type>	Interface type
	<interface-id>	Interface ID
	session	Session group setting
	integer	Session ID
	enable	Enable the feature
disable	Disable the feature	
Defaults	dual-homing primary interface ethernet 1/1 secondary interface ethernet 1/2 (when multi-session is supported, this commnad means the session 1 will be enabled.) dual-homing primary interface ethernet 1/1 secondary interface ethernet 1/2 session 1 enable	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# dual-homing primary interface ethernet 1/1 secondary interface port-channel 1 session 1 enable	
Error Messages	Invalid: Port channel member port can not be assigned to a redundant protocol.	
Related Commands	show dual-homin	

Multiple Network Coupling

Enable/disable multiple network coupling

Commands

```
multiple-network-coupling {enable | disable}
```

Syntax Description	multiple-network-coupling	Configure Multiple Network Coupling parameters
	enable	Enable Multiple Network Coupling in the system
	disable	Disable Multiple Network Coupling in the system
Defaults	disable	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product# configuremoxa-product(config)# multiple-network-coupling enablemoxa-product# configuremoxa-product(config)# multiple-network-coupling disable	
Error Messages	N/A	
Related Commands	N/A	

Display the coupling information that is present in the system

Commands

show multiple-network-coupling {config | status}

Syntax Description	show	Display configuration/status information																																																							
	multiple-network-coupling	Display Multiple Network Coupling information																																																							
	config	Config information																																																							
	status	Status information																																																							
Defaults	N/A																																																								
Command Modes	Privileged EXEC Mode																																																								
Usage Guidelines	N/A																																																								
Examples	<pre>moxa-product# show multiple-network-coupling config</pre> <p>Multiple Network Coupling is globally Enabled. Main ring protocol : Turbo Ring V2. Coupling switch role : Backup. Coupling group ID : 1. Coupling polling interval : 40ms.</p> <p>Coupling Table :</p> <table border="1"> <thead> <tr> <th>Index</th> <th>Path ID</th> <th>Coupling port</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>Eth1/1</td> <td>Active</td> </tr> <tr> <td>2</td> <td>2</td> <td>Po1</td> <td>Active</td> </tr> <tr> <td>3</td> <td>3</td> <td>Eth2/3</td> <td>Inactive</td> </tr> <tr> <td>4</td> <td>4</td> <td>Eth2/4</td> <td>Inactive</td> </tr> </tbody> </table> <pre>moxa-product# show multiple-network-coupling status</pre> <p>Multiple Network Coupling is globally Enabled. Coupling switch role : Backup. Coupling group ID : 1.</p> <p>Coupling Table :</p> <table border="1"> <thead> <tr> <th>Index</th> <th>Path ID</th> <th>Coupling port</th> <th>Coupling port state</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>Eth1/1</td> <td>Blocking</td> </tr> <tr> <td>2</td> <td>2</td> <td>Po1</td> <td>Forwarding</td> </tr> <tr> <td>3</td> <td>3</td> <td>Eth2/3</td> <td>Link down</td> </tr> <tr> <td>4</td> <td>4</td> <td>Eth2/4</td> <td>Link down</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Partner MAC</th> <th>Connection status</th> <th>Error status</th> </tr> </thead> <tbody> <tr> <td>00:90:e8:12:45:67</td> <td>Connected</td> <td>---</td> </tr> <tr> <td>00:90:e8:12:45:67</td> <td>Connected</td> <td>---</td> </tr> <tr> <td>---</td> <td>Disabled</td> <td>---</td> </tr> <tr> <td>---</td> <td>Disabled</td> <td>---</td> </tr> </tbody> </table>		Index	Path ID	Coupling port	Status	1	1	Eth1/1	Active	2	2	Po1	Active	3	3	Eth2/3	Inactive	4	4	Eth2/4	Inactive	Index	Path ID	Coupling port	Coupling port state	1	1	Eth1/1	Blocking	2	2	Po1	Forwarding	3	3	Eth2/3	Link down	4	4	Eth2/4	Link down	Partner MAC	Connection status	Error status	00:90:e8:12:45:67	Connected	---	00:90:e8:12:45:67	Connected	---	---	Disabled	---	---	Disabled	---
Index	Path ID	Coupling port	Status																																																						
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Error Messages	N/A																																																								
Related Commands	N/A																																																								

Configure the redundant protocol of the main ring

Commands

multiple-network-coupling main-ring-protocol {trv2 | mrp}

Syntax Description	multiple-network-coupling	Configure Multiple Network Coupling parameters
	main-ring-protocol	Main ring protocol related configuration
	trv2	Turbo Ring V2 as main ring
	mrp	MRP as main ring
Defaults	trv2	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product# configure moxa-product(config)# multiple-network-coupling main-ring-protocol trv2 moxa-product# configure moxa-product(config)# multiple-network-coupling main-ring-protocol mrp	
Error Messages	N/A	
Related Commands	N/A	

Configure the coupling switch role

Commands

multiple-network-coupling switch-role {active | backup}

Syntax Description	multiple-network-coupling	Configure Multiple Network Coupling parameters
	switch-role	Coupling switch role related configuration
	active	Active switch
	backup	Backup switch
Defaults	active	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product# configure moxa-product(config)# multiple-network-coupling switch-role active moxa-product# configure moxa-product(config)# multiple-network-coupling switch-role backup	
Error Messages	N/A	
Related Commands	N/A	

Configure the coupling group id

Commands

multiple-network-coupling group <group-id (1-16)>

Syntax Description	multiple-network-coupling	Configure Multiple Network Coupling parameters
	group	Coupling group related configuration
	group-id	Coupling group ID
Defaults	1	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product# configure moxa-product(config)# multiple-network-coupling group 1	
Error Messages	N/A	
Related Commands	N/A	

Configure the coupling polling interval

Commands

multiple-network-coupling polling-interval {80ms | 40ms}

Syntax Description	multiple-network-coupling	Configure Multiple Network Coupling parameters
	polling-interval	Coupling polling interval related configuration
	80ms	80ms polling interval
	40ms	40ms polling interval
Defaults	80ms	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product# configure moxa-product(config)# multiple-network-coupling polling-interval 80ms	
	moxa-product# configure moxa-product(config)# multiple-network-coupling polling-interval 40ms	
Error Messages	N/A	
Related Commands	N/A	

Reset the coupling polling interval to the default value

Commands

no multiple-network-coupling polling-interval

Syntax Description	no	Remove configuration / delete entry / reset to default value
	multiple-network-coupling	Multiple Network Coupling details configuration
	polling-interval	Coupling polling interval
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product# configure moxa-product(config)# no multiple-network-coupling polling-interval	
	moxa-product# configure moxa-product(config)# no multiple-network-coupling polling-interval	
Error Messages	N/A	
Related Commands	N/A	

Enable/ disable the coupling table entry and configure the path id and coupling port of the entry in the coupling table

Commands

multiple-network-coupling <index (1-4)> {**enable** | **disable**} [**path-id** <path-id (1-16)> **port interface** { **port-channel** <port-channel-id> | <interface-type> <interface-id> }]

Syntax Description	multiple-network-coupling	Configure Multiple Network Coupling parameters
	index	Index of coupling table
	enable	Enable coupling table entry
	disable	Disable coupling table entry
	path-id	Path ID related configuration
	path-id	Path ID
	port	Coupling port related configuration
	interface	Interface related configuration
	port-channel	Port channel interface
	port-channel-id	Port channel ID, the range is from 1 to (Totalport/2)
	interface-type	Interface type
	interface-id	Interface number
Defaults	See 2.7 Parameter Table	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa-product# configure moxa-product(config)# multiple-network-coupling 1 enable path-id 1 port interface port-channel 1 moxa-product# configure moxa-product(config)# multiple-network-coupling 1 enable path-id 1 port interface ethernet 1/1 moxa-product# configure moxa-product(config)# multiple-network-coupling 1 enable moxa-product# configure moxa-product(config)# multiple-network-coupling 1 disable</pre>	
Error Messages	N/A	
Related Commands	N/A	

IEC 62439-3

PRP/HSR

Show PRP/HSR Counter Information

Commands

show prp-hsr [counter]

Syntax Description	prp-hsr	Display PRP/HSR information
	counter	Counter information
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show prp-hsr moxa# show prp-hsr counter	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Show Supervision-frame Information

Commands

show supervision-frame { config | nodes-table [<node-type (0-5)>] }

Syntax Description	supervision-frame	Display Supervision Frame information
	config	Supervision Frame config information
	nodes-table	IEC 62439-3 Nodes Table information
	(0-5)	Node type, i.e., DANP/RedboxP/VDANP/DANH/RedboxH/VDANH
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show supervision-frame config moxa# show supervision-frame nodes-table 0	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Enable/Disable PRP/HSR

Commands

prp-hsr {enable | disable}

Syntax Description	prp-hsr	Configure PRP/HSR parameters
	enable	Enable PRP/HSR in the system
	disable	Disable PRP/HSR in the system
Defaults	disable	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# prp-hsr enable	
Error Messages	<ol style="list-style-type: none"> 1. Invalid settings detected. PHR module ports do not support 100M-Half, 10M-Full, 10M-Half. 2. Invalid settings detected. Invalid PHR module ports cannot modify port settings. 3. Invalid settings detected. PHR module ports do not support flow control. 4. Invalid settings detected. PHR module ports do not support port channel membership. 5. Invalid settings detected. PHR module ports do not support Multiple Network Coupling. 6. Invalid settings detected. PHR module ports do not support Turbo Ring v2. 7. Invalid settings detected. PHR module ports do not support Turbo Chain. 8. Invalid settings detected. PHR module ports do not support RSTP. 9. Invalid settings detected. PHR module ports do not support Dual Homing. 10. Invalid settings detected. PHR module ports do not support MSTP. 11. Invalid settings detected. PHR module ports do not support MRP. 12. Invalid settings detected. PHR module ports do not support MRP interconnection. 13. Invalid settings detected. PHR module ports do not support Ingress Rate Limit. 14. Invalid settings detected. PHR module ports do not support GMRP. 15. Invalid settings detected. PHR module ports cannot be set as port mirror destination ports. 16. Invalid settings detected. PHR module ports cannot be set as RSPAN source port. 17. Invalid settings detected. Invalid PHR module ports cannot be set as port mirror source port. 18. Invalid settings detected. PHR module ports do not support IEEE 802.1X. 19. Invalid settings detected. PHR module ports do not support MAB. 20. Invalid settings detected. PHR module ports do not support Port Security. 21. Invalid settings detected. PHR module ports do not support being set as IGMP static router ports. 22. Invalid settings detected. PHR module ports do not support GVRP. 23. Invalid settings detected. PHR module ports do not support MACsec. 24. Invalid settings detected. PHR module ports do not support Traffic Storm Control. 25. Invalid settings detected. PHR module ports do not support DHCP Snooping/IP Source Guard/Dynamic ARP Inspection. 26. Invalid settings detected. PHR module ports do not support DHCP Snooping. 27. Invalid settings detected. PHR module ports do not support Linkup Delay. 28. Invalid settings detected. PHR module ports do not support Static Unicast. 29. Invalid settings detected. PHR module ports do not support Static Multicast. 30. Invalid settings detected. PHR module ports do not support DHCP Server Port-based IP Assignment. 31. Invalid settings detected. Unable to configure VLAN because selected ports are invalid. 32. Invalid settings detected. Unable to configure DHCP Relay Agent because selected ports are invalid. 33. Invalid settings detected. Unable to configure QoS because selected ports are invalid. 34. Invalid settings detected. Unable to configure ACL because selected ports are invalid. 35. Invalid settings detected. PHR module ports do not support Egress Shaper. 36. PHR module malfunction. The module may not be correctly inserted. 	

	37. Invalid settings detected. The main ring protocol cannot be set to HSR while TRv2/MRP is enabled. 38. Supervision Frame can only be enabled when PRP/HSR is enabled. 39. Invalid settings detected. The same PHR module port cannot be configured as a source port for multiple mirror sessions.
Warning Messages	N/A
Related Commands	N/A

Enable/Disable PRP/HSR/Coupling Protocol

Commands

prp-hsr protocol {prp | hsr | coupling}

Syntax Description	prp-hsr	Configure PRP/HSR parameters
	protocol	Protocol related configuration
	prp	PRP
	hsr	HSR
	coupling	COUPLING
Defaults	prp	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# prp-hsr protocol prp	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Configure Entry Forget Time

Commands

prp-hsr entryforgettime {10ms | 100ms}

Syntax Description	prp-hsr	Configure PRP/HSR parameters
	entryforgettime	Entry forget time related configuration
	10ms	10ms
	100ms	100ms
Defaults	10ms	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# prp-hsr entryforgettime 10ms	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Configure Net ID

Commands

prp-hsr netid <net-id (1-7)>

no prp-hsr netid

Syntax Description	prp-hsr	Configure PRP/HSR parameters
	netid	Net ID related configuration
	(1-7)	Net ID
Defaults	1	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# prp-hsr netid 1 moxa(config)# no prp-hsr netid	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Configure Lan ID

Commands

prp-hsr lanid <lan-id (0-1)>

no prp-hsr lanid

Syntax Description	prp-hsr	Configure PRP/HSR parameters
	lanid	LAN ID related configuration
	(0-1)	LAN ID
Defaults	0 (LAN A)	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# prp-hsr lanid 0 moxa(config)# no prp-hsr lanid	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Supervision Frame

Enable/Disable Supervision Frame

Commands

supervision-frame {enable | disable}

Syntax Description	supervision-frame	Configure Supervision Frame parameters
	enable	Enable Supervision Frame in the system
	disable	Disable Supervision Frame in the system
Defaults	disable	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# supervision-frame enable	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Configure Supervision Frame Interval

Commands

supervision-frame interval <life-check-interval (1-60)>

Syntax Description	supervision-frame	Configure Supervision Frame parameters
	interval	Life Check Interval related configuration
	(1-60)	Interval (sec) between two supervision frames sent
Defaults	2	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# supervision-frame interval 2	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Configure Supervision Frame Destination Address

Commands

supervision-frame dest-addr <last-hex-byte>

Syntax Description	supervision-frame	Configure Supervision Frame parameters
	dest-addr	Destination address related configuration
	<string(2)>	Last hex byte of destination address, i.e., 00~FF
Defaults	00	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# supervision-frame dest-addr 01	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Enable/ Disable Supervision Frame Forward to Interlink

Commands

supervision-frame forward-to-interlink {enable | disable}

Syntax Description	supervision-frame	Configure Supervision Frame parameters
	forward-to-interlink	Forwarding to interlink port related configuration
	enable	Enable Supervision Frame forwarding to interlink port
	disable	Disable Supervision Frame forwarding to interlink port
Defaults	disable	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# supervision-frame forward-to-interlink enable	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Configure Supervision Frame Nodes Table Node Forget Time

Commands

supervision-frame nodes-table node-forget-time <interval (60-120)>

Syntax Description	supervision-frame	Configure Supervision Frame parameters
	nodes-table	IEC 62439-3 Nodes Table related configuration
	node-forget-time	Node Forget Time related configuration
	(60-120)	Node Forget Time (sec)
Defaults	60	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# supervision-frame nodes-table node-forget-time 120	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Layer 3 Redundancy

VRRP

Enable/Disable VRRP Functions

Commands

router vrrp { enable | disable }

Syntax Description	router	Configures router related information
	vrrp	VRRP related configuration
	enable	Enables VRRP
	disable	Disables VRRP
Defaults	disable	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# router vrrp enable	
	moxa# configure	
	moxa(config)# router vrrp disable	
Error messages	N/A	
Related Commands	N/A	

Enter the VRRP Configuration Mode

Commands

router vrrp

Syntax Description	router	Configure router related information
	vrrp	VRRP related configuration
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure	
	moxa(config)# router vrrp	
	moxa(config-vrrp)#	
Error Messages	N/A	
Related Commands	N/A	

Configure the VRRP Version Settings

Commands

vrrp version { v2 | v3 }

Syntax Description	vrrp	Configure the VRRP related parameters
	version	Version related configuration
	v2	Enable VRRP Version 2
	v3	Enable VRRP Version 3
Defaults	v2	
Command Modes	VRRP Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# router vrrp	
	moxa(config-vrrp)# vrrp version v2	
Error Messages	N/A	
Related Commands	N/A	

Configure the Virtual Router IP Address

Commands

vrrp <vrid(1-255)> **ip** <ip-addr>

Syntax Description	vrrp	Configures the VRRP related parameters
	vrid	virtual router ID
	ip	IP related configuration
	ip-addr	IP address
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# vrrp 2 ip 192.168.2.1	
Error Messages	% VRRP: Invalid: If any of the existing virtual routers have advertisement intervals less than 1 second, then the maximum number of virtual routers is 16. % VRRP: Invalid: The associated IP conflicts with another associated IP. % VRRP: Invalid: The associated IP cannot be 0.0.0.0 or Class D, Class E, or vlan address. % VRRP: Invalid: The interface name is not an existing L3 VLAN interface or the L3 VLAN interface cannot be removed when VRRP is being used. % VRRP: Invalid: The associated IP and L3 VLAN interface IP must be in the same subnet. % VRRP: Invalid: The associated IP cannot be an L3 VLAN interface network address. % VRRP: Invalid: The associated IP cannot be an L3 VLAN interface broadcast address. % VRRP: Invalid: The associated IP cannot be active when the L3 VLAN interface IP or subnet mask is not set.	
Related Commands	N/A	

Delete the Virtual Router in the Interface

Commands

no vrrp <vrid(1-255)>

Syntax Description	no	Disables configuration/delete entry/reset to default value
	vrrp	VRRP related configuration
	vrid	virtual router ID
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# no vrrp 2	
Error Messages	N/A	
Related Commands	N/A	

Enable the Virtual Router in the Interface

Commands

vrrp <vrid(1-255)> **active**

Syntax Description	vrrp	Configures the VRRP related parameters
	vrid	virtual router ID
	active	Make the virtual router active
Defaults	Enabled	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# vrrp 2 active	
Error Messages	N/A	
Related Commands	N/A	

Disable the Virtual Router in the Interface

Commands

no vrrp <vrid(1-255)> **active**

Syntax Description	no	Disable configuration/delete entry/reset to default value
	vrrp	VRRP related configuration
	vrid	virtual router ID
	active	Make the virtual router active
Defaults	Enabled	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# no vrrp 2 active	
Error Messages	N/A	
Related Commands	N/A	

Set the Virtual Router Priority

Commands

vrrp <vrid(1-255)> **priority** <priority(1-254)>

Syntax Description	vrrp	Configures the VRRP related parameters
	vrid	virtual router ID
	priority	priority related configuration
	prio-value	priority used for the virtual router master election process; larger number means higher priority
Defaults	100	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product# configure moxa-product(config)# interface vlan 2 moxa-product(config-if)# vrrp 2 priority 150	
Error Messages	N/A	
Related Commands	N/A	

Set the Virtual Router Priority to the Default Value

Commands

no vrrp <vrid(1-255)> **priority**

Syntax Description	no	Disables configuration/delete entry/reset to default value
	vrrp	VRRP related configuration
	vrid	virtual router ID
	priority	priority related configuration
Defaults	100	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# no vrrp 2 priority	
Error Messages	N/A	
Related Commands	N/A	

Enable the Preempt Mode

Commands

vrrp <vrid(1-255)> **preempt**

Syntax Description	vrrp	Configure the VRRP related parameters
	vrid	virtual router ID
	preempt	Preempt mode related configuration
Defaults	enable	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product(config)# interface vlan 2 moxa-product(config-if)# vrrp 2 preempt	
Error Messages	N/A	
Related Commands	N/A	

Disable the Preempt Mode

Commands

no vrrp <vrid(1-255)> **preempt**

Syntax Description	no	Disables configuration/delete entry/reset to default value
	vrrp	VRRP related configuration
	vrid	virtual router ID
	preempt	preempt mode related configuration
Defaults	enable	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# no vrrp 2 preempt	
Error Messages	N/A	
Related Commands	N/A	

Set the Authentication Type for the Virtual Router to Simple Password

Commands

vrrp <vrid(1-255)> **text-authentication** <password>

Syntax Description	vrrp	Configures the VRRP related parameters
	vrid	virtual router ID
	text-authentication	simple password authentication related configuration
	password	authentication password used to validate the incoming VRRP packets
Defaults	no authentication	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# vrrp 2 text-authentication aaaaaaa	
Error Messages	% VRRP: Invalid: The VRRP version must be V2 when configuring auth type or auth key. % VRRP: Invalid: The maximum length of VRRP authentication key is 8 characters.	
Related Commands	N/A	

Set the Authentication Type for the Virtual Router to None

Commands

no vrrp <vrid(1-255)> **text-authentication**

Syntax Description	no	Disables configuration/delete entry/reset to default value
	vrrp	VRRP related configuration
	vrid	virtual router ID
	text-authentication	simple password authentication related configuration
Defaults	no authentication	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# no vrrp 2 text-authentication	
Error Messages	% VRRP: Invalid: The VRRP version must be V2 when configuring auth type or auth key.	
Related Commands	N/A	

Set the Advertisement Timer for the Virtual Router

Commands

vrrp <vrid(1-255)> **timer [msec]** <interval(1-255)secs>

Syntax Description	vrrp	Configures the VRRP related parameters
	vrid	virtual router ID
	timer	timer related configuration
	msec	Unit is changed to milli-seconds
	interval	Acceptable range for version 2 and version 3 are (1-40secs)/(30-40000msecs)
Defaults	1sec/1000msecs	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# vrrp 2 timer 2 moxa(config)# interface vlan 2 moxa-(config-if)# vrrp 2 timer msec 100	
Error Messages	% VRRP: Invalid: If any of the existing virtual routers have advertisement intervals less than 1 second, then the maximum number of virtual routers is 16. % VRRP: Invalid: The advertisement interval must be set as a multiple of 10, e.g. 30 ms, 40 ms, 50 ms etc.	
Related Commands	N/A	

Set the Advertisement Timer for the Virtual Router to the Default Value

Commands

no vrrp <vrid(1-255)> **timer**

Syntax Description	no	Disables configuration/delete entry/reset to default value
	vrrp	VRRP related configuration
	vrid	virtual router ID
	timer	timer related configuration
Defaults	1sec (or 1000msecs)	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# no vrrp 2 timer	
Error Messages	N/A	
Related Commands	N/A	

Enable the Accept Mode

Commands

vrpp <vrid(1-255)> **accept-mode**

Syntax Description	vrpp	Configures the VRRP related parameters
	vrid	virtual router ID
	accept-mode	accept mode related configuration
Defaults	enable	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# vrrp 2 accept-mode	
Error Messages	N/A	
Related Commands	N/A	

Disable the Accept Mode

Commands

no vrrp <vrid(1-255)> **accept-mode**

Syntax Description	no	Disables configuration/delete entry/reset to default value
	vrpp	VRRP related configuration
	vrid	virtual router ID
	accept-mode	accept mode related configuration
Defaults	enable	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 2 moxa(config-if)# no vrrp 2 accept-mode	
Error Messages	N/A	
Related Commands	N/A	

Show the VRRP Information

Commands

show vrrp [interface { vlan <vlan-id> } <vrId(1-255)>] [{ brief | detail | statistics }]

Syntax Description	show	Display configuration / statistics / general information
	vrpp	Displays VRRP information
	interface	VRRP status for the interface
	vlan	VLAN interface
	vlan-id	The range (1-4094) is for VLAN ID
	vrId	Virtual router ID
	brief	Brief information
	detail	Detailed information
	statistics	Statistics related information
Defaults	brief	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	moxa# show vrrp	
	moxa# show vrrp detail	
	moxa# show vrrp statistics	
	moxa# show vrrp interface vlan 2	
	moxa# show vrrp interface vlan 2 2	
Error Messages	N/A	
Related Commands	N/A	

Show the VRRP Information for the Interface

Commands

show vrrp interface [{ **vlan** <vlan-id> }] [{ **brief** | **detail** | **statistics** }]

Syntax Description	show	Display configuration / statistics / general information
	vrrp	Displays VRRP information
	interface	VRRP status for the interface
	vlan	VLAN interface
	vlan-id	The range (1-4094) is for VLAN ID
	brief	brief information
	detail	detailed information
	statistics	statistics related information
Defaults	brief	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	moxa# show vrrp interface	
	moxa# show vrrp interface detail	
	moxa# show vrrp interface statistics	
	moxa# show vrrp interface vlan 2	
Error Messages	N/A	
Related commands	N/A	

Tracking

Enable/Disable Tracking

Commands

tracking {enable | disable}

Syntax Description	tracking	Configure tracking functions
	enable	Enable tracking function
	disable	Disable tracking function
Defaults	Disabled	
Command Modes	Privileged EXEC	
	Global Configuration	
Usage Guidelines	Enable or disable tracking function	
Examples	moxa(config)# tracking enable	
	moxa(config)# tracking disable	
Error Messages	N/A	
Related Commands	show tracking {all interface ping logical}	

Enable/Disable Tracking ID

Commands

tracking <short(1-16)> {enable | disable}

Syntax Description	tracking	Configure tracking functions
	1 - 16	Tracking ID (1-16) of the created tracking entry
	enable	Enable the tracking entry
	disable	Disable the tracking entry
Defaults	Disabled	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Enable tracking entry	
Examples	moxa(config)# tracking 1 enable moxa(config)# tracking 1 disable	
Error Messages	% Tracking: Invalid: This TID does not exist.	
Related Commands	show tracking {all interface ping logical}	

Configure Tracking Entry of Interface

Commands

tracking <short(1-16)> **interface** { **vlan** <vlan-id> | **port-channel** <port-channel-id> | <interface-type> <interface-id> } [**down_to_up** {enable | disable}] [**up_delay** <integer (0-99)>] [**up_to_down** {enable | disable}] [**down_delay** <integer (0-99)>]

Syntax Description	tracking	Configure tracking functions
	1 - 16	Tracking ID (1-16) of the created tracking
	interface	Interface related configuration
	vlan	Create an interface tracking entry to monitor a layer 3 interface
	vlan-id	The vlan id (1-4094) of the monitored layer 3 interface
	port-channel	Create an interface tracking entry to monitor a port-channel
	port-channel-id	Monitored port-channel id
	interface-type	Create an interface tracking entry to monitor a port
	interface-id	Monitored port number
	down_to_up	Status change from down to up
	enable	Enable the down to up status change
	disable	Disable the down to up status change
	up_delay	Set the up delay of interface tracking entry
	integer (0-99)	up delay (0 sec - 99 sec)
	up_to_down	Status change from up to down
	enable	Enable the up to down status change
	disable	Disable the up to down status change
down_delay	Set the down delay of interface tracking entry	
integer (0-99)	down delay (0 sec - 99 sec)	
Defaults	down_to_up: enable up_delay: 0 up_to_down: enable down_delay: 0	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Create an interface tracking entry	
Examples	moxa(config)# tracking 1 interface vlan 2 up_delay 5 up_to_down disable	
Error Messages	Error Messages % Tracking: Invalid: Duplicate tracking ID <tid>. % Tracking: Invalid: Invalid port. % Tracking: Invalid: The selected port cannot be used for tracking because it is a member of a port channel. % Tracking: Invalid: Invalid port channel. % Tracking: Invalid: This port channel does not exist. % Tracking: Invalid: Invalid VLAN interface.	
Related Commands	show tracking {all interface ping logical}	

Configure Tracking Entry of Ping

Commands

```
tracking <short(1-16)> ping <ucast_addr> [interval <integer (500-100000)>]
[timeout <integer (500-100000)>] [down_to_up {enable | disable}] [received <integer (1-99)>]
[up_to_down {enable | disable}] [lost <integer (1-99)>]
```

Syntax Description	tracking	Configure tracking functions
	1 - 16	Tracking ID (1-16) of the created tracking
	ping	Create a ping tracking entry to monitor an IP address
	ucast_addr	Monitored IP address
	interval	Set the interval of ping tracking entry
	integer (500-100000)	interval (500 ms - 100,000 ms) 500ms one unit
	timeout	Set the timeout of ping tracking entry
	integer (500-100000)	timeout (500 ms - 100,000 ms) 500ms one unit
	down_to_up	Status change from down to up
	enable	Enable the down to up status change
	disable	Disable the down to up status change
	received	Set the received threshold of ping tracking entry
	integer (1-99)	Received threshold (1 time - 99 times)
	up_to_down	Status change from up to down
	enable	Enable the up to down status change
	disable	Disable the up to down status change
	lost	Set the lost threshold of ping tracking entry
integer (1-99)	lost threshold (1 time - 99 times)	
Defaults	down_to_up: enable received: 3 up_to_down: enable lost: 3	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Create a ping tracking entry	
Examples	moxa(config)# tracking 2 interface ping 192.168.127.101 received 5 up_to_down disable	
Error Messages	% Tracking: Invalid: Duplicate tracking ID <tid>. % Tracking: Invalid: Invalid tracking interval value. Must be a multiple of 500 ms. % Tracking: Invalid: Invalid tracking timeout value. Must be a multiple of 500 ms.	
Related Commands	show tracking {all interface ping logical}	

Configure Tracking Entry of Logical

Commands

tracking <short(1-16)> **logical** {and | or | nand | nor} **tid** <short(1-16)> **tid** <short(1-16)> [**tid** <short(1-16)>] [**tid** <short(1-16)>]

Syntax Description	tracking	Configure tracking functions
	short(1-16)	Tracking ID (1-16) of the created tracking
	logical	Create a logic tracking entry to monitor tracking entries
	and	Logic operator AND
	or	Logic operator OR
	nand	Logic operator NAND
	nor	Logic operator NOR
	tid	Set the monitored tracking entries
	short(1-16)	The first monitored tracking entry
	tid	Set the monitored tracking entries
	short(1-16)	The first monitored tracking entry
	tid	Set the monitored tracking entries
short(1-16)	The first monitored tracking entry	
tid	Set the monitored tracking entries	
short(1-16)	The first monitored tracking entry	
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Create a logic tracking entry	
Examples	moxa(config)# tracking 3 logical and tid1 tid 2	
Error Messages	% Tracking: Invalid: Duplicate tracking ID <tid>. % Tracking: Invalid: (1) The TID <tid> does not exist. (2) The TID <tid> cannot be deleted because it belongs to a logical list. % Tracking: Invalid: The tracking ID <tid> must be higher than the highest logical list tracking ID.	
Related Commands	show tracking {all interface ping logical}	

Delete Tracking Entry

Commands

no tracking <short(1-16)>

Syntax Description	no	Delete the entry
	tracking	Configure tracking functions
	short1 - 16	Tracking ID (1-16) of the delete tracking entry
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	To delete the tracking entry.	
Examples	moxa(config)# no tracking 5	
Error Messages	% Tracking: Invalid: (1) The TID <tid> does not exist. (2) The TID <tid> cannot be deleted because it belongs to a logical list.	
Related Commands	show tracking {all interface ping logical}	

Display Tracking Information

Commands

show tracking { all | interface | ping | logical | <short(1-16)>}

Syntax Description	show	show running system information
	tracking	Display tracking information
	all	Display the status and configuration of all tracking entries
	interface	Display the status and configuration of interface tracking entries
	ping	Display the status and configuration of ping tracking entries
	logical	Display the status and configuration of logic tracking entries
	short(1-16)	Display the status and configuration of tracking ID (1-16) entry
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	Display tracking information.	
Examples	<pre> moxa# show tracking all Tracking Function: enable No. of Time Since TID Enable Type Target Status Change Last Change ----- - 1 Enable Interface vlan2 Down 1 0d0h0m4s 2 Enable Ping 192.168.127.101 Up 0 0d1h6m12s 3 Enable Logical [AND]1,2 Down 1 0d0h0m4s moxa# show tracking 1 ----- Tracking ID: 1 ----- Enable: Enable Type: Interface Tracking (Layer 3 Interface) VLAN ID: 2 Status Change Down to Up: Enable Up Delay (ms): 5 Status Change Up to Down: Enable Down Delay (ms): 5 Status: Down Number of Change: 1 Time Since Last Change: 0d0h0m4s ----- moxa# show tracking 3 Tracking ID: 3 ----- Enable: Enable Type: Logical Tracking Logical Operator: AND Tracking ID 1: 1 Tracking ID 2: 2 Tracking ID 3: ---- Tracking ID 4: ---- Status: Down Number of Change: 1 Time Since Last Change: 0d0h0m4s </pre>	
Error Messages	N/A	
Related Commands	N/A	

Tracking Force Sync Entry State

Commands

tracking force-sync-state tid <tracking(1-16)>

Syntax Description	tracking	Command of tracking function
	force-sync-state	Force sync tracking entry state
	tid	The monitored tracking entries
	tracking(1-16)	Tracking ID (1-16) of the tracking entry
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	If Status Change (Down to Up / Up to Down) is disable, the user can use this command to force synchronization of tracking entry state.	
Examples	moxa# tracking force-sync-state tid 5	
Error Messages	N/A	
Related Commands	N/A	

Bind a Tracking Entry On the Port

Commands

tracking <tracking(1-16)>

Syntax Description	tracking	Configure tracking parameters
	tracking(1-16)	tracking ID of the bound tracking entry
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration Mode	
Usage Guidelines	Each port could bind a tracking entry. The port is set disable when the status of the bound tracking entry is down forcefully. Otherwise, the port is set enable/disable by the configuration.	
Examples	moxa(config)# interface ethernet 1/1 moxa(config-if)# tracking 5	
Error Messages	N/A	
Related Commands	N/A	

Unbind the Tracking Entry On the Port

Commands

no tracking

Syntax Description	no	Delete the configuration
	tracking	Configure tracking parameters
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration Mode	
Usage Guidelines	Unbind the tracking entry on the port.	
Examples	moxa(config)# interface ethernet 1/1 moxa(config-if)# no tracking	
Error Messages	N/A	
Related Commands	tracking <short(1-16)>	

Bind a Tracking Entry On the VRRP

Commands

vrrp <vrid(1-255)> **tracking** <tracking(1-16)> **decrement** <decrement(0-255)>

Syntax Description	vrrp	Configures the VRRP related parameters
	vrid	virtual router ID
	tracking	Configure tracking parameters
	tracking(1-16)	tracking ID of the bound tracking entry
	decrement	decrement related configuration
	decrement (0-255)	decrement of the bound tracking entry
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration Mode	
Usage Guidelines	Each VRRP entry could bind a tracking entry. Each VRRP entry has a decrement, which is used to decrease the priority of VRRP entry, when the status of tracking entry is down.	
Examples	moxa(config)# interface vlan 20 moxa(config-if)# vrrp 20 tracking 1 decrement 5	
Error Messages	N/A	
Related Commands	no vrrp <vrid(1-255)> tracking	

Unbind the Tracking Entry On the VRRP

Commands

no vrrp <vrid(1-255)> **tracking**

Syntax Description	no	Configures the VRRP related parameters
	vrrp	Configures the VRRP related parameters
	vrid(1-255)	virtual router ID
	tracking	Configure tracking parameters
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration Mode	
Usage Guidelines	Set VRRP interface unbinding the tracking entry	
Examples	moxa(config)# interface vlan 20 moxa(config-if)# no vrrp 20 tracking	
Error Messages	N/A	
Related Commands	vrrp <vrid(1-255)> tracking <tracking(1-16)> decrement <decrement (0-255)>	

Configure VRRP with static route

Commands

ip route <prefix> <mask> {<next-hop> [<distance(1-255)>] [tracking <tracking(1-16)>]} | **vlan** <vlan-id> [<distance(1-255)>] [next-hop] [tracking <tracking(1-16)>] }

Syntax Description	ip	Global IPv4 configuration subcommands
	route	Static routing entry
	prefix	Address prefix
	mask	Subnet mask
	next-hop	Next hop address
	vlan	Specified VLAN ID
	distance(1-255)	Distance metric
	tracking	set static route binding a tracking entry
	tracking(1-16)	the tracking ID (1 - 16) of the bound tracking entry
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Each static route could bind a tracking entry. The static route is removed from routing table when the status of the bound tracking entry is down. Otherwise, the static route is writing into routing table.	
Examples	moxa(config)# ip route 30.0.0.2 255.255.255.255 20.0.0.1 tracking 5 moxa(config)# ip route 30.1.1.0 255.255.255.0 vlan 1 tracking 5 moxa(config)# no ip route 30.0.0.2 255.255.255.255 20.0.0.1 tracking moxa(config)# no ip route 30.1.1.0 255.255.255.0 vlan 1 tracking	
Error Messages	N/A	
Related Commands	show ip route	

Network Service

DHCP and MAC-based IP Assignment

Configure DHCP Server Pool

Commands

network <uicast_addr> <uicast_addr> <ip_mask>

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

Configure DHCP Server Host IP Address

Commands

host <ucast_addr> <ip_mask>

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

Configure DHCP Server Host MAC Address

Commands

hardware-address <ucast_mac>

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

Configure Lease Time

Commands

lease <integer (10-604800)>

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

Reset Lease time

Commands

no lease

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

Configure Default Router IP Address

Commands

default-router <ucast_addr>

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

Remove Default Router IP Address

Commands

no default-router

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

Configure DNS Server IP Address

Commands

dns-server <ucast_addr> [<ucast_addr>]

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

Remove DNS Server IP Address

Commands

no dns-server

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

Configure NTP Server IP Address

Commands

ntp-server <ucast_addr>

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

Remove NTP Server IP Address

Commands

no ntp-server

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

Configure Port-based IP Assignment

Commands

ip dhcp port-based-ip-assignment <ucast_addr> <ip_mask>

Syntax Description	ip	Configure IP parameters
	dhcp	Configure DHCP server parameters
	port-based-ip-assignment	Configure port-based IP assignment parameters
	<ucast_addr>	The unicast IP address
	<ip_mask>	The subnet mask
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# interface ethernet 1/2 moxa(config-if)# ip dhcp port-based-ip-assignment 192.168.127.100 255.255.255.0	
Error Messages	N/A	
Related Commands	N/A	

Remove Port-based IP Assignment

Commands

no ip dhcp port-based-ip-assignment

Syntax Description	no	Remove configuration / delete entry / reset to default value
	ip	Configure IP parameters
	dhcp	Configure DHCP server parameters
	port-based-ip-assignment	Configure port-based IP assignment parameters
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# interface ethernet 1/2 moxa(config-if)# no ip dhcp port-based-ip-assignment	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable Port-based IP Assignment

Commands

ip dhcp port-based-ip-assignment { enable | disable }

Syntax Description	ip	Configure IP parameters
	dhcp	Configure DHCP server parameters
	port-based-ip-assignment	Configure port-based IP assignment parameters
	enable	Enable port-based IP assignment
	disable	Disable port-based IP assignment
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# interface ethernet 1/2 moxa(config-if)# ip dhcp port-based-ip-assignment enable moxa(config-if)# ip dhcp port-based-ip-assignment disable	
Error Messages	N/A	
Related Commands	N/A	

Configure Port-based IP Assignment Parameters

Commands

```
ip dhcp port-based-ip-assignment { { lease <integer (10-604800)> } | { default-router <uicast_addr> } | { dns-server <uicast_addr> [ <uicast_addr> ] } | { ntp-server <uicast_addr> } }
```

Syntax Description	ip	Configure IP parameters
	dhcp	Configure DHCP server parameters
	port-based-ip-assignment	Configure port-based IP assignment parameters
	lease	Configure duration of lease
	<integer (10-604800)>	The duration of the lease in seconds
	default-router	Configure the default router
	<uicast_addr>	The unicast IP address
	dns-server	Configure the DNS server
	<uicast_addr>	The primary DNS server IP address
	<uicast_addr>	The secondary DNS server IP address
ntp-server	Configure the NTP server	
<uicast_addr>	The unicast IP address	
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa(config-if)# ip dhcp port-based-ip-assignment lease 3600 moxa(config-if)# ip dhcp port-based-ip-assignment default-router 192.168.127.254 moxa(config-if)# ip dhcp port-based-ip-assignment dns-server 192.168.127.254 moxa(config-if)# ip dhcp port-based-ip-assignment dns-server 192.168.127.251 192.168.127.252 moxa(config-if)# ip dhcp port-based-ip-assignment ntp-server 192.168.127.254</pre>	
Error Messages	N/A	
Related Commands	N/A	

Remove Port-based IP Assignment Parameters

Commands

```
no ip dhcp port-based-ip-assignment { lease | default-router | dns-server | ntp-server }
```

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ip	Configure IP parameters
	dhcp	Configure DHCP server parameters
	port-based-ip-assignment	Configure port-based IP assignment parameters
	lease	Configure the IP lease duration
	default-router	Configure the default router
	dns-server	Configure the DNS server
	ntp-server	Configure the NTP server
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa(config-if)# no ip dhcp port-based-ip-assignment lease moxa(config-if)# no ip dhcp port-based-ip-assignment default-router moxa(config-if)# no ip dhcp port-based-ip-assignment dns-server moxa(config-if)# no ip dhcp port-based-ip-assignment ntp-server</pre>	
Error Messages	N/A	
Related Commands	N/A	

DHCP Relay Agent

Display IP DHCP Relay Configurations

Commands

show ip dhcp relay

Syntax Description	show	Display configuration/statistics information
	ip	Display the IP-related configuration
	dhcp	Display the DHCP-related configuration
	relay	Display the DHCP Relay configuration
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	Use this command to show the DHCP relay configuration details.	
Examples	<pre>moxa# show ip dhcp relay Dhcp Relay : Enabled DHCP server 1 : 192.168.127.100 DHCP server 2 : 192.168.127.200 DHCP server 3 : DHCP server 4 : DHCP Relay Option 82 : Remote ID type : IP Remote ID value : 192.168.127.200 Remote ID display : C0A87FC8 The number of packets that Option 82 has been inserted in : 0 The number of packets that have been dropped : 0 The number of packets that Option 82 could not be inserted in : 0 Interface Relay Trusted Option 82 ----- Eth1/1 Disabled Untrusted Disabled Eth1/2 Disabled Untrusted Disabled Eth1/3 Disabled Untrusted Disabled Eth1/4 Enabled Trusted Enabled Eth1/5 Disabled Untrusted Disabled</pre>	
Error Messages	N/A	
Related Commands	N/A	

Clear IP DHCP Relay Statistics

Commands

clear ip dhcp relay statistics

Syntax Description	clear	Clear statistics information
	ip	Clear IP-related information
	dhcp	Clear DHCP-related information
	relay	Clear DHCP relay-related information
	statistic	Clear the DHCP relay statistics
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	Use this command to clear the DHCP relay statistics counters	
Examples	<pre>moxa# clear ip dhcp relay statistics</pre>	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable DHCP Relay Global Status

Commands

ip dhcp relay {enable | disable}

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	relay	Configure DHCP relay parameters
	enable	Enable the global DHCP relay
	disable	Disable the global DHCP relay
Defaults	Disable	
Command Modes	Global Configuration	
Usage Guidelines	Use this command to enable or disable the global DHCP relay	
Examples	moxa(config)# ip dhcp relay enable	
Error Messages	N/A	
Related Commands	N/A	

Configure the DHCP Relay Server

Commands

ip dhcp relay server <server-index> <ucast_addr>

no ip dhcp relay server <server-index>

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	relay	Configure DHCP relay parameters
	server	Configure DHCP relay server parameters
	<server-index>	Specify the DHCP server address index (1-4)
	<ucast_addr>	Specify the IP address of the DHCP server to which the packets are to be forwarded
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	Use this command to specify the IP address of the DHCP server to which the packets are to be forwarded. To remove the DHCP relay server address, use the no form of this command.	
Examples	moxa(config)# ip dhcp relay server 1 192.168.127.100	
Error Messages	N/A	
Related Commands	N/A	

Configure the DHCP Relay Interface Status

Commands

ip dhcp relay

no ip dhcp relay

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	relay	Configure DHCP relay interface parameters
Defaults	Disable	
Command Modes	Interface Configuration	
Usage Guidelines	Use this command to enable the DHCP relay interface. To disable the DHCP relay interface, use the no form of this command.	
Examples	moxa(config-if)# ip dhcp relay	
Error Messages	N/A	
Related Commands	N/A	

Configure the DHCP Relay Trust Mode

Commands

ip dhcp relay trust

no ip dhcp relay trust

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	relay	Configure DHCP relay parameters
	trust	Configure the DHCP relay trust mode
Defaults	Untrust	
Command Modes	Interface Configuration	
Usage Guidelines	If the interface is in untrusted mode, it will drop any DHCP packets with Option 82 information or DHCP packets with a non-zero GIAddr received from untrust sources. In trusted mode, the interface will accept all DHCP packets.	
Examples	moxa(config-if)# ip dhcp relay trust	
Error Messages	N/A	
Related Commands	N/A	

DHCP Relay Agent Option82

Display IP DHCP Relay Configurations

Commands

show ip dhcp relay

Syntax Description	show	Display configuration/statistics information
	ip	Display the IP-related configuration
	dhcp	Display the DHCP-related configuration
	relay	Display the DHCP Relay configuration
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	Use this command to display the DHCP relay configuration details.	
Examples	<pre>moxa# show ip dhcp relay Dhcp Relay : Enabled DHCP server 1 : 192.168.127.100 DHCP server 2 : 192.168.127.200 DHCP server 3 : DHCP server 4 : DHCP Relay Option 82 : Remote ID type : IP Remote ID value : 192.168.127.200 Remote ID display : C0A87FC8 The number of packets that Option 82 has been inserted in : 0 The number of packets that have been dropped : 0 The number of packets that Option 82 could not be inserted in : 0 Interface Relay Trusted Option 82 ----- Eth1/1 Disabled Untrusted Disabled Eth1/2 Disabled Untrusted Disabled Eth1/3 Disabled Untrusted Disabled Eth1/4 Enabled Trusted Enabled Eth1/5 Disabled Untrusted Disabled</pre>	
Error Messages	N/A	
Related Commands	N/A	

Configure the DHCP Relay Option 82 Remote ID

Commands

ip dhcp relay option82 remote-id {ip | mac | client-id | other <string(15)>}

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	relay	Configure DHCP relay parameters
	option82	Configure DHCP Option 82 parameters
	remote-id	Configure the Option 82 remote ID
	ip	Specify the IP address of the switch
	mac	Specify the MAC address of the switch
	client-id	Specify the hostname of the switch
Defaults	The IP address of switch	
Command Modes	Global Configuration	
Usage Guidelines	Use this command to specify the Option 82 remote ID of the switch.	
Examples	moxa(config)# ip dhcp relay option82 remote-id mac moxa(config)# ip dhcp relay option82 remote-id other abcdef	
Error Messages	N/A	
Related Commands	N/A	

Enable the DHCP Relay Option 82 Interface

Commands

ip dhcp relay option82

no ip dhcp relay option82

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	relay	Configure DHCP relay parameters
	option82	Configure the DHCP Option 82 interface status
Defaults	Disable	
Command Modes	Interface Configuration	
Usage Guidelines	Use this command to enable the DHCP relay to add Option 82 through the interface. To disable it, use the no form of this command.	
Examples	moxa(config-if)# ip dhcp relay option 82	
Error Messages	N/A	
Related Commands	N/A	

DNS Settings

Configure DNS settings

Commands

ip management name-server server-index server-address

no ip management name-server server-index

Syntax Description	no	Remove configuration / delete entry / reset to default value
	ip	Configure IP parameters
	management	Configure IPv4 management address parameters
	name-server	Configure the IPv4 DNS address of the device
	<i>server-index</i>	Index of DNS, range from 1 to 2
	<i>server-address</i>	IPv4 address of DNS
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# ip management name-server 1 1.1.1.1 moxa(config)# no ip management name-server 1	
Error Messages	Invalid: DNS Server server-address is not reachable.	
Related Commands	N/A	

Routing

Unicast Route

Static Route

Create/Delete the Static Route Entry

Commands

ip route <prefix> <mask> {<next-hop> [<distance (1-255)>] | vlan <vlan-id> [<distance (1-255)>]
[next-hop] }

no ip route <prefix> <mask> {<next-hop> | vlan <vlan-id> [next-hop] }

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ip	Global IPv4 configuration subcommands
	route	Static routing entry
	prefix	Address prefix
	mask	Subnet mask
	next-hop	Next hop address
	vlan	Specified VLAN ID
	distance	Distance metric
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# ip route 30.0.0.2 255.255.255.255 20.0.0.1 moxa(config)# ip route 30.1.1.0 255.255.255.0 vlan 1	
Error Messages	Invalid: Invalid IPv4 Address ipv4_config['ipAddress']/ ipv4_config['netmask'] Invalid: This IPv4 address overlaps with another Interface IPv4 address. Invalid: [data.I3VlanIfTable] must contain no more than 256 items. Invalid: The interface name is duplicated. Invalid: The interface does not exist. Invalid: The subnet mask should be 32 bits for the following interface 10.10.10.10/255.255.255.0 Invalid: IP address mismatch. Invalid: Loopback index. Invalid: The maximum number of routing entries to the same destination is 8. Please delete another routing entry to accommodate the new one.	
Related Commands	show ip route show ip route static	

Display the Existing ARP Entry List

Commands

show ip arp

Syntax Description	show	Display configuration/statistics/general/information
	ip	IP related information
	arp	ARP related information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip arp IP Address MAC Address Interface ----- 192.168.127.95 00:19:cb:d6:db:b4 vlan1	
Error Messages	N/A	
Related Commands	N/A	

Flush the ARP Entries

Commands

clear ip arp

Syntax Description	clear	Clear/flush the dynamically learnt arp entries
	ip	IP related information
	arp	ARP cache entries
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# clear ip arp	
Error Messages	N/A	
Related Commands	N/A	

RIP

Enable/Disable RIP Settings

Commands

router rip {enable | disable}

Syntax Description	router	Configures router related information
	rip	RIP related configuration
	enable/disable	Enable/disable RIP routing process
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# router rip enable moxa(config)#	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Configure Router RIP Settings

Commands

router rip

Syntax Description	router	Configures router related information
	rip	RIP related configuration
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# router rip moxa(config-rip)#	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Configure RIP Interfaces

Commands

network <STRING:ifname>

no network <STRING:ifname>

Syntax Description	network <STRING:ifname>	Configures network related information Specify interface name
Defaults	N/A	
Command Modes	RIP Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-rip)# network vlan10	
Error Messages	Invalid: Maximum number of active RIP interfaces exceeded. Reduce enabled interfaces to below 20 and try again.	
Warning Messages	N/A	
Related Commands	N/A	

Configure RIP version

Commands

version { 1 | 2 }

Syntax Description	version 1 2	Configures global version version 1 version 2
Defaults	2	
Command Modes	RIP Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-rip)# version 1	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Configure RIP Redistribute Settings

Commands

redistribute { connected | static | ospf }

no redistribute { connected | static | ospf }

Syntax Description	redistribute connected static ospf	Redistribute information from another routing protocol Import routes learned through directly connected Import routes learned through static route Import routes learned through OSPF
Defaults	Disable	
Command Modes	RIP Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-rip)# redistribute static	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Show RIP IP and Interface

Commands

show ip rip

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	rip	Display RIP related information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip rip RIP is globally enabled RIP version: v2 Distribution Connected : Disable Static : Enable OSPF : Enable IfName IP Address Status ----- vlan1 192.168.127.253 Disabled vlan10 192.168.10.11 Disabled vlan20 192.168.20.11 Enabled vlan30 192.168.30.11 Enabled loopback1 3.3.3.3 Enabled	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

OSPF

Show OSPF Interface Information

Commands

show ip ospf interface [vlan <vlan id>]

Syntax Description	ip	IP related information
	ospf	OSPF related information
	interface	Interface related information
	vlan	VLAN related information
	<vlan id>	Specified VLAN ID
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ip ospf interface vlan 3 Interface name : vlan3 IP Address : 192.168.127.253 Mask : 255.255.255.0 Area : 0.0.0.0 Router ID : 10.5.5.4 Network Type : BROADCAST Cost : 1 Priority : 1 Timer intervals : Hello : 10 secs Hello due in 2 sec Dead : 40 secs: Retransmit : 5 secs Transmit Delay : 1 sec Authentication type : simple State : BDR Designated Router Id : 10.5.6.4 IP address : 10.4.0.4 Backup Designated Router Id : 10.4.0.1 IP address : 10.4.0.1 Neighbor Count : 1 Adjacent neighbor count : 1 Adjacent with the neighbor : 10.5.6.4 Interface name : vlan1 IP Address : 192.168.127.253 is disable.</pre>	
Error Messages	N/A	
Related Commands	N/A	

Show OSPF Neighbor Information

Commands

show ip ospf neighbor [vlan <vlan id>]

Syntax Description	ip	IP related information
	ospf	OSPF related information
	neighbor	Neighbor router
	vlan	VLAN related information
	<vlan id>	Specified VLAN ID
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ip ospf neighbor vlan 3 Neighbor-ID Pri State DeadTime Address Interface ----- 10.5.6.4 1 FULL/DR 34 10.4.0.4 vlan3 10.10.1.8 1 FULL/DR 35 10.10.2.8 vlan10</pre>	
Error Messages	N/A	
Related Commands	N/A	

Show OSPF Request List

Commands

show ip ospf request-list

Syntax Description	ip	IP related information
	ospf	OSPF related information
	request-list	OSPF Link state request list information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ip ospf request-list OSPF Router with ID (10.5.6.6) Neighbor 10.5.6.4, interface - address 10.5.6.4 Type LS-ID ADV-RTR SeqNo Age Checksum ----- 1 10.5.6.6 10.5.6.6 0x8000000c 149 0x7e5c 2 10.5.6.6 10.5.6.6 0x80000001 740 0x943a</pre>	
Error Messages	N/A	
Related Commands	N/A	

Show OSPF Re-transmission List

Commands

show ip ospf retransmission-list

Syntax Description	ip	IP related information
	ospf	OSPF related information
	retransmission-list	OSPF Link state retransmission list information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip ospf retransmission-list OSPF Router with ID (10.5.6.6) Neighbor 10.5.6.4, interface - address 10.5.6.4 Queue length 1 Type LS-ID ADV-RTR SeqNo Age Checksum ----- ----- ---- ---- 1 10.5.6.6 10.5.6.6 0x80000015 0 0xe6ca	
Error Messages	N/A	
Related Commands	N/A	

Show OSPF Virtual Link Information

Commands

show ip ospf virtual-links

Syntax Description	ip	IP related information
	ospf	OSPF related information
	virtual-links	OSPF virtual link information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip ospf virtual-links Virtual Link to router 10.7.0.6, Interface State is DOWN Transit Area 0.0.0.3 Transmit Delay is 1 sec, Neighbor State DOWN Authentication type : simple Timer intervals : Hello : 10 secs Dead : 40 secs: Retransmit : 5 secs	
Error Messages	N/A	
Related Commands	N/A	

Show OSPF Border Router Information

Commands

show ip ospf border-routers

Syntax Description	ip	IP related information
	ospf	OSPF related information
	border-routers	OSPF border and boundary router information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip ospf border-routers	
	OSPF Process Border Router Information	
	Destination	TOS Type NextHop Cost Rt.Type Area
	-----	--- ---- -
	10.4.0.4	0 ASBR 10.10.2.1 2 interArea 0.0.0.6
	10.10.2.1	0 ABR 10.10.2.1 1 intraArea 0.0.0.6
Error Messages	N/A	
Related Commands	N/A	

Show OSPF Area Range Information

Commands

show ip ospf area-range

Syntax Description	ip	IP related information
	ospf	OSPF related information
	area-range	Associated with the OSPF address range.
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip ospf area-range	
	Display of Summary addresses for Type3 and Translated Type5	
	Vrf default ,Summary Address	

	Network Mask LSAType Area Effect Tag	
	-----	-----
	10.10.0.0 255.255.0.0 Summary 0.0.0.6 Advertise 0	
Error Messages	N/A	
Related Commands	N/A	

Show OSPF Information

Commands

show ip ospf

Syntax Description	show	Display configuration/statistics/general information
	ip	Display IP information
	ospf	OSPF related information
Defaults	N/A	
Command Modes	User EXEC mode	
Usage Guidelines	N/A	
Examples	moxa# show ip ospf OSPF Router with ID (10.10.1.10) Autonomous System Boundary Router : Disabled Redistributing External Routes - None is enabled Rfc1583 compatibility : Disabled Administrative Distance is 110 Area is 0.0.0.0 Number of interfaces in this area is 42 SPF algorithm executed 5 times Number of Areas in this router is 1 BFD is Enabled	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Show OSPF Route Information

Commands

show ip ospf route

Syntax Description	ip	IP related information																								
	ospf	OSPF related information																								
	route	route Routes learnt by OSPF process																								
Defaults	N/A																									
Command Modes	Privileged EXEC/ User EXEC																									
Usage Guidelines	N/A																									
Examples	moxa# show ip ospf route OSPF Routing Table <table border="0"> <thead> <tr> <th>Dest/Mask</th> <th>TOS</th> <th>NextHop/Interface</th> <th>Cost</th> <th>Rt.Type</th> <th>Area</th> </tr> <tr> <th>-----</th> <th>---</th> <th>-----/-----</th> <th>-----</th> <th>-----</th> <th>-----</th> </tr> </thead> <tbody> <tr> <td>10.4.0.0/255.255.0.0</td> <td>0</td> <td>0.0.0.0/vlan3</td> <td>1</td> <td>IntraArea</td> <td>0.0.0.0</td> </tr> <tr> <td>10.10.2.0/255.255.255.0</td> <td>0</td> <td>0.0.0.0/vlan10</td> <td>1</td> <td>IntraArea</td> <td>0.0.0.6</td> </tr> </tbody> </table>		Dest/Mask	TOS	NextHop/Interface	Cost	Rt.Type	Area	-----	---	-----/-----	-----	-----	-----	10.4.0.0/255.255.0.0	0	0.0.0.0/vlan3	1	IntraArea	0.0.0.0	10.10.2.0/255.255.255.0	0	0.0.0.0/vlan10	1	IntraArea	0.0.0.6
Dest/Mask	TOS	NextHop/Interface	Cost	Rt.Type	Area																					
-----	---	-----/-----	-----	-----	-----																					
10.4.0.0/255.255.0.0	0	0.0.0.0/vlan3	1	IntraArea	0.0.0.0																					
10.10.2.0/255.255.255.0	0	0.0.0.0/vlan10	1	IntraArea	0.0.0.6																					
Error Messages	N/A																									
Related Commands	N/A																									

Show OSPF Database Information

Commands

show ip ospf database [{database-summary | self-originate}]

Syntax Description	ip	IP related information
	ospf	OSPF related information
	database	Displays how many of each type of LSA there are for each area in the database
	database-summary	Display how many of each type of LSA there are for each area in the database, and the total number of LSA types
	self-originate	Displays only self-originated LSAs (from the local router)
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ip ospf database database-summary Area 0.0.0.0 database summary ----- LSA Type Count Maxage ----- Router 2 0 Network 1 0 Summary Net 1 0 Summary ASBR 0 0 Type-7 Ext 0 0 Opaque Link 0 0 Opaque Area 0 0 Subtotal 4 0 Area 0.0.0.6 database summary ----- LSA Type Count Maxage ----- Router 2 0 Network 1 0 Summary Net 1 0 Summary ASBR 0 0 Type-7 Ext 0 0 Opaque Link 0 0 Opaque Area 0 0 Subtotal 4 0 OSPF Process database summary ----- LSA Type Count Maxage ----- Router 4 0 Network 2 0 Summary Net 2 0 Summary ASBR 0 0 Type-5 Ext 0 0 Type-7 Ext 0 0 Opaque Link 0 0 Opaque Area 0 0 Opaque AS 0 0 Total 8 0 MOXA# show ip ospf database self-originate OSPF Router with ID (10.4.0.1) Router Link States (Area 0.0.0.0) ----- Link ID ADV Router Age Seq# Checksum Link count </pre>	

	<pre> ----- 10.4.0.1 10.4.0.1 1002 0x8000007d 0xf382 1 ----- Summary Link States (Area 0.0.0.0) ----- Link ID ADV Router Age Seq# Checksum ----- 10.10.2.0 10.4.0.1 717 0x80000094 0xdaa8 ----- Router Link States (Area 0.0.0.6) ----- Link ID ADV Router Age Seq# Checksum Link count ----- 10.4.0.1 10.4.0.1 1098 0x80000095 0x90b9 1 ----- Summary Link States (Area 0.0.0.6) ----- Link ID ADV Router Age Seq# Checksum ----- 10.4.0.0 10.4.0.1 717 0x80000093 0x3b51 </pre>
Error Messages	N/A
Related commands	N/A

Show OSPF Database by Specific LSA Type

Commands

show ip ospf database { asbr-summary | external | network | nssa-external | router | summary }

Syntax Description	ip	IP related information
	ospf	OSPF related information
	database	Display all of the LSA entries
	asbr-summary	Display information only about the Autonomous System Boundary Router (ASBR) summary LSAs
	external	Display information only about the external LSAs
	network	Display information only about the network LSAs
	nssa-external	Display information about the NSSA external LSAs
	router	Display information only about the router LSAs
	summary	Display information only about the summary LSAs
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ip ospf database OSPF Router with ID (10.4.0.1) Router Link States (Area 0.0.0.0) ----- Link ID ADV Router Age Seq# Checksum Link count ----- 10.4.0.1 10.4.0.1 1053 0x8000007d 0xf382 1 10.5.6.4 10.5.6.4 1056 0x80000124 0x1a9e 1 Network Link States (Area 0.0.0.0) ----- Link ID ADV Router Age Seq# Checksum ----- 10.4.0.4 10.5.6.4 1056 0x80000092 0x470d Summary Link States (Area 0.0.0.0) ----- Link ID ADV Router Age Seq# Checksum ----- 10.10.2.0 10.4.0.1 768 0x80000094 0xdaa8 Router Link States (Area 0.0.0.6) ----- Link ID ADV Router Age Seq# Checksum Link count ----- 10.4.0.1 10.4.0.1 1150 0x80000095 0x90b9 1 10.10.1.8 10.10.1.8 1094 0x80000093 0xf831 1 Network Link States (Area 0.0.0.6) ----- Link ID ADV Router Age Seq# Checksum ----- 10.10.2.8 10.10.1.8 1094 0x80000092 0xc679 Summary Link States (Area 0.0.0.6) ----- Link ID ADV Router Age Seq# Checksum ----- 10.4.0.0 10.4.0.1 768 0x80000093 0x3b51 </pre>	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable OSPF Settings

Commands

router ospf {enable | disable}

Syntax Description	router	Configures router related information
	ospf	OSPF related configuration
	enable/disable	Enable/disable OSPF routing process
Defaults	disable	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# router ospf enable	
Error Messages	N/A	
Related Commands	N/A	

Configure Router OSPF Settings

Commands

router ospf

Syntax Description	router	Configure router related information
	ospf	OSPF related configuration
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	Enter OSPF router configuration mode	
Examples	moxa(config)# router ospf	
Error Messages	N/A	
Related Commands	N/A	

Configure Route ID

Commands

router-id <ip_addr>

no router-id

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	router-id	Set OSPF router ID
	ip_addr	IP address for the router
Defaults	N/A	
Command Modes	OSPF Router Configuration Mode	
Usage Guidelines	Set the router-id as 0.0.0.0 or use no router-id command, it will dynamically select the lowest IP address as router ID	
Examples	moxa(config-router)# router-id 10.4.0.1	
Error messages	N/A	
Related commands	N/A	

Configure Network Area Settings

Commands

network <ip_addr> **area** <area-id>

no network <ip_addr> **area** <area-id>

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	network	Configures network related information
	<ip_addr>	IPv4 address of the network
	area	Area related configuration
	<area-id>	Area associated with the OSPF address range
Defaults	N/A	
Command Modes	OSPF Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-router)# network 10.4.0.1 area 0.0.0.0	
Error Messages	% OSPF: Invalid: The IP address has not been configured. % OSPF: Invalid: Mismatched Area ID. % OSPF: Invalid: The area has not been configured. % OSPF: Invalid: The area has not been created. % OSPF: Invalid: There are configured neighbors on this interface so the network type cannot be changed. % OSPF: Invalid: Demand Circuit is not supported. % OSPF: Invalid: The advertisement of the indicated aggregate can not be disabled. OSPF: Invalid: The maximum number (75) of active OSPF interfaces has been exceeded. % OSPF: Invalid: The interface does not support this feature.	
Related Commands	N/A	

Configure Redistribute Settings

Commands

redistribute {static | connected | all} [**metric** <integer(1-16777214)>] [**metric-type** <integer(1-2)>]

no redistribute {static | connected | all}

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	redistribute	Configures route redistribution related parameters
	static/connected/ rip/all	Redistribute protocol
	metric	Metric related configuration
	metric-type	OSPF exterior metric type for redistributed routes
Defaults	N/A	
Command Modes	OSPF Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-router)# redistribute static	
Error Messages	N/A	
Related Commands	N/A	

Configure Area Settings

Commands

area <area-id> [{ nssa | stub }] [no-summary]

no area <ip_addr> [{ stub [no-summary] | nssa[no-summary]]}

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	area	Configures area related information
	<area-id>	Area associated with the OSPF address range
	nssa/ stub	NSSA/Stub area related configuration
	no-summary	The router will neither originate nor propagate summary LSAs into the area
Defaults	N/A	
Command Modes	OSPF Router Configuration Mode	
Usage Guidelines	Create normal area : area <area-id> Create nssa area : area <area-id> nssa Create stub area : area <area-id> stub Reset to standard area : no area <area-id> nssa	
Examples	moxa(config-router)#area 0.0.0.6 nssa	
Error Messages	% OSPF: Invalid: The Area Type has not been configured. % OSPF: Invalid: The Backbone area cannot be set as a stub area or NSSA. % OSPF: Invalid: The area for which a virtual link has been configured cannot serve as stub or NSSA area. % OSPF: Invalid: The area has not been configured. % OSPF: Invalid: The area has not been created. % OSPF: Invalid: There are configured neighbors on this interface so the network type cannot be changed. % OSPF: Invalid: The Area ID is already associated with the aggregate area. (The existing function can still be used.) % OSPF: Invalid: The Area ID is already associated with the interface table. (The existing function can still be used.) % OSPF: Invalid: The Area ID is already associated with the virtual interface. (The existing function can still be used.) % OSPF: Invalid: This Area ID already exists. % OSPF: Invalid: The Backbone area can not be deleted.	
Related Commands	N/A	

Configure Area Virtual Link Settings

Commands

area < area-id > **virtual-link** < router-id > [**auth** { **simple** | **md5** | **sha-1** | **sha-224** | **sha-256** | **sha384** | **sha-512**}] [**hello-interval** <short (1-65535)>][**dead-interval** <integer (1-65535)>] [**auth-key** <string(8)> | **key-id** <integer (0-255)> **auth-key** <string(16)>}]

no area <ip_addr> **virtual-link** <ip_addr> [**auth**] [**hello-interval**] [**dead-interval**]

Syntax Description	area	Configures area related information
	<area-id>	Area associated with the OSPF address rang
	virtual-link	Virtual link related configuration
	<router-id>	Router ID of the virtual neighbor
	auth	Authentication related configuration
	hello-interval	Interval between hello packets that the software sends on the OSPF virtual link interface
	dead-interval	Interval at which hello packets must not be seen before its neighbors declare the router down
	auth-key	Authentication key value
	key-id	Cryptographic authentication key ID
Defaults	N/A	
Command Modes	OSPF Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-router)# area 0.0.0.3 virtual-link 10.7.0.6 auth sha-1 hello-interval 10 dead-interval 40 key-id 12 auth-key 456	
Error Messages	% OSPF: Invalid: The area has not been created. % OSPF: Invalid: The crypt authentication key has not been set yet. % OSPF: Invalid: The maximum length of the crypt authentication key is 16. % OSPF: Invalid: The simple authentication key has not been set yet. % OSPF: Invalid: The maximum length of the simple authentication key is 8. % OSPF: Invalid: The Virtual Interface already exists. % OSPF: Invalid: The virtual link cannot be configured on stub, NSSA, or the backbone area. % OSPF: Invalid: The virtual link cannot be configured since the area does not exist on any of the OSPF interfaces that are running. % OSPF: Invalid: The Dead Interval should be bigger than the Hello Interval. % OSPF: Invalid: The neighbor of another area of the virtual link's endpoint already exists.	
Related Commands	N/A	

Configure Area Range Settings

Commands

area <area-id> **range** <ip_addr> <ip_mask> {**summary** | **Type7**}

no area <area-id> **range** <ip_addr> [**Type7**]

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	area	Configures area related information
	range	Address range configuration
	Summary/Type7	LSA type is set as summary LSA or Type-7 LSA
Defaults	N/A	
Command Modes	OSPF Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-router)# area 0.0.0.6 range 10.10.2.0 255.255.255.0 summary	
Error Messages	% OSPF: Invalid: The area has not been created. % OSPF: Invalid: The advertisement of the indicated aggregate can not be disabled. % OSPF: Invalid: The number of addresses for this area has been exceeded. (The maximum is three.) % OSPF: Invalid: The address/mask combination is inconsistent. % OSPF: Invalid: The same Address Range has already been configured in this area and cannot be used. % OSPF: Invalid: The Aggregate area already exists. (The existing function can still be used.) % OSPF: Invalid: The Area ID is already associated with the aggregate area. (The existing function can still be used.)	
Related Commands	N/A	

Configure the Neighbor Router Priority Settings

Commands

neighbor <neighbor-ip-address> [**priority** <integer (0-255)>]

no neighbor <ip_addr> [**priority**]

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	neighbor	Specify a neighbor router
	priority	0 means no election; larger number means higher priority
Defaults	N/A	
Command Modes	OSPF Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-router)# neighbor 10.10.2.8 priority 1	
Error messages	% OSPF: Invalid: There are configured neighbors on this interface so the network type cannot be changed. % OSPF: Invalid: The address/mask combination is inconsistent. % OSPF: Invalid: The IP address of a local interface cannot be configured as a neighbor IP address. % OSPF: Invalid: The Neighbor IP address does not fall into any of the interface networks. % OSPF: Invalid: The Neighbor IP address can only be configured on NBMA or point-to-multipoint networks. % OSPF: Invalid: The Neighbor IP address already exists.	
Related commands	N/A	

Configure OSPF with Legacy OSPFv2 (RFC1583) Compatibility

Commands

compatible rfc1583

no compatible rfc1583

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	Compatible rfc1583	Set OSPF compatibility list compatible with RFC 1583
Defaults	N/A	
Command Modes	OSPF Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-router)# compatible rfc1583	
Error Messages	N/A	
Related Commands	N/A	

Configure SPF (Shortest Path First) Holdtime Settings

Commands

spf holdtime < integer(0-65535)>

Syntax Description	spf holdtime	Minimum time (in milliseconds) between two consecutive SPF calculations
	Integer(0-65535)	Set the spf holdtime in milliseconds
Defaults	5000	
Command Modes	OSPF Router Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-router)# spf holdtime 7000	
Error Messages	N/A	
Related Commands	N/A	

Configure OSPF Passive Interface Settings

Commands

ip ospf passive-interface

no ip ospf passive-interface

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	ip	Configure IP related information
	ospf	OSPF related configuration
	passive-interface	Configure routing update details
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-if)# ip ospf passive-interface	
Error Messages	N/A	
Related Commands	N/A	

Configure OSPF Priority Settings

Commands

ip ospf priority <integer(0 - 255)>

no ip ospf priority

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	ip	Configures IP related information
	ospf	OSPF related configuration
	priority	Router priority configuration
	integer(0-255)	Set the priority parameter
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	1	
Examples	moxa(config-if)# ip ospf priority 10	
Error Messages	N/A	
Related Commands	N/A	

Configure OSPF Hello Interval Settings

Commands

ip ospf hello-interval <integer(1 - 65535)>

no ip ospf hello-interval

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	ip	Configure IP related information
	ospf	OSPF related configuration
	hello-interval	Interval (in seconds) between hello packets sent on the interface
	integer(1 - 65535)>	Interval parameter
Defaults	10	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-if)# ip ospf hello-interval 15	
Error Messages	% OSPF: Invalid: The Dead Interval should be bigger than the Hello Interval.	
Related Commands	N/A	

Configure OSPF Dead Interval Settings

Commands

ip ospf dead-interval <integer(1-65535)>

no ip ospf dead-interval

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	ip	Configures IP related information
	ospf	OSPF related configuration
	dead-interval	Interval (in seconds) at which hello packets must not be seen before neighbors declare the router down
	integer(1-65535)	Set the interval parameter
Defaults	40	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-if)# ip ospf dead-interval 20	
Error Messages	% OSPF: Invalid: The Dead Interval should be bigger than the Hello Interval.	
Related Commands	N/A	

Configure the OSPF Cost Settings

Commands

ip ospf cost <integer (1-65535)>

no ip ospf cost

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	ip	Configures IP related information
	ospf	OSPF related configuration
	cost	Path cost configuration
	integer(10-65535)	Set the cost parameter
Defaults	1	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-if)# ip ospf cost 30	
Error Messages	N/A	
Related Commands	N/A	

Configure OSPF Authentication Settings

Commands

ip ospf auth simple auth-key <string (8)>

ip ospf auth {md5 | sha-1 | sha-224 | sha-256 | sha-384 | sha-512} key-id <integer (0-255)>
auth-key <string (16)>

no ip ospf auth

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	ip	Configures IP related information
	ospf	OSPF related configuration
	auth	Authentication related configuration
	md5, sha-1, sha-223, sha-256, sha-384, sha-512	Set the authentication methods
	key-id	Cryptographic authentication key ID
	auth-key	Authentication key value
Defaults	N/A	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-if)# ip ospf auth simple auth-key 123456	
Error Messages	% OSPF: Invalid: The crypt authentication key has not been set yet. % OSPF: Invalid: The maximum length of the crypt authentication key is 16. % OSPF: Invalid: The simple authentication key has not been set yet. % OSPF: Invalid: The maximum length of the simple authentication key is 8.	
Related Commands	N/A	

Configure OSPF Network Settings

Commands

ip ospf network {broadcast | non-broadcast | point-to-multipoint | point-to-point}

no ip ospf network

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	ip	Configures IP related information
	ospf	OSPF related configuration
	network	Network related configuration
Defaults	broadcast	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-if)# ip ospf network point-to-multipoint	
Error Messages	% OSPF: Invalid: There are configured neighbors on this interface so the network type cannot be changed. % OSPF: Invalid: The Neighbor IP address only can be configured on NBMA or point-to-multipoint networks.	
Related Commands	N/A	

Routing Table

Display Static Routing Table

Commands

show ip route [{ connected | ospf | static }]

Syntax Description	show	Show running system information
	ip	Display IP information
	route	Display routing entries
	connected	Connected routing entries
	ospf	OSPF routing entries
	static	Static routing entries
Defaults	N/A	
Command Modes	Privileged EXEC / User EXEC	
Usage Guidelines	N/A	
Examples	<pre> Product# show ip route Codes: C - connected, S - static, O - ospf ----- S 192.111.111.0/24 [1] via 192.168.127.46 S 192.168.126.0/24 [1] via 192.168.127.45 C 192.168.127.0/24 is directly connected, vlan1 Product# show ip route static Codes: C - connected, S - static, O - ospf ----- S 192.111.111.0/24 [1] via 192.168.127.46 S 192.168.126.0/24 [1] via 192.168.127.45 Product# show ip route connected Codes: C - connected, S - static, O - ospf ----- C 192.168.127.0/24 is directly connected, vlan1 Product# show ip route ospf Codes: C - connected, S - static, O - ospf ----- O 15.0.0.0/8 [2] via 12.0.0.7 O 20.0.0.0/8 [10] via 12.0.0.7 </pre>	
Error Messages	N/A	
Related Commands	N/A	

Multicast Route

PIM-DM

Enable/Disable PIM-DM

Commands

ip multicast-routing pim-dm

no ip multicast-routing

Syntax Description	ip	Configure IP parameters
	multicast-routing	Configure Multicast Routing related configuration
	pim-dm	Enable PIM-DM
Defaults	disable	
Command Modes	Global configuration mode	
Usage Guidelines	The switch supports three IP multicast routing functions: "PIM-DM", "PIM-SM and "Multicast Local Route". Please note only one can be enabled at a time. CLI prompt error message if the user tries to enable more than one. Use no ip multicast-routing to disable all and then re-enable the desired function.	
Examples	moxa# configure moxa(config)# ip multicast-routing pim-dm moxa(config)# no ip multicast-routing	
Error Messages	Invalid: Only one multicast routing protocol can be running at the same time.	
Related Commands	N/A	

Enter PIM Router Configuration Mode

Commands

router pim

Syntax Description	router	Configures router related information
	pim	PIM related information
Defaults	N/A	
Command Modes	Global configuration mode	
Usage Guidelines	Enter PIM Router Configuration Mode	
Examples	moxa# configure moxa(config)# router pim moxa(config-pim)#	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable PIM-DM State Refresh

Commands

pim-dm state-refresh

no pim-dm state-refresh

Syntax Description	no	Disables configuration / delete entry / reset to default value
	pim-dm	PIM-DM related configuration
	state-refresh	Enable State-Refresh
Defaults	enable	
Command Modes	PIM Router Configuration Mode	
Usage Guidelines	If you want to use state-refresh, you need to ensure that state-refresh is enabled on all routers.	
Examples	moxa# configure moxa(config)# router pim moxa(config-pim)# pim-dm state-refresh	
Error Messages	N/A	
Related Commands	N/A	

Configure PIM-DM State Refresh Interval

Commands

pim-dm state-refresh-interval <short (10-100)>

no pim-dm state-refresh-interval

Syntax Description	no	Disables configuration / delete entry / reset to default value
	pim-dm	PIM-DM related configuration
	state-refresh-interval	State-Refresh-Interval related configuration
	(10-100)	State refresh interval value
Defaults	60sec	
Command Modes	PIM Router Configuration Mode	
Usage Guidelines	The interval for the state-refresh control message must be the same for all PIM routers.	
Examples	moxa# configure moxa(config)# router pim moxa(config-pim)# pim-dm state-refresh-interval 80	
Error Messages	N/A	
Related Commands	N/A	

Enable/disable PIM-DM on the operating VLAN interface

Commands

ip pim-dm

no ip pim-dm

Syntax Description	no	Disables configuration / delete entry / reset to default value
	ip	Configure IP related configuration
	pim-dm	Enable PIM-DM on specific VLAN
Defaults	Disable	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 1 moxa(config-if)# ip pim-dm	
Error Messages	N/A	
Related Commands	N/A	

Configure PIM-DM Hello Interval

Commands

ip pim-dm hello-interval < integer (10-3600) >

no ip pim-dm hello-interval

Syntax Description	no	Disables configuration / delete entry / reset to default value
	ip	Configure IP related configuration
	pim-dm	PIM-DM related configuration
	hello-interval	Hello-Interval related configuration
	(10-3600)	Hello interval value
Defaults	30sec	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 1 moxa(config-if)# ip pim-dm hello-interval 30	
Error Messages	N/A	
Related Commands	N/A	

Display ip pim-dm interface status

Commands

show ip pim-dm interface [vlan <vlan-id>] [detail]

Syntax Description	show	Display configuration / statistics / general information
	ip	Display IP information
	pim-dm	PIM-DM related information
	interface	Interface related information
	vlan	VLAN related information
	vlan-id	Specified vlan id
	detail	Detail interface information
Defaults	N/A	
Command Modes	Privileged EXEC Mode/ User EXEC	
Usage Guidelines	<p>This command displays PIM-DM interface information.</p> <ul style="list-style-type: none"> • Checksum error: Triggered when the PIM checksum of the packet is incorrect. • Bad version packets: Triggered when the PIM version of the packet is not 2. • Packets from self: Triggered when the source IP of the packet is the same as its own IP. • Packets from Non-Neighbors: When the PIM neighbor has not been established yet, packet types other than Hello are received 	
Examples	<pre>moxa# show ip pim-dm interface Globally disabled moxa# show ip pim-dm interface Interface PIM-DM Address Nbr Count Hello Interval ----- - Vlan2 Enabled 192.168.40.2 1 30 Vlan3 Enabled 192.168.50.2 2 30 moxa# show ip pim-dm interface detail vlan2 is up Internet Address is 192.168.40.2 PIM Version: 2 PIM Neighbor Count: 0 PIM Hello Interval: 30 PIM Join/Prune Interval: 60 PIM Graft Retry Interval: 3 PIM State Refresh: Uncapable PIM State Refresh Processing: enabled PIM Refresh Origination: Disabled PIM RPF Status: Disabled PIM Interface Statistics General (Sent/Received): Hellos: 0/0, Join/Prune's: 0/0, Assert's: 0/0, Grafts's: 0/0, GraftAck's: 0/0, Errors: Checksum error: 0, Bad version packets: 0 Packets from self: 0, Packets from Non-Neighbors : 0</pre>	
Error Messages	Invalid: The maximum number (40) of active PIM-DM interfaces has been exceeded.	
Related Commands	N/A	

Display PIM-DM PIM-DM neighbor information

Commands

show ip pim-dm neighbor [vlan <vlan-id>]

Syntax Description	show	Display configuration / statistics / general information
	ip	Display IP information
	pim-dm	PIM-DM related information
	neighbor	Neighbor related information
	vlan	VLAN related information
	vlan-id	Specified vlan id
Defaults	N/A	
Command Modes	Privileged EXEC Mode/ User EXEC	
Usage Guidelines	This command displays PIM-DM neighbor information.	
Examples	moxa# show ip pim-dm neighbor	
	<pre>Neighbor Interface Uptime/Expiry ----- 192.168.40.3 vlan2 0d10h12m5s/0h0m15s 192.168.41.3 vlan3 0d11h12m3s/0h1m15s</pre>	
Error Messages	moxa# show ip pim-dm neighbor vlan 2	
	<pre>Neighbor Interface Uptime/Expiry ----- 192.168.40.3 vlan2 0d11h12m3s/0h1m25s</pre>	
Related Commands	N/A	

Display PIM-DM Multicast Routing

Commands

show ip pim-dm mroute [**group-address** <mcast_addr> | **source-address** <ucast_addr>]

Syntax Description	show	Display configuration / statistics / general / information
	ip	Display IP information
	pim-dm	PIM-DM related information
	mroute	Display the multicast routing entries of PIM
	group-address	Group-address related information
	mcast_addr	Specifies the PIM-DM multicast group address
	source-address	Source-address related information
	ucast_addr	Specifies the Unicast address
	Defaults	N/A
Command Modes	Privileged EXEC Mode/ User EXEC	
Usage Guidelines	This command displays PIM-DM multicast routing entry information.	
Examples	moxa# show ip pim-dm mroute	
	<pre> PIM Multicast Routing Table ----- (S,G), Uptime/Expires Incoming Interface: Interface, State Upstream neighbor Route Flags S: SPT Bit W: Wild Card Bit R: RPT Bit OIF State Pruned(A): Assert Loser Outgoing Interface list: Interface, State/Mode, Uptime Total number of Multicast Routes is 1 (192.168.20.100,239.1.1.1), 0d0h20m15s/0h3m22s Incoming Interface: vlan29, Forwarding Upstream nbr: 192.168.129.102 Route Flags: --- State Refresh Message Generation: Disabled Source Active Timer Value: 210 State Refresh Remaining Time: 0h0m0s Prune Limit Remaining Time: 0h0m0s Outgoing Interface list: vlan30, Prune(A)/Dense ,0d0h20m15s </pre>	
Error Messages	N/A	
Related Commands	N/A	

Clear PIM-DM Statistics

Commands

clear ip pim-dm statistics [vlan <vlan-id>]

Syntax Description	clear	Clear statistics information
	ip	IP related information
	pim-dm	PIM-DM related information
	statistics	Clear statistics information
	vlan	VLAN related information
	vlan-id	Specified vlan id
	Defaults	N/A
Command Modes	Privileged EXEC Mode/ User EXEC	
Usage Guidelines	This command clear PIM-DM interface statistics.	
Examples	moxa# clear ip pim-dm statistics	
	moxa# clear ip pim-dm statistics vlan 2	
Error Messages	N/A	
Related Commands	N/A	

PIM-SM

Enable/Disable PIM-SM

Commands

ip multicast-routing pim-sm

no ip multicast-routing

Syntax Description	ip multicast-routing pim-sm no ip multicast-routing	Enable PIM-SM on the switch Disable all IP multicast routing functions (PIM-DM, PIM-SM, Multicast Local Route) on the switch
Defaults	Disable	
Command Modes	Global Configuration Mode	
Usage Guidelines	The switch supports three IP multicast routing functions: "PIM-DM", "PIM-SM" and "Multicast Local Route". Please note only one can be enabled at a time. CLI prompt error message if the user tries to enable more than one. Use no ip multicast-routing to disable all and then re-enable the desired function.	
Examples	moxa(config)# ip multicast-routing pim-sm	
Error Messages	Invalid: Only one multicast routing protocol can be active.	
Related Commands	ip multicast-routing pim-dm (Refer to FR-M-NL_PIM_DM Software Requirement Specification) ip multicast-routing local-route (Refer to FR-M-NL_MULTICAST_LOCAL_ROUTE Software Requirement Specification)	

Enter PIM Router Configuration Mode

Commands

router pim

Syntax Description	router pim	Enter PIM Router Configuration Mode
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# router pim moxa(config-pim)#	
Error Messages	N/A	
Related Commands	N/A	

Configure PIM-SM Static RP

Commands

pim-sm rp-static rp-address <group-addr> <group-mask> <ip-addr> [**override**]

no pim-sm rp-static rp-address <group-addr> <group-mask>

Syntax Description	pim-sm	Configure PIM-SM related configuration
	rp-static	Configure switch a statistically RP
	rp-address	Configure RP address for a particular group
	<group-addr>	Configure the group address
	<group-mask>	Configure the group mask
	<ip-addr>	Configure the unicast RP address
	override	Override dynamically learnt RP mappings
Defaults	N/A	
Command Modes	PIM Router Configuration Mode	
Usage Guidelines	The override keyword means that if there is a conflict between the RP configured by this command and one learned by BSR, the RP configured by this command is used instead of the one learned by BSR. Without the override keyword, the RP learned by BSR takes priority over the one configured by this command.	
Examples	moxa(config)# router pim moxa(config-pim)# pim-sm rp-static rp-address 224.1.1.0 255.255.255.0 4.4.4.4	
Error Messages	Invalid: Invalid group prefix. Invalid: A static RP already exists for this group prefix. Invalid: RP cannot be configured for a SSM group range.	
Related Commands	N/A	

Configure PIM-SM Candidate RP

Commands

pim-sm rp-candidate rp-address <group-addr> <group-mask> <ip-addr> [**priority** <value(0-255)>]

no pim-sm rp-candidate rp-address <group-addr> <group-mask> <ip-addr>

Syntax Description	pim-sm	Configure PIM-SM related configuration
	rp-candidate	Configure switch as RP candidate and advertise to BSR
	rp-address	Configure the address of RP for a particular group
	<group-addr>	Configure the group address
	<group-mask>	Configure the group mask
	<ip-addr>	Configure the unicast candidate RP address
	priority	Configure priority value for candidate RP. The default value is 192 if priority not set.
Defaults	N/A	
Command Modes	PIM Router Configuration Mode	
Usage Guidelines	The candidate RP with the smaller priority value is preferred. ----- Note: RP candidate can only be created when: Binding L3 IP interface is created Binding L3 IP address is valid PIM-SM interface is enabled ----- If RP is the same, the priority will override the previous one.	
Examples	moxa(config)# router pim moxa(config-pim)# pim-sm rp-candidate rp-address 224.1.1.0 255.255.255.0 3.3.3.3 priority 0	
Error Messages	Invalid: The PIM interface has not been created yet. Invalid: Invalid group prefix. Invalid: A candidate RP already exists for this group prefix. Invalid: RP cannot be configured for a SSM group range.	
Related Commands	N/A	

Enable/disable PIM-SM SSM

Commands

pim-sm ssm {enable | disable}

Syntax Description	pim-sm	Configure PIM-SM related configuration
	ssm	Configure SSM configuration
	enable	Enable SSM operation for groups within SSM range
	disable	Disable SSM operation
Defaults	Disable	
Command Modes	PIM Router Configuration Mode	
Usage Guidelines	This command is used to enable/disable SSM delivery model. SSM delivery model can be used when local receiver knows the exact locations of multicast sources in advance, support IGMPv3 include mode to specify the sources they want to receive data.	
Examples	moxa(config)# pim-sm ssm enable	
Error Messages	N/A	
Related Commands	N/A	

Configure pim-sm ssm group address

Commands

pim-sm ssm group <group-addr> <group-mask>

no pim-sm ssm group <group-addr> <group-mask>

Syntax Description	pim-sm	Configure PIM-SM related configuration
	ssm	Configure SSM configuration
	group	Add group range to be used for SSM
	<group-addr>	Configure the group address
	<group-mask>	Configure the group mask
Defaults	PIM Router Configuration Mode	
Command Modes	In addition to default SSM group range (232.0.0.0 to 232.255.255.255), SSM range can be expanded by this command. Switch allows SSM configuration for the IP multicast address range (224.0.0.0 to 239.255.255.255). Note that the SSM group address range configured on each router should be the same.	
Usage Guidelines	moxa(config-pim)# pim-sm ssm group 224.1.1.0 255.255.255.0	
Examples	Invalid: The default SSM group cannot be deleted. Invalid: Invalid group prefix. Invalid: This SSM group already exists. Invalid: This SSM group range is already used by a static RP. Invalid: This SSM group range is already used by a candidate RP.	
Error Messages	N/A	
Related Commands	N/A	

Enable/disable PIM-SM SPT Immediate

Commands

pim-sm spt-immediate

no pim-sm spt-immediate

Syntax Description	pim-sm	Configure PIM-SM related configuration
	spt-immediate	Configure immediate switchover to Shortest-Path-Tree
Defaults	Disable	
Command Modes	PIM Router Configuration Mode	
Usage Guidelines	This command make the RPT switch over to the SPT as soon as the first data packet arrives at the last-hop router. By default, all groups use the RPT and will not switch to the SPT.	
Examples	moxa(config)# router pim moxa(config-pim)# pim-sm spt-immediate	
Error Messages	N/A	
Related Commands	N/A	

Enable/disable PIM-SM on the interface

Commands

ip pim-sm

no ip pim-sm

Syntax Description	ip pim-sm	Enable PIM-SM on the interface
	no ip pim-sm	Disable PIM-SM on the interface
Defaults	Disable	
Command Modes	Interface Configuration Mode	
Usage Guidelines	Note: PIM-SM interface cannot be disabled if candidate RP is binding.	
Examples	moxa(config)# interface vlan 100 moxa(config-if)# ip pim-sm moxa(config)# interface loopback 1 moxa(config-if)# ip pim-sm	
Error Messages	Invalid: The maximum number (40) of active PIM-SM interfaces has been exceeded. Invalid: This interface is used by candidate RP.	
Related Commands	N/A	

Enable/disable IP PIM-SM BSR Candidate

Commands

ip pim-sm bsr-candidate {enable | disable}

Syntax Description	ip	Configure IP related configuration
	pim-sm	Configure PIM-SM related configuration
	bsr-candidate	Configure BSR candidate configuration
	enable	Enable local interface as BSR candidate
	disable	Disable local interface as BSR candidate
Defaults	Disable	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 100 moxa(config-if)# ip pim-sm bsr-candidate enable moxa(config)# interface loopback 1 moxa(config-if)# ip pim-sm bsr-candidate enable	
Error Messages	N/A	
Related Commands	N/A	

Configure the priority of PIM-SM BSR Candidate

Commands

ip pim-sm bsr-candidate priority <value(0-255)>

no ip pim-sm bsr-candidate priority

Syntax Description	ip	Configure IP related configuration
	pim-sm	Configure PIM-SM related configuration
	bsr-candidate	Configure BSR candidate configuration
	priority	Configure priority value for BSR candidate
Defaults	64	
Command Modes	Interface Configuration Mode	
Usage Guidelines	The BSR with the larger priority value is preferred. If the priority values are the same, the device with the highest IP address is selected as the BSR.	
Examples	moxa(config)# interface vlan 100 moxa(config-if)# ip pim-sm bsr-candidate priority 0	
	moxa(config)# interface loopback 1 moxa(config-if)# ip pim-sm bsr-candidate priority 0	
Error Messages	N/A	
Related Commands	N/A	

Configure the Hash Mask Length of PIM-SM BSR Candidate

Commands

ip pim-sm bsr-candidate hash-mask-length <hash-mask-length(4-32)>

no ip pim-sm bsr-candidate hash-mask-length

Syntax Description	ip	Configure IP related configuration
	pim-sm	Configure PIM-SM related configuration
	bsr-candidate	Configure BSR candidate configuration
	hash-mask-length	Configure hash-mask-length for BSR candidate
Defaults	30	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 100 moxa(config-if)# ip pim-sm bsr-candidate hash-mask-length 32	
	moxa(config)# interface loopback 1 moxa(config-if)# ip pim-sm bsr-candidate hash-mask-length 32	
Error Messages	N/A	
Related Commands	N/A	

Configure PIM-SM Hello Interval

Commands

ip pim-sm hello-interval <seconds(10-3600)>

no ip pim-sm hello-interval

Syntax Description	ip	Configure IP related configuration
	pim-sm	Configure PIM-SM related configuration
	hello-interval	Configure the hello-messages interval
Defaults	30	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 100 moxa(config-if)# ip pim-sm hello-interval 60	
	Invalid: This configuration does not support a loopback interface.	
Error Messages	Invalid: This configuration does not support a loopback interface.	
Related Commands	N/A	

Configure PIM-SM Join/Prune Interval

Commands

ip pim-sm join-prune-interval <seconds(10-3600)>

no ip pim-sm join-prune-interval

Syntax Description	ip	Configure IP related configuration
	pim-sm	Configure PIM-SM related configuration
	join-prune-interval	Configure the join/prune-messages interval
Defaults	60	
Command Modes	Interface Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 100 moxa(config-if)# ip pim-sm join-prune-interval 30	
Error Messages	Invalid: This configuration does not support a loopback interface.	
Related Commands	N/A	

Configure the PIM-SM DR priority

Commands

ip pim-sm dr-priority <priority (1-4294967295)>

no ip pim-sm dr-priority

Syntax Description	ip	Configure IP related configuration
	pim-sm	Configure PIM-SM related configuration
	dr-priority	Configure the DR priority
Defaults	1	
Command Modes	Interface Configuration Mode	
Usage Guidelines	The DR with the larger priority value is preferred in DR election.	
Examples	moxa(config)# interface vlan 100 moxa(config-if)# ip pim-sm dr-priority 3	
Error Messages	Invalid: This configuration does not support a loopback interface.	
Related Commands	N/A	

Display PIM-SM interface information

Commands

show ip pim-sm interface [vlan <vlan-id(1-4094)> | **loopback** <interface-id(1-10)>] [**detail**]

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	pim-sm	Display PIM-SM related information
	interface	Display PIM-SM interface information
	vlan	Display for specific vlan
	loopback	Display for specific loopback
	detail	Display the detailed information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ip pim-sm interface Shortest Path Tree Switchover Method: Never IfName PIM-SM Address Nbr Hello DR DR Count Intvl Address Priority ----- vlan200 Enabled 11.1.1.1 1 30 11.1.1.2 1 vlan300 Enabled 12.1.1.1 1 30 12.1.1.2 1 </pre> <pre> moxa# show ip pim-sm interface vlan 200 detail vlan200 (Interface Index:130) is up Internet Address is 11.1.1.1 PIM version: 2 PIM DR: 11.1.1.2 PIM DR Priority: 1 PIM Neighbor Count: 1 PIM Hello Interval: 30 PIM Join/Prune Interval: 60 PIM Interface Statistics General (Sent/Received): Hellos: 103/103, Join/Prune's: 0/0, Assert's: 0/0, Errors: Checksum error: 0, Bad version packets: 0, NULL-Register errors: 0 Packets from self: 0 Packets from Non-Neighbors: 1 Join/Prune packets received on RPF interface: 0 (*,G) Joins received with no/wrong RP: 0/0 (S,G) Join/Prune received for SSM groups: 0 Bad Join/Prune packets received for SSM groups: 0 </pre>	
Error Messages	N/A	
Related Commands	N/A	

Display PIM-SM neighbor information

Commands

show ip pim-sm neighbor [vlan <vlan-id>]

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	pim-sm	Display PIM-SM related information
	neighbor	Display neighbor information
	vlan <vlan-id>	Display for specific VLAN
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip pim-sm neighbor	
	Neighbor IfName Uptime/Expiry DR-Priority ----- - 11.1.1.2 vlan200 0d1h31m15s/0m15s 1	
Error Messages	N/A	
Related Commands	N/A	

Display PIM-SM statistic RP information

Commands

show ip pim-sm rp-static

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	pim-sm	Display PIM-SM related information
	rp-static	Display statistically RP information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	iss# show ip pim-sm rp-static	
	Group Address Group Mask RP Address ----- - 224.1.1.0 255.255.255.0 3.3.3.3	
Error Messages	N/A	
Related Commands	N/A	

Display PIM-SM RP candidate information

Commands

show ip pim-sm rp-candidate

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	pim-sm	Display PIM-SM related information
	rp-candidate	Display RP candidate information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip pim-sm rp-candidate	
	Group Address Group Mask RP Address/Priority ----- - 225.1.1.0 255.255.255.0 100.1.1.1/1	
Error Messages	N/A	
Related Commands	N/A	

Display the PIM-SM RP information for the multicast group

Commands

show ip pim-sm rp [<group-addr>]

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	pim-sm	Display PIM-SM related information
	rp	Display the RP information for the multicast group
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ip pim-sm rp PIM-SM BSR RP: ----- Group Address/Network Mask: 224.1.1.0/255.255.255.0 RP Address: 3.3.3.3 Priority: 192, Hold Time: 150s, Expiry Time: 0h2m25s Group Address/Network Mask: 224.1.1.0/255.255.255.0 RP Address: 4.4.4.4 Priority: 192, Hold Time: 150s, Expiry Time: 0h2m25s Group Address/Network Mask: 225.1.1.0/255.255.255.0 RP Address: 100.1.1.1 Priority: 1, Hold Time: 150s, Expiry Time: 0h2m25s Group Address/Network Mask: 226.1.1.0/255.255.255.0 RP Address: 100.1.1.1 Priority: 1, Hold Time: 150s, Expiry Time: 0h2m25s PIM-SM Static RP: ----- Group Address/Network Mask: 224.1.1.0/255.255.255.0 RP Address: 4.4.4.4, Override: Disabled moxa# show ip pim-sm rp 224.1.1.1 RP Address: 3.3.3.3 (via BSR) Priority: 192, Hold Time: 150s, Expiry Time: 0h2m25s Hash Value RP: 4.4.4.4, priority: 192, Hash Value: 546521210 RP: 3.3.3.3, priority: 192, Hash Value: 1597564979 </pre>	
Error Messages	N/A	
Related Commands	N/A	

Display PIM-SM BSR information

Commands

show ip pim-sm bsr

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	pim-sm	Display PIM-SM related information
	bsr	Display BSR information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>iss# show ip pim-sm bsr Elected BSR BSR Address: 100.1.1.1 BSR Priority: 254, Hash Mask Length: 30 BSR UpTime: 0d0h3m41s</pre>	
Error Messages	N/A	
Related Commands	N/A	

Display multicast routing table of PIM-SM

Commands

show ip pim-sm mroute [<group-addr> | <source-addr>]

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	pim-sm	Display PIM-SM related information
	mroute	Display multicast routing table of PIM-SM
	<group-addr>	Specifies the PIM multicast group address
	<source-addr>	Specifies the Unicast network address that identifies the sources for which the entry contains multicast routing information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>iss# show ip pim-sm mroute PIM Multicast Routing Table ----- (S,G), Uptime/Expires Incoming Interface: Interface, State Upstream neighbor Route Flags S: SPT Bit W: Wild Card Bit R: RPT Bit OIF State Pruned(A): Assert Loser Outgoing InterfaceList: Interface, State/Mode, Uptime Total number of Multicast Routes is 1 (*, 224.1.1.1), 0d0h3m2s/, RP: 3.3.3.3 Incoming Interface: vlan200 Upstream nbr: 11.1.1.2 Route Flags: WR Outgoing InterfaceList: vlan300, Forwarding/Sparse, 0d0h3m2s</pre>	
Error Messages	N/A	
Related Commands	N/A	

Display Multicast Routing table

Commands

show ip mroute [<group-addr>| <source-addr>]

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	mroute	Display multicast routing table
	<group-addr>	Specifies the PIM multicast group address
	<source-addr>	Specifies the Unicast network address that identifies the sources for which the entry contains multicast routing information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ip mroute IPv4 Multicast Routing Status : Enabled Multicast Routing Table ----- (S,G), Uptime/Expires Multicast routing protocol, Upstream neighbor Incoming interface: Interface Outgoing interface list: interface, State, Uptime/expires (3.3.3.3, 224.1.1.1), 0d0h6m23s/0h3m27s Protocol: PIM-SM, Upstream nbr: 11.1.1.2 Incoming interface: vlan 200 Outgoing interface list: vlan 300, Forwarding, 0d0h6m23s</pre>	
Error Messages	N/A	
Related Commands	N/A	

Display the PIM-SSM group range

Commands

show ip pim-sm ssm

Syntax Description	show	Display configuration / statistics information
	ip	Display IP related information
	pim-sm	Display PIM-SM related information
	ssm	Display the PIM-SSM group range
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ip pim-sm ssm Group Address Group Mask ----- ----- 232.0.0.0 255.0.0.0</pre>	
Error Messages	N/A	
Related Commands	N/A	

Clear PIM-SM related statistics

Commands

clear ip pim-sm statistics [vlan <vlan-id >]

Syntax Description	clear	Clear statistics information
	ip	Clear IP related configuration
	pim-sm	Clear PIM-SM related information
	statistics	Clear related statistics
	vlan	Clear for specified vlan
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# clear ip pim-sm statistics	
Error Messages	N/A	
Related Commands	N/A	

Multicast Local Route

Enable/disable Multicast Local Route

Commands

ip multicast-routing local-route

no ip multicast-routing

Syntax Description	ip	Configure IP parameters
	multicast-routing	Configure Multicast Routing related configuration
	local-route	Enable MLR global configuration
Defaults	Disable	
Command Modes	Global Configuration	
Usage Guidelines	The switch supports multiple IP multicast routing protocols. Please note only one can be enabled at a time. CLI prompt error message if the user tries to enable more than one. Use no ip multicast-routing to disable all and then re-enable the desired multicast protocol.	
Examples	moxa(config)# ip multicast-routing local-route	
Error Messages	% Multicast Routing: Invalid: Only one multicast routing protocol can be active.	
Related Commands	ip multicast-routing pim-dm ip multicast-routing pim-sm (Refer to FR-12-5L_Multicast_Routing_Table_SRS)	

Enable Multicast Local Route VRRP-Master-Only

Commands

ip mcast-local-route vrrp-master-only {enable | disable}

Syntax Description	ip	Configure IP parameters
	mcast-local-route	Configure Multicast Local Route related configuration
	vrrp-master-only	Configure VRRP master only configuration
	enable	Enable VRRP master only feature
	disable	Disable VRRP master only feature
Defaults	Enable	
Command Modes	Global Configuration	
Usage Guidelines	When MLR and VRRP are enabled at the same time, only VRRP master can route multicast stream if vrrp-master-only is enabled. And both VRRP master and backup can route multicast stream if vrrp-master-only is disabled.	
Examples	moxa(config)# ip mcast-local-route vrrp-master-only enable	
Error Messages	N/A	
Related Commands	N/A	

Configure Multicast Local Route

Commands

ip mcast-local-route route source-vlan <vlan-id> **downstream-vlan** <vlan-range>

no ip mcast-local-route route source-vlan <vlan-id>

Syntax Description	ip	Configure IP parameters
	mcast-local-route	Configure Multicast Local Route related configuration
	route	Configure Local Route
	source-vlan	Configure Source VLAN
	<vlan-id>	VLAN ID (1-4094)
	downstream-vlan	Configure Downstream VLAN
	<vlan-range>	Range (1-4094) of VLANs separated by a hyphen, or a series of VLANs separated by a comma
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	The source VLAN and downstream VLAN must be L3 VLAN interface. The source VLAN and downstream VLAN must not be duplicated in the same entry.	
Examples	moxa(config)# ip mcast-local-route route source-vlan 3 downstream-vlan 2,5-7	
Error Messages	% Multicast Local Route: Invalid: The Source VLAN must be mapped to a L3 VLAN interface. % Multicast Local Route: Invalid: The Downstream VLAN must be mapped to a L3 VLAN interface. % Multicast Local Route: Invalid VLAN ID. The valid range is from 1 to 4094. % Multicast Local Route: Invalid: The Downstream VLAN cannot be assigned to a VLAN that is already assigned to the Source VLAN. % Multicast Local Route: Invalid: The maximum number (16) of Local Route has been exceeded. % Multicast Local Route: Invalid: The maximum number (16) of downstream VLAN has been exceeded.	
Related Commands	N/A	

Configure Multicast Local Route ACL

Commands

ip mcast-local-route acl <macl-id (1-16)> **group** {<group-addr> <group-mask> | **any**} **source-ip** {<uicast_addr> <ip_mask> | **any**} **source-vlan** {<vlan-id> | **any**} **downstream-vlan** {<vlan-id> | **any**} {**permit** | **deny**}

no ip mcast-local-route acl <macl-id (1-16)>

Syntax Description	ip	Configure IP parameters
	mcast-local-route	Configure Multicast Local Route related configuration
	acl	Configure Multicast ACL
	<macl-id>	Configure Multicast ACL Index
	group	Configure multicast group address and mask
	<group-addr>	Configure the group address
	<group-mask>	Configure the group mask
	any	Configure any group address and mask
	source-ip	Configure source IP and mask
	<uicast_addr>	Configure the source IP
	<ip_mask>	Configure the source mask
	any	Configure any source address and mask
	source-vlan	Configure source VLAN
	<vlan-id>	Configure source VLAN ID
	any	Configure any source VLAN ID
	downstream-vlan	Configure downstream VLAN
	<vlan-id>	Configure downstream VLAN ID
	any	Configure any downstream VLAN ID
	permit	Permit the multicast stream
	deny	Deny the multicast stream
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	Smaller MACL-ID numbers have higher priority for multicast routing filtering	
Examples	moxa(config)# ip mcast-local-route acl 1 group 239.0.1.2 255.255.255.255 source-ip any source-vlan 3 downstream-vlan 5 deny	
Error Messages	% Multicast Local Route: Invalid Multicast Group IP/Mask format. % Multicast Local Route: Invalid Multicast Group IP format. % Multicast Local Route: Invalid Multicast Group Mask format. % Multicast Local Route: Invalid Source IP/Mask format. % Multicast Local Route: Invalid Source Mask format. % Multicast Local Route: Invalid: The maximum number (16) of Multicast ACL has been exceeded.	
Related Commands	N/A	

Display Active Multicast Local Route status

Commands

show ip mcast-local-route route

Syntax Description	show	Display configuration / statistics / general information
	ip	Display IP information
	mcast-local-route	Display Multicast Local Route related information
	route	Display Active Multicast Local Route status
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip mcast-local-route route Multicast Local Route is globally enabled VRRP Master Only is globally enabled Index Source VLAN Downstream VLAN ----- 1 3 2,5	
Error Messages	N/A	
Related Commands	N/A	

Display Active Multicast ACL status

Commands

show ip mcast-local-route acl

Syntax Description	show	Display configuration / statistics / general information
	ip	Display IP information
	mcast-local-route	Display Multicast Local Route related information
	acl	Display Active Multicast ACL status
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip mcast-local-route acl Note. Action(A) : Deny(D) Permit(P) ID Group Mask Source Mask Svid Dvid A ----- 1 239.0.1.2 255.255.255.255 Any Any 3 5 D	
Error Messages	N/A	
Related Commands	N/A	

Display Multicast Routing table

Commands

show ip mroute

Syntax Description	show	Display configuration / statistics / general information
	ip	Display IP information
	mroute	Multicast routing related information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show ip mroute IPv4 Multicast Routing Status : Enabled Multicast Routing Table ----- (S,G), Uptime/Expires Muticast routing protocol, Upstream neighbor Incoming interface : Interface Outgoing interface list : Interface, State, Uptime (192.168.3.102, 239.0.1.2), 0d0h3m29s/0h0m9s Protocol: Multicast Local Route, Upstream nbr: - Incoming interface: vlan 3 Outgoing interface list: vlan 2, Forwarding, 0d0h3m29s vlan 5, Forwarding, 0d0h3m29s (192.168.3.30, 239.255.255.250), 0d0h2m12s/0h3m27s Protocol: Multicast Local Route, Upstream nbr: - Incoming interface: vlan 3 Outgoing interface list: vlan 2, Forwarding, 0d0h2m12s vlan 5, Forwarding, 0d0h2m12s</pre>	
Error Messages	N/A	
Related Commands	N/A	

Multicast Routing Table

Configure Multicast Routing Protocol

Commands

ip multicast-routing {**pim-dm** | **pim-sm** | **local-route**}

no ip multicast-routing

Syntax Description	ip	Configure IP parameters
	multicast-routing	Configure Multicast Routing related configuration
	pim-dm	Enable PIM-DM
	pim-sm	Enable PIM-SM
	local-route	Enable Multicast-Local-Route
Defaults	disable	
Command Modes	Global configuration mode	
Usage Guidelines	The switch supports three IP multicast routing functions: "PIM-DM", "PIM-SM" and "Multicast Local Route". Please note only one can be enabled at a time. CLI prompt error message if the user tries to enable more than one. Use no ip multicast-routing to disable all and then re-enable the desired function.	
Examples	moxa# configure moxa(config)# ip multicast-routing pim-dm moxa(config)# no ip multicast-routing	
Error Messages	Invalid: Only one multicast routing protocol can be running at the same time.	
Related Commands	N/A	

Display Multicast Routing Table

Commands

show ip mroute [group-address <mcast_addr> | source-address <uicast_addr>]

Syntax Description	show	Display configuration / statistics / general information
	ip	Display IP information
	mroute	Multicast routing related information
	group-address	Group-address related information
	mcast_addr	Specifies the multicast group address
	source-address	Source-address related information
	uicast_addr	Specifies the Unicast address
Defaults	N/A	
Command Modes	Privileged EXEC Mode/ User EXEC	
Usage Guidelines	This command displays multicast routing entry information.	
Examples	<pre>moxa# show ip mroute IPv4 Multicast Routing Status : Enabled Multicast Routing Table ----- (S,G), Uptime/Expires Multicast routing protocol, Upstream neighbor Incoming interface: Interface Outgoing interface list : Interface, State, Uptime (192.168.20.100,239.1.1.1), 0d0h20m18s/0h3m28s Protocol: PIM-DM, Upstream nbr: 192.168.129.102 Incoming interface: vlan 29 Outgoing interface list: vlan 30, Forwarding, 0d0h20m18s (192.168.20.100,239.1.1.2), 0d0h20m18s/0h3m28s Protocol: PIM-DM, Upstream nbr: - Incoming interface: vlan 29 Outgoing interface list: vlan 30, Forwarding, 0d0h20m18s</pre>	
Error Messages	N/A	
Related Commands	N/A	

BFD

Enable/ Disable BFD Settings

Commands:

bfd {enable | disable}

Syntax Description	bfd	Configure BFD parameters
	enable	Enable BFD globally on the switch
	disable	Disable BFD on the switch
Defaults	The feature is disabled by default.	
Command Modes	Global Configuration mode	
Usage Guidelines	N/A	
Examples	<pre>moxa(config)# bfd enable moxa(config)# bfd disable</pre>	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	show bfd global (or show bfd configuration)	

Configure BFD intervals

Commands:

bfd ([min-tx-interval <(500-10000)>] [min-rx-interval <required-rx-interval(500-10000)>] [detect-multiplier <(3-50)>]

Syntax Description	bfd	Configure BFD parameters
	min-tx-interval	Desired transmit interval in milliseconds
	min-rx-interval	Minimum receive interval in milliseconds
	detect-multiplier	Detect time multiplier
Defaults	The feature is disabled by default.	
Command Modes	Global Configuration mode	
Usage Guidelines	N/A	
Examples	moxa(config)# bfd min-tx-interval 1000 moxa(config)# bfd min-rx-interval 1000 moxa(config)# bfd detect-multiplier 3	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	show bfd global (or show bfd configuration)	

Configure IP related settings

This command "enabled BFD monitoring on the specific OSPF interfaces."

Commands:

ip ospf bfd [disable]

Syntax Description	ip	Configure IP related configuration
	ospf	OSPF related configuration
	bfd	BFD support for the interface
	disable	Disable BFD for OSPF on the switch
Defaults	The feature is disabled by default.	
Command Modes	Interface VLAN Configuration mode	
Usage Guidelines	N/A	
Examples	moxa(config)# interface vlan 10 moxa(config-if)# ip ospf bfd moxa(config-if)# ip ospf bfd disable	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	show ip ospf show ip ospf interface	

Enable OSPF to Register with BFD

Commands:

enable bfd

Syntax Description	enable	Enable BFD
	bfd	Enables BFD for OSPF status
Defaults	The feature is disabled by default.	
Command Modes	Router OSPF mode	
Usage Guidelines	N/A	
Examples	moxa(config-router)# enable bfd	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	show ip ospf	

Show BFD Session

Commands

show bfd session { detail | summary }

Syntax Description	show	Display configuration/statistics/general information
	bfd	BFD related configuration information
	session	Session related configuration
	detail	Detail session information
	summary	Summary of session information
Defaults	The feature is disabled by default.	
Command Modes	User EXEC mode	
Usage Guidelines	N/A	
Examples	<pre> moxa# show bfd session summary SessIdx Local/Remote Discr State Dst IP DetectTime ----- 256 256/1 Up 10.30.2.2 3000 257 257/6 Up 10.30.3.2 3000 258 258/2 Up 10.30.4.2 3000 259 259/5 Up 10.30.5.2 3000 260 260/8 Up 10.30.6.2 3000 261 261/3 Up 10.30.7.2 3000 262 262/7 Up 10.30.8.2 3000 263 263/9 Up 10.30.9.2 3000 264 264/4 Up 10.30.10.2 3000 265 265/10 Up 10.30.11.2 3000 266 266/0 Down 10.30.12.2 0 267 267/0 Down 10.30.13.2 0 268 268/0 Down 10.30.14.2 0 269 269/0 Down 10.30.15.2 0 270 270/0 Down 10.30.16.2 0 271 271/0 Down 10.30.17.2 0 272 272/0 Down 10.30.18.2 0 273 273/0 Down 10.30.19.2 0 moxa# show bfd session detail Session Index:256 State : Up Src IP : 10.30.2.10 Dest IP : 10.30.2.2 Detection Time (ms) : 3000 Local Discriminator : 256 Remote Discriminator : 1 Min Tx Interval (ms) : 500 Min Rx Interval (ms) : 500 Detect Multiplier : 3 Received Min Tx Interval (ms): 1000 Received Min Rx Interval (ms): 1000 Received Detect Multiplier : 3 Registered Protocols : OSPF Sess Type : Single hop Oper Mode : Asynchronous Without Echo Function </pre>	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Show BFD Neighbor

Commands

show bfd neighbor { details | summary }

Syntax Description	show	Display configuration/statistics/general information
	bfd	BFD related configuration information
	neighbor	Neighbor related configuration
	detail	Detail session information
	summary	Summary of session information
Defaults	The feature is disabled by default.	
Command Modes	User EXEC mode	
Usage Guidelines	N/A	
Examples	<pre> moxa# show bfd neighbors summary OurAddr Neighbor State Interface Session ----- 192.168.2.253 192.168.2.252 Up vlan2 1 192.168.3.253 192.168.3.252 Up vlan3 2 Total BFD sessions entries displayed: 2 moxa# show bfd neighbors detail OurAddr Neighbor State Interface Session ----- 192.168.2.253 192.168.2.252 Up vlan2 1 Session state is Up and not using echo function. Min Tx Interval (ms): 1000 Received Min Tx Interval (ms): 1000 Min Rx Interval (ms): 1000 Received Min Rx Interval (ms): 1000 Detect Multiplier : 3 Received Detect Multiplier : 3 Tx Count: 410, Rx Count: 385 Registered Protocols: OSPF Uptime: 00:05:35 OurAddr Neighbor State Interface Session ----- 192.168.3.253 192.168.3.252 Up vlan3 2 Session state is Up and not using echo function. Min Tx Interval (ms): 1000 Received Min Tx Interval (ms): 1000 Min Rx Interval (ms): 1000 Received Min Rx Interval (ms): 1000 Detect Multiplier : 3 Received Detect Multiplier : 3 Tx Count: 213, Rx Count: 133 Registered Protocols: OSPF Uptime: 00:01:54 </pre>	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Show BFD Statistics

Commands

show bfd statistics

Syntax Description	show	Configure BFD parameters
	bfd	BFD related information
	statistics	Statistics related information
Defaults	The feature is disabled by default.	
Command Modes	User EXEC mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# show bfd statistics Session Rx Count Tx Count Drop Count ----- 256 1228 1227 0 257 1227 1226 0 258 1227 1226 0 259 1226 1226 0 260 1228 1225 0 261 1226 1226 0 262 1227 1226 0 263 1227 1227 0 264 1228 1225 0 265 1229 1226 0 266 0 1226 0 267 0 1224 0 268 0 1226 0 269 0 1224 0 270 0 1225 0 271 0 1223 0 272 0 1225 0 273 0 1226 0 274 0 1225 0</pre>	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Show BFD Configuration

Commands

show bfd global

Syntax Description	show	Display configuration/statistics/general information
	bfd	BFD related configuration information
	global	Global settings information
Defaults	The feature is disabled by default.	
Command Modes	User EXEC mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# show bfd global BFD is globally enabled Desired TX interval : 500ms Required RX interval : 500ms Detection Multiplier : 3 Oper Mode : Asynchronous Without Echo Function</pre>	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Clear BFD statistics

Commands

clear bfd statistics

Syntax	clear	Perform clear operation
Description	bfd	BFD related information
	statistics	Clear statistics information
Defaults	N/A	
Command Modes	Privileged EXEC Mode/User EXEC	
Usage Guidelines	This command clear BFD statistics.	
Examples	moxa# clear bfd statistics	
Error messages	N/A	
Related commands	N/A	

Security

Device Security

Login Policy

Configure Login Lockout Settings

Commands

login lockout <enable|disable>

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

Syntax Description	login	Configure login parameters
	lockout	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
	attempts	Configure the maximum number of login attempts
	tries	The number of tries ranging from 1 to 10
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	(config)# login lockout 10 attempts 5 (config)# login lockout enable (config)# login lockout disable	
Error Messages	N/A	
Related Commands	N/A	

Configure Login Banner

Commands

login banner <string (500)>

no login banner

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

Configure Login Failure Message

Commands

login fail-message <string (500)>

no login fail-message

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

Configure Timeout Value for a Session End

Commands

session timeout <integer (1-1440)>

Syntax Description	session	Configure session parameters
	timeout	Configure the session timeout value
	integer	The timeout value ranging from 1 to 1440 seconds
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	(config)# session timeout 100	
Error Messages	N/A	
Related Commands	N/A	

Show Session Timeout Information

Commands

show session timeout

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

Show Login Failure Message

Commands

show login fail-message

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

Show Login Banner

Commands

show login banner

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

Show Login Authentication

Commands

show login authentication

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

Trusted Access

Configure Trusted Access Settings

Commands

trusted-access ip-source <uicast_addr> [{ <ip_mask> | "/" <short(0-32)> }]

no trusted-access <uicast_addr> [{ <ip_mask> | "/" <short(0-32)> }]

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	trusted-access	Configure IP trusted access parameters
	ip-source	Configure the IP source
	uicast_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
Defaults	Trusted access is disabled by default	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Trusted access will take effect when the "trusted-access enable" command is executed.	
Examples	(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	
Error Messages	N/A	
Related Commands	show trusted-access trusted-access enable	

Enable/Disable IP Trusted Access List

Commands

trusted-access <enable>

trusted-access <disable>

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

Show Trusted Access IP List

Commands

show trusted-access

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

SSH & SSL

Re-generate New Web SSL Certificate

Commands

web certificate generate

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

Import New Web SSL Certificate via TFTP or SFTP

Commands

web certificate import { <tftp_url> | <sftp_url> }

Syntax Description	web	Configure web parameters
	certificate	Configure the web server certificate
	import	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
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	(config)# web certificate import tftp://192.168.1.1/server.crt	
Error Messages	Format or Password Error Server not Connected	
Related Commands	N/A	

Re-generate New SSH Key

Commands

ssh key generate

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

Network Security

IEEE 802.1X

Configure Local Authentication Mode

Commands

dot1x aaa auth { radius | local }

Syntax Description	dot1x	Configure IEEE 802.1X port-based network access control
	aaa	Configure authentication, authorization, and accounting
	auth	Configure authentication
	radius	Configure a RADIUS authentication server
	local	Configure a local authentication database
Defaults	The default authentication mode is set to local	
Command Modes	Global configuration mode	
Usage Guidelines	This command enables dot1x local authentication or RADIUS server-based remote authentication method for all ports. The actual authentication of the supplicant happens at the authentication server.	
Examples	moxa(config)# dot1x aaa auth radius	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable IEEE 802.1X Function

Commands

dot1x { enable | disable }

Syntax Description	dot1x	Configure IEEE 802.1X port-based network access control
	enable	Enable dot1x authentication
	disable	Disable dot1x authentication
Defaults	Dot1x authentication is disabled by default	
Command Modes	Global configuration mode	
Usage Guidelines	This command enables dot1x on the switch. Dot1x is an authentication mechanism that acts as mediator between the authentication server and the supplicant (client). If the client accesses the protected resources, it contacts the authenticator with EAPOL frames.	
Examples	moxa (config)# dot1x enable	
Error Messages	{{!s}} and 802.1x/MAB cannot be enabled at the same port. Invalid: If 802.1x port is enabled, the port security port cannot be enabled. Invalid: If the port is in port-channel, it cannot enable dot1x.	
Related Commands	N/A	

Configure IEEE 802.1X on the Port

Commands

dot1x

no dot1x

Syntax Description	dot1x	Enable dot1x on the port.
	no dot1x	Disable dot1x on the port.
Defaults	Dot1x is disabled by default	
Command Modes	Interface Configuration Mode	
Usage Guidelines	This command enables dot1x on the specified port.	
Examples	moxa (config-if)# dot1x moxa (config-if-range)# dot1x	
Error Messages	{{!s}} and 802.1x/MAB cannot be enabled at the same port. Invalid: If 802.1x port is enabled, the port security port cannot be enabled. Invalid: If the port is in port-channel, it cannot enable dot1x. Invalid: This port is an internal communication port. This function cannot be configured on this port.	
Related Commands	N/A	

Authorize IEEE 802.1X

Commands

dot1x port-control { auto | force-authorized | force-unauthorized }

no dot1x port-control

Syntax Description	dot1x	Configure IEEE 802.1X port-based network access control
	port-control	Configure authenticator port control parameters
	auto	Enable 802.1X authentication on the interface
	force-authorized	Allow all traffic without any restrictions
	force-unauthorized	Block all traffic over the interface
	no	Set the authenticator port control state to force-authorized.
Defaults	The default port-control mode is set to force-authorized	
Command Modes	Interface Configuration Mode	
Usage Guidelines	This command configures the authenticator port control parameter. The dot1x standard exercises port-based authentication to increase the security of the network. The different modes employed on the ports offer varied access levels.	
Examples	moxa (config-if)# dot1x port-control auto moxa (config-if-range)# dot1x port-control auto	
Error Messages	Invalid: This port is an internal communication port. This function cannot be configured on this port.	
Related Commands	N/A	

Configure Maximum Number of EAP

Commands

dot1x max-req < count (1-10) >

no dot1x max-req

Syntax Description	no	Remove configuration/delete entry/reset to default value
	dot1x max-req	Configure the dot1X maximum request count
	count	The count value ranging from 1 to 10.
Defaults	The default request count is set to 2	
Command Modes	Interface Configuration Mode	
Usage Guidelines	This command sets the maximum number of EAP (Extensible Authentication Protocol) retries to the client by the authenticator before restarting the authentication process.	
Examples	moxa (config-if)# dot1x max-req 2 moxa (config-if-range)# dot1x max-req 2	
Error Messages	Invalid input detected at '^' marker Invalid: This port is an internal communication port. This function cannot be configured on this port.	
Related Commands	N/A	

Configure IEEE 802.1X Reauthentication

Commands

dot1x reauthentication

no dot1x reauthentication

Syntax Description	no	Remove configuration/delete entry/reset to default value
	dot1x	Configure IEEE 802.1X port-based network access control
	reauthentication	Perform periodic reauthentication
Defaults	Dot1x reauthentication is disabled by default	
Command Modes	Interface Configuration Mode.	
Usage Guidelines	This command enables periodic re-authentication from authenticator to client. The periodic re-authentication is requested to ensure that the same supplicant is accessing the protected resources.	
Examples	moxa (config-if)# dot1x reauthentication moxa (config-if-range)# dot1x reauthentication	
Error Messages	Invalid: If port Control mode is not Auto, Reauthentication cannot be enabled. Invalid: This port is an internal communication port. This function cannot be configured on this port.	
Related Commands	dot1x timeout – Sets the dot1x timers dot1x port-control – Configures the authenticator port control parameter	

Reauthenticate IEEE 802.1X on the Port

Commands

dot1x re-authenticate

Syntax Description	dotx1	Configure IEEE 802.1X port-based network access control
	re-authenticate	Perform re-authentication of the specified dot1x-enabled port
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	Re-authentication is requested by the authentication server to the supplicant to furnish the identity without waiting for the configured number of seconds. (re-authperiod).	
Examples	moxa (config-if) # dot1x re-authenticate moxa (config-if-range) # dot1x re-authenticate	
Error Messages	Invalid: This port is an internal communication port. This function cannot be configured on this port.	
Related Commands	N/A	

Configure IEEE 802.1X Settings

Commands

dot1x timeout { quiet-period < value (0-65535) > | { reauth-period | server-timeout | supp-timeout | tx-period } < value (1-65535) > }

no dot1x timeout { quiet-period | reauth-period | server-timeout | supp-timeout | tx-period }

Syntax Description	dot1x	Configure IEEE 802.1X port-based network access control
	timeout	Configure the dot1x timeout parameter
	quiet-period	The number of seconds that the switch remains in the quiet state following a failed authentication exchange with the client
	reauth-period	The number of seconds between re-authentication attempts
	server-timeout	The number of seconds that the switch waits for the retransmission of packets by the switch to the authentication server
	supp-timeout	The number of seconds that the switch waits for the retransmission of packets by the switch to the client
	tx-period	The number of seconds that the switch waits for a response to an EAP-request/identity frame from the client before retransmitting the request
	no	Set the dot1x timers to their default values
Defaults	quiet-period: 60 seconds reauth-period: 3600 seconds server-timeout: 30 seconds supp-timeout: 30 seconds tx-period: 30 seconds	
Command Modes	Interface configuration mode	
Usage Guidelines	This command sets the dot1x timers.	
Examples	moxa (config-if)# dot1x timeout quiet-period 30 moxa (config-if-range)# dot1x timeout quiet-period 30	
Error Messages	Invalid input detected at '^' marker Invalid: This port is an internal communication port. This function cannot be configured on this port.	
Related Commands	dot1x max-req – Sets the maximum number of EAP retries to the client before restarting authentication process. dot1x reauthentication – Enables periodic re-authentication of the client.	

Show IEEE 802.1X Information

Commands

show dot1x [{ interface < interface-type > < interface-id > | local-database | all }]

Syntax Description	show	Display configuration/statistics/general information
	dot1x	Configure IEEE 802.1X port-based network access control
	interface-type	The interface type
	interface-id	The slot number/port number
	local-database	Display the dot1x authentication server database with user names
	all	Display the dot1x status for all interfaces
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command displays dot1x information.	
Examples	<pre> moxa # show dot1x iss# show dot1x Sysauthcontrol = Enabled Dot1x Authentication Method = Local moxa # show dot1x interface gigabitethernet 1/2 Dot1x Info for Eth1/2 ----- AuthPaeStatus = ENABLED PortStatus = UNAUTHORIZED MaxReq = 2 Port Control = Auto QuietPeriod = 60 Seconds Re-authentication = Disabled ReAuthPeriod = 3600 Seconds ServerTimeout = 30 Seconds SuppTimeout = 30 Seconds Tx Period = 30 Seconds moxa # show dot1x local-database Pnac Authentication Users Database ----- User name : user1 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 ----- User name : user2 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>	
Error Messages	N/A	
Related Commands	dot1x local-database - Configures dot1x local database with values dot1x system-auth-control - Enables dot1x in the switch dot1x max-req - Configures the maximum number of EAP retries to the client dot1x reauthentication - Configures the periodic reauthentication for the client dot1x timeout - Sets the dot1x timers	

Configure IEEE 802.1X Server Host

Commands

dot1x auth radius-server host { ipv4-address } [**auth-port** < integer(1-65535) >] [**timeout** < 1-120 >] [**retransmit** < 1-254 >] [**key** < secret-key-string >] [**primary**]

no dot1x auth radius-server host { < ipv4-address > } [**primary**]

Syntax Description	dot1	Configure IEEE 802.1X port-based network access control
	auth radius-server host	Configure the RADIUS server host
	ipv4-address	Configure the IPv4 address.
	auth-port	Configure a specific UDP destination port on this RADIUS server to be used exclusively for authentication requests.
	timeout	Configure the time period in seconds for which a client waits for a response from the server before re-transmitting the request.
	retransmit	Configure the maximum number of attempts to be tried by a client to get a response from the server for a request.
	key	Configure the per-server encryption key.
	primary	Set the RADIUS server as the primary server.
no	Delete the RADIUS server configuration	
Defaults	N/A	
Command Modes	Global configuration mode	
Usage Guidelines	This command configures the RADIUS client with the host, timeout, key, retransmit parameters.	
Examples	moxa (config)# dot1x auth radius-server host 6.7.8.9 auth-port 1812 timeout 3 retransmit 1 key 123456 primary	
Error Messages	Invalid: All of the retry times {{!s}} cannot exceeds Dot1x server timeout values {{!s}}. Note: All of the retry times = Timeout * (Retransmit + 1). Invalid: Primary IP Address should be the same as the Server IP Address. Invalid: Server IP Address cannot be a reserved IP Address.	
Related Commands	N/A	

Configure IEEE 802.1X Username and Password

Commands

dot1x local-database < username > password < password >

no dot1x local-database < username >

Syntax Description	dot1x	Configure IEEE 802.1X port-based network access control
	local-database	Configure the local database table
	username	Configure the username for the new entry
	password	Configure the password for the new entry
	no	Delete the entry from the dot1x authentication server database
Defaults	N/A	
Command Modes	Global configuration mode	
Usage Guidelines	This command configures dot1x authentication server local database username and password entries.	
Examples	moxa (config)# dot1x local-database user password 123456	
Error Messages	Invalid: This 'Username' is already in the 'Local Database'.	
Related Commands	N/A	

Show IEEE 802.1X Authentication RADIUS Server

Commands

show dot1x auth radius server

Syntax Description	show	Display configuration/statistics/general information
	dot1x	Display dot1x configuration information
	auth	Display authentication type information.
	radius	Display RADIUS server information.
	server	Display server information.
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command displays radius server information.	
Examples	<pre>moxa# show dot1x auth radius server Primary Server : 6.7.8.9 Radius Server Host Information ----- Index : 1 Server address : 6.7.8.9 Shared secret : Radius Server Status : Enabled Response Time : 5 Maximum Retransmission : 1 Authentication Port : 1812 -----</pre>	
Error Messages	N/A	
Related Commands	N/A	

MAC Authentication Bypass

Enable/Disable MAC Authentication Bypass

Commands

mab {enable | disable}

Syntax Description	mab	Configure MAB parameters
	enable	Enable MAB on the switch
	disable	Disable MAB on the switch
Defaults	Disable	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa(config)# mab enable moxa(config)# mab disable</pre>	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	show mab	

Configure MAB Authentication Settings

Commands

mab aaa auth {radius | local}

Syntax Description	mab	Configure MAB parameters
	aaa	Configure AAA services related parameters
	auth	Authentication related configuration
	radius	Configure RADIUS as the authentication mode
	local	Configure local database as the authentication mode
Defaults	Local-database	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# mab aaa auth radius moxa(config)# mab aaa auth local	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	show mab	

Enable/Disable MAB on a Port

Commands

mab

no mab

Syntax Description	no	Remove configuration / delete entry / reset to default value
	mab	Enable/Disable MAB on an interface
Defaults	Disable	
Command Modes	Interface Configuration	
Usage Guidelines	'no mab' will invalid HW operation but keep the configuration on a port.	
Examples	moxa(config-if)# mab moxa(config-if)# no mab	
Error Messages	moxa(config-if)# mab	
	Cannot enable MAB while < Link Aggregation, RSTP, MSTP, Dual-Homing, Turbo Ring v2, Turbo Chain, 802.1X, Port Security> be enabled. moxa(config)# mac-address-table static unicast 00:00:00:00:00:03 vlan 1 set interface ethernet 1/1 moxa(config)# interface ethernet 1/1 moxa(config-if)# mab	
Warning Messages	Cannot enable MAB on an interface while it's configured as forwarding port in static unicast table.	
Warning Messages	N/A	
Related Commands	show mab	

Configure MAB Local Database MAC Address

Commands

mab local-database mac-address <ucast_mac>

no mab local-database {mac-address <ucast_mac> | all }

Syntax Description	no	Remove configuration / delete entry / reset to default value
	mab	Configure MAB parameters
	local-database	Configure local database authentication
	mac-address	Unicast MAC address
	all	Delete for all entries
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa(config)# mab local-database mac-address 02:03:04:01:01:01 moxa(config)# no mab local-database mac-address 02:03:04:01:01:01 moxa(config)# no mab local-database all</pre>	
Error Messages	<pre>moxa(config)# mab local-database mac-address 00:00:00:00:00:01 The MAC address has exceeded the maximum limit. moxa(config)# mab local-database mac-address 00:00:00:00:00:02 MAC address is already in the local database. moxa(config)# mac-address-table static unicast 00:00:00:00:00:03 vlan 1 set interface ethernet 1/1 moxa(config)# mab local-database mac-address 00:00:00:00:00:03 Cannot add a MAC address into MAB local database while it's in static unicast table. [Web Only] MAB only support unicast MAC address.</pre>	
Warning Messages	N/A	
Related Commands	show mab auth local-database	

Show MAB Information

Commands

show mab

Syntax Description	show	Display configuration / statistics / general information			
	mab	Display MAB information			
Defaults	N/A				
Command Modes	User EXEC Privileged EXEC				
Usage Guidelines	N/A				
Examples	moxa# show mab MAB Status: Enabled MAB Authentication Method: Local				
	<pre> Port Enable Quiet Period Reauthentication Reauth Period ----- Eth1/1 Disabled 60 Enabled 3600 Eth1/2 Disabled 60 Disabled 3600 Eth1/3 Disabled 60 Disabled 3600 Eth1/4 Disabled 60 Disabled 3600 Eth2/1 Disabled 60 Disabled 3600 Eth2/2 Disabled 60 Disabled 3600 Eth2/3 Disabled 60 Disabled 3600 Eth2/4 Disabled 60 Disabled 3600 Eth3/1 Disabled 60 Disabled 3600 Eth3/2 Disabled 60 Disabled 3600 Eth3/3 Disabled 60 Disabled 3600 Eth3/4 Disabled 60 Disabled 3600 Eth4/1 Disabled 60 Disabled 3600 Eth4/2 Disabled 60 Disabled 3600 Eth4/3 Disabled 60 Disabled 3600 Eth4/4 Disabled 60 Disabled 3600 </pre>				
Error Messages	moxa# N/A				
Warning Messages	N/A				
Related Commands	N/A				

Show MAB Authentication Local Database MAC Address

Commands

show mab auth local-database

Syntax Description	show	Display configuration / statistics / general information
	mab	Display MAB configuration
	auth	Auth type information
	local-database	Display local-database information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show mab auth local-database MAB Authentication Users Database ----- MAC Address ----- 02:03:04:01:01:01 02:03:04:01:01:02 Total MAC entries : 2 System Max. Addresses : 1024	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

MACsec

Globally enable/disable Multicast Local Route

Commands

macsec { enable | disable }

Syntax Description	macsec enable	Globally enable MACsec
	macsec disable	Globally disable MACsec
Defaults	Disable	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# macsec enable	
Error Messages	Invalid: Dot1x must be enabled before activating the MACsec feature.	
Related Commands	N/A	

Configures MKA participants to enable/disable

Commands

macsec

no macsec

Syntax Description	macsec	Configure mka participant to enable.
	no macsec	Configure mka participant to disable.
Defaults	Disable	
Command Modes	Interface configuration mode	
Usage Guidelines	This command configures MKA participants.	
Examples	Product(config-if)# macsec	
Error Messages	Invalid: MACsec cannot be enabled on the member port of port-channel.	
Related Commands	N/A	

Delete the connectivity association key name (CKN)

Commands

no mka participant ckn <string (16)>

Syntax Description	no mka participant ckn	Delete the connectivity association key name (CKN).
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	This command deletes the connectivity association key name (CKN).	
Examples	Product(config-if)# no mka participant ckn	
Error Messages	N/A	
Related Commands	N/A	

Create the pre-shared key

Commands

mka participant ckn <string (16)> **cak** <string (66)> key-server {enable | disable}

Syntax Description	mka participant ckn <string (1-16)> cak <string (1-16)> key-server enable key-server disable	Create the pre-shared key by configuring the connectivity association key name (CKN) and connectivity association key (CAK). Configure key-server enable. Configure key-server disable.
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	This command creates the pre-shared key by configuring the connectivity association key name (CKN) and connectivity association key (CAK).	
Examples	Product(config-if)# mka participant ckn moxackn cak moxacak key-server enable	
Error Messages	Invalid: Both the CKN and CAK values must be entered. Invalid: The CKN and CAK values cannot be empty on a MACsec-enabled port. Invalid: CKN entries cannot be the same.	
Related Commands	N/A	

Create mka {participant CKN and CAK

Commands

mka participant ckn <string (16)> **cak** <string (66)> [key-server {enable | disable}]

Syntax Description	mka participant ckn <string (1-16)> cak <string (1-16)> key-server enable key-server disable	Create the pre-shared key by configuring the connectivity association key name (CKN) and connectivity association key (CAK). Configure key-server enable. => no effect, keep this command just for backward compatibility (help no show) Configure key-server disable. => no effect, keep this command just for backward compatibility (help no show)
Defaults	N/A	
Command Modes	Interface configuration mode	
Usage Guidelines	This command creates the pre-shared key by configuring the connectivity association key name (CKN) and connectivity association key (CAK).	
Examples	Product(config-if)# mka participant ckn moxackn cak moxacak	
Error Messages	Invalid: Both the CKN and CAK values must be entered. Invalid: The CKN and CAK values cannot be empty on a MACsec-enabled port. Invalid: CKN entries cannot be the same.	
Related Commands	N/A	

Display MACsec information

Commands

show macsec [{interface <iftype> <ifnum> | mka {participant | peer ckn <string (16)>}] interface <iftype> <ifnum>}]

Syntax Description	show macsec	To Display MACsec status and configuration in the system level.
	interface	To view Kay Mka port related information.
	participant	To view Kay Mka participant related information.
	peer	To display Mka peer List information.
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command displays macsec information.	
Examples	<pre> Product# show macsec MACsec : Enabled Periodic Hello-Time : 2 Product# show macsec interface ethernet 1/2 Mka Pae Kay Info for Eth1/2 ----- MACsec Port = Enabled Product# show macsec mka participant interface eth 4/8 Mka Participant Info Eth4/8 ----- Participant CKN = moxackn KeyServer = Disabled Product# show macsec mka peer ckn moxackn interface ethernet 4/8 Mka Peer List Info Eth4/8 ----- MkaParticipant CKN : moxackn MkaPeerList MI : d7034342ddb9221c41f725da MkaPeerList MN : 2099 MkaPeerList Type : LivePeerList MkaPeerList SCI : 00010203040a0021 </pre>	
Error Messages	<p>If CKN not exists and interface is valid: Product# show macsec mka peer ckn moxackn interface ethernet 4/6 No corresponding CKN exists.</p> <p>If CKN exists, interface is valid, and no peer exists: Product# show macsec mka peer ckn moxackn interface ethernet 4/6 No corresponding peer exists in the Peer List.</p>	
Related Commands	N/A	

Configure MKA Key-server Priority

Commands

mka key-server priority <integer (0-255)>

no mka key-server priority

Syntax Description	mka key-server priority	Configure priority value
	no key-server priority	Configure priority value to the default
Defaults	112 (0x70)	
Command Modes	Global configuration	
Usage Guidelines	This command configures priority value in MKA PDUs.	
Examples	Product(config-if)# mka key-server priority 200 Re-enabling MACsec is required after a completed handshake. Product(config-if)# no mka key-server priority	
Error Messages	N/A	
Related Commands	N/A	

Port Security

Configure Port Security Mode

Commands

port-security mode { static-port-lock | mac-sticky }

Syntax Description	port-security	Configure port security parameters
	mode	Configure the security mode (port security port/address table will be reset when the mode changes)
	static-port-lock	Use Static Port Lock mode
	mac-sticky	Use MAC Sticky mode
Defaults	The default port security mode is set to static-port-lock	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Changing modes resets all port configurations.	
Examples	moxa(config)# port-security mode mac-sticky moxa(config)# port-security mode static-port-lock	
Error Messages	'error:If 'portLimit' is changed, 'mode' must be Mac Sticky" 'error:If 'portSecurityAction' is changed," + " 'mode' must be Mac sticky" 'Invalid: Address Table cannot have duplicated addresses (VLAN ID, MAC Address).' 'Invalid: The mac address has exceeded the setting port limit.' 'Sum of port limit value on all ports ' + 'MUST under ' + str(_MAX_SUN_OF_PORT_LIMIT) + ' in Mac-Sticky mode' 'Invalid: Port Security MAC only support unicast address.' 'Invalid: Port Security address table VLAN ID must exist in the VLAN configuration.' 'Invalid: Port Security address table port should be added in the VLAN member.' 'Invalid: Port Security address table conflicts with VLAN configuration.' 'Invalid: If this port enables Port Security, this port cannot be a member port of Static Unicast Port Table.' 'Invalid: If this port enables Port Security, this port cannot be a member port of port-channel.' 'Invalid: If Port Security is enabled on this port, it cannot be a destination port of port mirror.' 'Invalid: If Port Security action is changed, this port could not in violation state.' 'Invalid: Port Security and redundant protocol cannot be enabled on the same port.'	
Related Commands	N/A	

Enable/Disable Port Security

Commands

port-security { enable | disable }

Syntax Description	port-security	Configure port security parameters
	enable	Enable port security
	disable	Disable port security
Defaults	Port security is enabled by default	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# port-security enable moxa(config)# port-security disable	
Error Messages	"error:If 'portLimit' is changed, 'mode' must be Mac Sticky" "error:If 'portSecurityAction' is changed," + " 'mode' must be Mac sticky" 'Invalid: Address Table cannot have duplicated addresses (VLAN ID, MAC Address).' 'Invalid: The mac address has exceeded the setting port limit.' 'Sum of port limit value on all ports ' + 'MUST under ' + str(_MAX_SUM_OF_PORT_LIMIT) + ' in Mac-Sticky mode' 'Invalid: Port Security MAC only support unicast address.' 'Invalid: Port Security address table VLAN ID must exist in the VLAN configuration.' 'Invalid: Port Security address table port should be added in the VLAN member.' 'Invalid: Port Security address table conflicts with VLAN configuration.' 'Invalid: If this port enables Port Security, this port cannot be a member port of Static Unicast Port Table.' 'Invalid: If this port enables Port Security, this port cannot be a member port of port-channel.' 'Invalid: If Port Security is enabled on this port, it cannot be a destination port of port mirror.' 'Invalid: If Port Security action is changed, this port could not in violation state.' 'Invalid: Port Security and redundant protocol cannot be enabled on the same port.'	
Related Commands	N/A	

Configure Port Security Setting

Commands

port-security [{ limit <integer(1-1024)> | violation { packet-drop | port-shutdown } | mac-address <ucast_mac> vlan <vlan_vfi_id> }]

Syntax Description	port-security	Configure port security parameters
	limit	The maximum number of addresses on the port
	integer(1-1024)	The limit value (MAC address will be removed on the configured port when the limit value changes)
	violation	Configure the violation action on the port
	packet-drop	Drop the packet when a violation occurs
	port-shutdown	Shut down the port when a violation occurs
	mac-address	The new MAC address
	ucast_mac	The unicast MAC address
	vlan	The new VLAN ID
	vlan_vfi_id	The VLAN ID ranging from 1 to 4094
Defaults	no port-security: disable on ports limit: 1 violation: secure action is packet-drop	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	If the limit value changes on a port, all entries on the port are deleted.	
Examples	<pre>moxa(config-if)# port-security moxa(config-if)# port-security limit 10 moxa(config-if)# port-security violation port-shutdown moxa(config-if)# port-security mac-address 02:03:04:01:01:01 vlan 1</pre>	
Error Messages	<pre>"error:If 'portLimit' is changed, 'mode' must be Mac Sticky" "error:If 'portSecurityAction' is changed," + " 'mode' must be Mac sticky" 'Invalid: Address Table cannot have duplicated addresses (VLAN ID, MAC Address).' 'Invalid: The mac address has exceeded the setting port limit.' 'Sum of port limit value on all ports ' + 'MUST under ' + str(_MAX_SUM_OF_PORT_LIMIT) + ' in Mac-Sticky mode' 'Invalid: Port Security MAC only support unicast address.' 'Invalid: Port Security address table VLAN ID must exist in the VLAN configuration.' 'Invalid: Port Security address table port should be added in the VLAN member.' 'Invalid: Port Security address table conflicts with VLAN configuration.' 'Invalid: If this port enables Port Security, this port cannot be a member port of Static Unicast Port Table.' 'Invalid: If this port enables Port Security, this port cannot be a member port of port-channel.' 'Invalid: If Port Security is enabled on this port, it cannot be a destination port of port mirror.' 'Invalid: If Port Security action is changed, this port could not in violation state.' 'Invalid: Port Security and {} '.format(red_protocol_def[red_protocol]) + 'cannot be enabled on the same port.'</pre>	
Related Commands	N/A	

Remove Port Security Setting

Commands

no port-security [{ limit | mac-address { <mac_addr> vlan <integer(1-4094)> | all } }]

Syntax Description	no	Remove configuration/delete entry/reset to default value
	port-security	Configure port security parameters
	limit	The maximum number of addresses on the port
	mac-address	The new MAC address
	mac_addr	The MAC address
	vlan	The new VLAN ID
	integer(1-4094)	The VLAN ID ranging from 1 to 4094
	all	All entries in the address table
Defaults	N/A	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	If the limit value changes on a port, all entries on the port are deleted.	
Examples	moxa(config-if)# no port-security moxa(config-if)# no port-security limit moxa(config-if)# no port-security mac-address 02:03:04:01:01:01 vlan 1	
Error Messages	"error:If 'portLimit' is changed, 'mode' must be Mac Sticky" "error:If 'portSecurityAction' is changed," + " 'mode' must be Mac sticky" 'Invalid: Address Table cannot have duplicated addresses (VLAN ID, MAC Address).' 'Invalid: The mac address has exceeded the setting port limit.' 'Sum of port limit value on all ports ' + 'MUST under ' + str(_MAX_SUN_OF_PORT_LIMIT) + ' in Mac-Sticky mode' 'Invalid: Port Security MAC only support unicast address.' 'Invalid: Port Security address table VLAN ID must exist in the VLAN configuration.' 'Invalid: Port Security address table port should be added in the VLAN member.' 'Invalid: Port Security address table conflicts with VLAN configuration.' 'Invalid: If this port enables Port Security, this port cannot be a member port of Static Unicast Port Table.' 'Invalid: If this port enables Port Security, this port cannot be a member port of port-channel.' 'Invalid: If Port Security is enabled on this port, it cannot be a destination port of port mirror.' 'Invalid: If Port Security action is changed, this port could not in violation state.' 'Invalid: Port Security and redundant protocol cannot be enabled on the same port.'	
Related Commands	set port-security mode [static-port-lock mac-sticky]	

Show Port Security Setting

Commands

show port-security [address]

Syntax Description	show	Display configuration/statistics/general information
	port-security	Display port security information
	address	Display port security address information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show port-security moxa# show port-security address	
Error Messages	N/A	
Related Commands	N/A	

Traffic Storm Control

Enable/Disable Storm Control

Commands

storm-control { bc | mc | dlf | bc_mc | bc_dlf | mc_dlf | bc_mc_dlf } level <rate-value(1-1488100)>

no storm-control {bc | mc | dlf | bc_mc | bc_dlf | mc_dlf | bc_mc_dlf}

Syntax Description	no	Remove configuration delete entry/reset to default value
	storm-control	Configure storm control parameters
	bc	Configure broadcast packet storm control parameters
	mc	Configure multicast packet storm control parameters
	dlf	Configure unicast packet storm control parameters
	bc_mc	Configure broadcast and multicast packet storm control parameters
	bc_dlf	Configure broadcast and unicast packet storm control parameters
	mc_dlf	Configure multicast and unicast packet storm control parameters
	bc_mc_dlf	Configure broadcast multicast and unicast packet storm control parameters
	level	Configure the control suppression level
	rate-value (625-1488100)	The storm control rate value
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# storm-control bc level 635 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)# storm-control bc_mc_dlf level 1905 moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# no storm-control bc</pre>	
Error Messages	<p>'Invalid: The value of traffic storm control should be less than ingress rate limit threshold.'</p> <p>'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)</p>	
Related Commands	<pre>moxa(config-if)# no storm-control {bc mc dlf bc_mc bc_dlf mc_dlf bc_mc_dlf} moxa# show [<ifXtype> <ifnum>] storm-control</pre>	

Show Storm Control Status

Commands

show interface [<ifXtype> <ifnum>] storm-control

Syntax Description	show	Display configuration/status information
	interface	Display interface information
	ifXtype	The interface type
	ifnum	The interface number
	storm-control	Display the broadcast, multicast, and unicast storm control suppression levels of the interface
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	N/A	
Examples	<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 Multicast Storm Control : Disabled</pre>	
Error Messages	N/A	
Related Commands	<pre>moxa (config-if)# storm-control {bc mc dlf bc_mc bc_dlf mc_dlf bc_mc_dlf} level <rate-value(625-1488100)> moxa (config-if)# no storm-control {bc mc dlf bc_mc bc_dlf mc_dlf bc_mc_dlf}</pre>	

Access Control List

Define IPv4 Access-list and Enter IPv4 Access-list Configuration Mode

Commands

ip access-list <short(1-16)>

Syntax Description	ip	Configure IP related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	An access list is created when the access list's name or rule is configured	
Examples	moxa# configure terminal moxa(config)# ip access-list 1 moxa(config-ip-acl)#	
Error Messages	N/A	
Related Commands	no ip access-list <short(1-16)> show ip access-list <short(1-16)>	

Configure IPv4 Access-list Name

Commands

name <string(32)>

Syntax Description	name	Configure IPv4 access-list name
	<string(32)>	IPv4 access-list name
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# name IP-ACL1	
Error Messages	N/A	
Related Commands	show ip access-list <short(1-16)>	

Configure Permitted IPv4 ACL Rules

Commands

Permit

{**any** | **src** <ip-address> | <ip-address> <ip-mask>}

[{ **any** | **dst** <ip-address> | <ip-address> <ip-mask> }]

[**dscp** <short(0-63)>]

[**redirect interface** <interface-type> <interface-id>]

[**dscp-remark** <short(0-63)>]

Syntax Description	permit	Configure the permitted ACL rule
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	dscp	Configure the DSCP related ACL parameters
	short(0-63)	DSCP value to filter
	redirect	Configure the redirect related ACL parameters
interface	Configure the interface related ACL parameters	
(interface-type /interface-id)	Interface to redirect packets that hits ACL rules	
dscp-remark	Configure the dscp-remark related ACL parameters	
short(0-63)	DSCP value to remark	
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support DSCP remarking in outbound traffic	
Examples	moxa(config-ip-acl)# permit src 192.168.127.253 dst 192.168.127.100 moxa(config-ip-acl)# deny 192.168.127.0 255.255.255.0 192.168.127.0 255.255.255.0 moxa(config-ip-acl)# permit any any dscp 32 moxa(config-ip-acl)# permit any any redirect interface ethernet 1/1 moxa(config-ip-acl)# permit any any dscp-remark 10	
Error Messages	N/A	
Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>	

Configure Permitted TCP ACL Rules

Commands

permit tcp

{**any** | **src** <ip-address> | <ip-address> <ip-mask> }

[{ **any** | **dst** <ip-address> | <ip-address> <ip-mask> }]

[**src-port** <short(0-65535)>]

[**dst-port** <short(0-65535)>]

[**dscp** <short(0-63)>]

[**redirect interface** <interface-type> <interface-id>]

[**dscp-remark** <short(0-63)>]

[**rate-limit-type simple-token-bucket cir** <integer(1-max_rate)> **cbs** <integer(10-10240)> **conform-action do-nothing violate-action drop**]

Syntax	Description
permit	Configure the permitted ACL rule
tcp	Configure the tcp related ACL parameters
any	Configure the filtering of a rule to any address
src	Configure the source related ACL parameters
(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
any	Configure the filtering of a rule to any address
dst	Configure the destination related ACL parameters
(ip-add/mask)	Configure the filtering of a rule to a specific address/mask
src-port	Configure the source-port related ACL parameters
(0-65535)	Source port value to filter
dst-port	Configure the destination-port related ACL parameters
(0-65535)	Destination port value to filter
any	Configure the filtering of a rule to any address
dscp	Configure the dscp related ACL parameters
(0-63)	DSCP value to filter
redirect	Configure the redirect related ACL parameters
interface	Configure the interface related ACL parameters
(interface-type /interface-id)	Interface to redirect packets that hits ACL rules
dscp-remark	Configure the dscp-remark related ACL parameters
(0-63)	DSCP value to remark
rate-limit-type	Algorithm type of rate limit
simple-token-bucket	Simple Token Bucket
cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
cir(1-max_rate)	Committed Information Rate in Mbps
cbs	Configures the Committed Burst Size of the rate limit. CBS value ranges from 0 to 10240.
cbs(10-10240)	Committed Burst Size in Kbytes
conformAction	Action type of conform packet
do-nothing	Do not perform any action
violateAction	Action type of violate packet
drop	Drop the packet
Defaults	N/A
Command Modes	IP Access-list Configuration Mode
Usage Guidelines	Only support redirect in inbound traffic Only support DSCP remarking in outbound traffic
Examples	moxa(config-ip-acl)# permit tcp 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0 src-port 23 dst-port 22 moxa(config-ip-acl)# permit tcp any any dscp 32

	<pre>moxa(config-ip-acl)# permit tcp any any redirect interface ethernet 1/1</pre> <pre>moxa(config-ip-acl)# permit tcp any any dscp-remark 10</pre> <pre>moxa(config-ip-acl)# permit tcp an an redirect interface ethernet 1/3 rate-limit-type simple-token-bucket cir 200 cbs 1024 conform-action do-nothing violate-action drop</pre>
Error Messages	N/A
Related Commands	<pre>no rule <short(1-10)></pre> <pre>no ip access-list <short(1-16)></pre> <pre>show ip access-list <short(1-16)></pre>

Configure Permitted UDP ACL Rules

Commands

permit udp

{any | src <ip-address> | <ip-address> <ip-mask>}

[{ any | dst <ip-address> | <ip-address> <ip-mask> }]

[src-port <short(0-65535)>]

[dst-port <short(0-65535)>]

[dscp <short(0-63)>]

[redirect interface <interface-type> <interface-id>]

[dscp-remark <short(0-63)>]

[rate-limit-type simple-token-bucket cir <integer(1-max_rate)> cbs <integer(10-10240)> conform-action do-nothing violate-action drop]

Syntax	Description
permit	Configure the permitted ACL rule
udp	Configure the udp related ACL parameters
any	Configure the filtering of a rule to any address
src	Configure the source related ACL parameters
(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
any	Configure the filtering of a rule to any address
dst	Configure the destination related ACL parameters
(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
src-port	Configure the source-port related ACL parameters
(0-65535)	Source port value to filter
dst-port	Configure the destination-port related ACL parameters
(0-65535)	Destination port value to filter
any	Configure the filtering of a rule to any address
dscp	Configure the DSCP-related ACL parameters
(0-63)	DSCP value to filter
redirect	Configure the redirect related ACL parameters
interface	Configure the interface related ACL parameters
(interface-type /interface-id)	Interface to redirect packets that hits ACL rules
dscp-remark	Configure the DSCP-remark related ACL parameters
(0-63)	DSCP value to remark
rate-limit-type	Algorithm type of rate limit
simple-token-bucket	Simple Token Bucket
cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
cir(1-max_rate)	Committed information Rate in Mbps
cbs	Configures the Committed burst size of the rate limit. CBS value ranges from 0 to 10240.
cbs(10-10240)	Committed Burst Size in Kbytes
conformAction	Action type of conform packet
do-nothing	Do not perform any action

	violateAction	Action type of violate packet
	drop	Drop the packet
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support DSCP remarking in outbound traffic	
Examples	<pre>moxa(config-ip-acl)# permit udp 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0 src-port 23 dst-port 22 moxa(config-ip-acl)# permit udp any any dscp 32 moxa(config-ip-acl)# permit udp any any redirect interface ethernet 1/1 moxa(config-ip-acl)# permit udp any any dscp-remark 10 moxa(config-ip-acl)# permit udp any any redirect interface ethernet 1/2 dscp- remark 5 rate-limit-type simple-token-bucket cir 300 cbs 2048 conform-action do- nothing violate-action drop</pre>	
Error Messages	N/A	
Related Commands	<pre>no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)></pre>	

Configure Permitted ICMP ACL Rules

Commands

permit icmp

{**any** | **src** <ip-address> | <ip-address> <ip-mask> }

[{ **any** | **dst** <ip-address> | <ip-address> <ip-mask> }]

[**type** <short(0-255)>]

[**code** <short(0-15)>]

[**dscp** <short(0-63)>]

[**redirect interface** <interface-type> <interface-id>]

[**dscp-remark** <short(0-63)>]

[**rate-limit-type simple-token-bucket cir** <integer(1-max_rate)> **cbs** <integer(10-10240)> **conform-action do-nothing violate-action drop**]

Syntax Description	permit	Configure the permitted ACL rule
	icmp	Configure the ICMP related ACL parameters
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
	type	Configure the ICMP type related ACL parameters
	(0-255)	ICMP type value to filter
	code	Configure the ICMP code related ACL parameters
	(0-15)	ICMP code value to filter
	any	Configure the filtering of a rule to any address
	dscp	Configure the dscp related ACL parameters
	(0-63)	DSCP value to filter
	redirect	Configure the redirect related ACL parameters
interface	Configure the interface related ACL parameters	
(interface-type /interface-id)	Interface to redirect packets that hits ACL rules	
dscp-remark	Configure the dscp-remark related ACL parameters	

	(0-63)	DSCP value to remark
	rate-limit-type	Algorithm type of rate limit
	simple-token-bucket	Simple Token Bucket
	cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
	cir(1-max_rate)	Committed Information Rate in Mbps
	cbs	Configures the Committed Burst Size of the rate limit. CBS value ranges from 0 to 10240.
	cbs(10-10240)	Committed Burst Size in Kbytes
	conformAction	Action type of conform packet
	do-nothing	Do not perform any action
	violateAction	Action type of violate packet
	drop	Drop the packet
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support DSCP remarking in outbound traffic	
Examples	<pre>moxa(config-ip-acl)# permit icmp 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0 type 3 code 10 moxa(config-ip-acl)# permit icmp any any dscp 32 moxa(config-ip-acl)# permit icmp any any redirect interface ethernet 1/1 moxa(config-ip-acl)# permit icmp any any dscp-remark 10 moxa(config-ip-acl)# permit icmp any any rate-limit-type simple-token-bucket cir 400 cbs 1024 conform-action do-nothing violate-action drop</pre>	
Error Messages	N/A	
Related Commands	<pre>no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)></pre>	

Configure Permitted IGMP ACL Rules

Commands

permit igmp

```
{any | src <ip-address> | <ip-address> <ip-mask> }
```

```
[{ any | dst <ip-address> | <ip-address> <ip-mask> } ]
```

```
[type <short(0-255)>]
```

```
[dscp <short(0-63)>]
```

```
[redirect interface <interface-type> <interface-id> ]
```

```
[dscp-remark <short(0-63)>]
```

```
[rate-limit-type simple-token-bucket cir <integer(1-max_rate)> cbs <integer(10-10240)> conform-
action do-nothing violate-action drop]
```

Syntax	Description
permit	Configure the permitted ACL rule
igmp	Configure the IGMP related ACL parameters
any	Configure the filtering of a rule to any address
src	Configure the source related ACL parameters
(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
any	Configure the filtering of a rule to any address
dst	Configure the destination related ACL parameters
(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
type	Configure the IGMP type related ACL parameters
(0-15)	IGMP type value to filter
any	Configure the filtering of a rule to any address
dscp	Configure the dscp related ACL parameters

	(0-63)	DSCP value to filter
	redirect	Configure the redirect related ACL parameters
	interface	Configure the interface related ACL parameters
	(interface-type /interface-id)	Interface to redirect packets that hits ACL rules
	dscp-remark	Configure the dscp-remark related ACL parameters
	(0-63)	DSCP value to remark
	rate-limit-type	Algorithm type of rate limit
	simple-token-bucket	Simple Token Bucket
	cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
	cir(1-max_rate)	Committed Information Rate in Mbps
	cbs	Configures the Committed Burst Size of the rate limit. CBS value ranges from 0 to 10240.
	cbs(10-10240)	Committed Burst Size in Kbytes
	conformAction	Action type of conform packet
	do-nothing	Do not perform any action
	violateAction	Action type of violate packet
	drop	Drop the packet
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support DSCP remarking in outbound traffic	
Examples	<pre>moxa(config-ip-acl)# permit igmp 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0 type 5 moxa(config-ip-acl)# permit igmp any any dscp 32 moxa(config-ip-acl)# permit igmp any any redirect interface ethernet 1/1 moxa(config-ip-acl)# permit igmp any any dscp-remark 10 moxa(config-ip-acl)# permit igmp any any redirect interface ethernet 1/4 rate-limit-type simple-token-bucket cir 500 cbs 1024 conform-action do-nothing violate-action drop</pre>	
Error Messages	N/A	
Related Commands	<pre>no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)></pre>	

Configure Permitted OSPF ACL Rules

Commands

permit ospf

{**any** | **src** <ip-address> | <ip-address> <ip-mask>}

[{ **any** | **dst** <ip-address> | <ip-address> <ip-mask> }]

[**dscp** <short(0-63)>]

[**redirect interface** <interface-type> <interface-id>]

[**dscp-remark** <short(0-63)>]

[**rate-limit-type simple-token-bucket cir** <integer(1-max_rate)> **cbs** <integer(10-10240)> **conform-action do-nothing violate-action drop**]

Syntax	Description
permit	Configure the permitted ACL rule
ospf	Configure the OSPF related ACL parameters
any	Configure the filtering of a rule to any address
src	Configure the source related ACL parameters
(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
any	Configure the filtering of a rule to any address
dst	Configure the destination related ACL parameters
(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
dscp	Configure the dscp related ACL parameters
(0-63)	DSCP value to filter
redirect	Configure the redirect related ACL parameters
interface	Configure the interface related ACL parameters
(interface-type /interface-id)	Interface to redirect packets that hits ACL rules
dscp-remark	Configure the dscp-remark related ACL parameters
(0-63)	DSCP value to remark
rateLimitType	Algorithm type of rate limit
simple-token-bucket	Simple Token Bucket
cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
cir(1-max_rate)	Committed Information Rate in Mbps
cbs	Configures the Committed Burst Size of the rate limit. CBS value ranges from 0 to 10240.
cbs(10-10240)	Committed Burst Size in Kbytes
conformAction	Action type of conform packet
do-nothing	Do not perform any action
violateAction	Action type of violate packet
drop	Drop the packet
Defaults	N/A
Command Modes	IP Access-list Configuration Mode
Usage Guidelines	Only support redirect in inbound traffic Only support DSCP remarking in outbound traffic
Examples	moxa(config-ip-acl)# permit ospf 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0 moxa(config-ip-acl)# permit ospf any any dscp 32 moxa(config-ip-acl)# permit ospf any any redirect interface ethernet 1/1 moxa(config-ip-acl)# permit ospf any any dscp-remark 10 moxa(config-ip-acl)# permit ospf any any dscp-remark 1 rate-limit-type simple-token-bucket cir 600 cbs 2020 conform-action do-nothing violate-action drop
Error Messages	N/A
Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>

Configure Permitted Protocol ACL Rules

Commands

permit protocol <short(0-255)>

{**any** | **src** <ip-address> | <ip-address> <ip-mask> }

[{ **any** | **dst** <ip-address> | <ip-address> <ip-mask> }]

[**dscp** <short(0-63)>]

[**redirect interface** <interface-type> <interface-id>]

[**dscp-remark** <short(0-63)>]

[**rate-limit-type simple-token-bucket cir** <integer(1-max_rate)> **cbs** <integer(10-10240)> **conform-action do-nothing violate-action drop**]

Syntax Description	permit	Configure the permitted ACL rule
	protocol	Configure the protocol related ACL parameters
	short(0-255)	Protocol value to filter
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-addr/mask)	Configure the filtering of a rule to a specific address/mask
	dscp	Configure the dscp related ACL parameters
	(0-63)	DSCP value to filter
	redirect	Configure the redirect related ACL parameters
	interface	Configure the interface related ACL parameters
	(interface-type /interface-id)	Interface to redirect packets that hits ACL rules
	dscp-remark	Configure the dscp-remark related ACL parameters
	(0-63)	DSCP value to remark
	rateLimitType	Algorithm type of rate limit
	simple-token-bucket	Simple Token Bucket
	cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
	cir(1-max_rate)	Committed Information Rate in Mbps
	cbs	Configures the Committed Burst Size of the rate limit. CBS value ranges from 0 to 10240.
cbs(10-10240)	Committed Burst Size in Kbytes	
conformAction	Action type of conform packet	
do-nothing	Do not perform any action	
violateAction	Action type of violate packet	
drop	Drop the packet	
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support DSCP remarking in outbound traffic	
Examples	<pre>moxa(config-ip-acl)# permit protocol 136 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0 moxa(config-ip-acl)# permit protocol 136 any any dscp 32 moxa(config-ip-acl)# permit protocol 136 any any redirect interface ethernet 1/1 moxa(config-ip-acl)# permit protocol 136 any any dscp-remark 10 moxa(config-ip-acl)# permit protocol 254 any any redirect interface ethernet 1/3 dscp-remark 2 rate-limit-type simple-token-bucket cir 700 cbs 2048 conform-action do-nothing violate-action drop</pre>	
Error Messages	N/A	

Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>
-------------------------	---

Configure Unacceptable ACL Rules

Commands

deny

{**any** | src <ip-address> | <ip-address> <ip-mask>}

[{ **any** | dst <ip-address> | <ip-address> <ip-mask> }]

[**dscp** <short(0-63)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	dscp	Configure the dscp related ACL parameters
	short(0-63)	DSCP value to filter
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# deny 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0	
	moxa(config-ip-acl)# deny any any dscp 32	
Error Messages	N/A	
Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>	

Configure Unacceptable TCP ACL Rules

Commands

deny tcp

{**any** | src <ip-address> | <ip-address> <ip-mask>}

[{ **any** | dst <ip-address> | <ip-address> <ip-mask> }]

[**src-port** <short(0-65535)>]

[**dst-port** <short(0-65535)>]

[**dscp** <short(0-63)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	tcp	Configure the tcp related ACL parameters
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	dst-port	Configure the destination-port related ACL parameters
	short(0-65535)	Destination port value to filter
	any	Configure the filtering of a rule to any address
dscp	Configure the dscp related ACL parameters	
short(0-63)	DSCP value to filter	
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# deny tcp 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0	
	moxa(config-ip-acl)# deny tcp any any dscp 32	
Error Messages	N/A	
Related Commands	no rule <short(1-10)>	
	no ip access-list <short(1-16)>	
	show ip access-list <short(1-16)>	

Configure Unacceptable UDP ACL Rules

Commands

deny udp

{**any** | src <ip-address> | <ip-address> <ip-mask>}

[{ **any** | dst <ip-address> | <ip-address> <ip-mask> }]

[**src-port** <short(0-65535)>]

[**dst-port** <short(0-65535)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	udp	Configure the udp related ACL parameters
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	dst-port	Configure the destination-port related ACL parameters
	short(0-65535)	Destination port value to filter
	any	Configure the filtering of a rule to any address
	dscp	Configure the dscp related ACL parameters
	short(0-63)	DSCP value to filter
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# deny udp 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0	
	moxa(config-ip-acl)# deny udp any any dscp 32	
Error Messages	N/A	
Related Commands	no rule <short(1-10)>	
	no ip access-list <short(1-16)>	
	show ip access-list <short(1-16)>	

Configure Unacceptable ICMP ACL Rules

Commands

deny icmp

{**any** | src <ip-address> | <ip-address> <ip-mask>}

[{ **any** | dst <ip-address> | <ip-address> <ip-mask> }]

[**type** <short(0-255)>]

[**code** <short(0-15)>]

[**dscp** <short(0-63)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	icmp	Configure the icmp related ACL parameters
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	type	Configure the ICMP type related ACL parameters
	short(0-255)	ICMP type value to filter
	code	Configure the ICMP code related ACL parameters
	short(0-15)	ICMP code value to filter
	any	Configure the filtering of a rule to any address
dscp	Configure the dscp related ACL parameters	
short(0-63)	DSCP value to filter	
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# deny icmp 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0 type 3 code 10	
	moxa(config-ip-acl)# deny icmp any any dscp 32	
Error Messages	N/A	
Related Commands	no rule <short(1-10)>	
	no ip access-list <short(1-16)>	
	show ip access-list <short(1-16)>	

Configure Unacceptable IGMP ACL Rules

Commands

deny igmp

{**any** | src <ip-address> | <ip-address> <ip-mask>}

[{ **any** | dst <ip-address> | <ip-address> <ip-mask> }]

[**type** <short(0-255)>]

[**dscp** <short(0-63)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	igmp	Configure the igmp related ACL parameters
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	type	Configure the IGMP type related ACL parameters
	short(0-255)	IGMP type value to filter
	any	Configure the filtering of a rule to any address
	dscp	Configure the dscp related ACL parameters
	short(0-63)	DSCP value to filter
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# deny igmp 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0 type 5	
	moxa(config-ip-acl)# deny igmp any any dscp 32	
Error Messages	N/A	
Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>	

Configure Unacceptable OSPF ACL Rules

Commands

deny ospf

{**any** | src <ip-address> | <ip-address> <ip-mask>}

[{ **any** | dst <ip-address> | <ip-address> <ip-mask> }]

[**dscp** <short(0-63)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	ospf	Configure the ospf related ACL parameters
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dscp	Configure the dscp related ACL parameters
short(0-63)	DSCP value to filter	
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# deny ospf 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0	
	moxa(config-ip-acl)# deny ospf any any dscp 32	
Error Messages	N/A	
Related Commands	no rule <short(1-10)>	
	no ip access-list <short(1-16)>	
	show ip access-list <short(1-16)>	

Configure Unacceptable Protocol ACL Rules

Commands

deny protocol <short(0-255)>

{**any** | src <ip-address> | <ip-address> <ip-mask>}

[{ **any** | dst <ip-address> | <ip-address> <ip-mask> }]

[**dscp** <short(0-63)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	protocol	Configure the protocol related ACL parameters
	short(0-255)	Protocol value to filter
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(ip-address/ip-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
dscp		Configure the dscp related ACL parameters
	short(0-63)	DSCP value to filter
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# deny protocol 136 192.168.127.253 255.255.255.0 192.168.127.100 255.255.255.0	
	moxa(config-ip-acl)# deny protocol 136 any any dscp 32	
Error Messages	N/A	
Related Commands	no rule <short(1-10)>	
	no ip access-list <short(1-16)>	
	show ip access-list <short(1-16)>	

Enable/Disable an IP ACL rule

Commands

rule <short(1-10)> {**enable** | **disable**}

Syntax Description	rule	Configure the rule related ACL parameters
	short(1-10)	Rule index
	enable	Enable the rule
	disable	Disable the rule
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# rule 9 enable	
	moxa(config-ip-acl)# rule 9 disable	
Error Messages	N/A	
Related Commands	show ip access-list <short(1-16)>	

Remove IP ACL Rule

Commands

no rule <short(1-10)>

Syntax Description	no	Remove configuration / delete entry / reset to default value
	rule (1-10)	Configure the rule related ACL parameters Rule index of rule
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# no rule 9	
Error Messages	N/A	
Related Commands	show ip access-list <short(1-16)>	

Remove an IPv4 Access-list

Commands

no ip access-list <short(1-16)>

Syntax Description	no	Remove configuration / delete entry / reset to default value
	ip	Configure IP related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
Defaults	N/A	
Command Modes	IP Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# no ip accessl-list 10	
Error Messages	N/A	
Related Commands	show ip access-list <short(1-16)>	

Configure a MAC Access-list and Enter MAC Access-list Configuration Mode

Commands

mac access-list <short(1-16)>

Syntax Description	mac	Configure MAC related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure terminal moxa(config)# mac access-list 1 moxa(config-mac-acl)#	
Error Messages	N/A	
Related Commands	no mac access-list <short(1-16)> show ip access-list <short(1-16)>	

Configure the name of MAC access-list Rule

Commands

name "<string(32)>"

Syntax Description	name	Configure name for the MAC access-list
	<string(32)>	Configuration name
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	An access list is created when the access list's name or rule is configured	
Examples	moxa(config-mac-acl)# name "MAC-ACL1"	
Error Messages	N/A	
Related Commands	show mac access-list <short(1-16)>	

Configure Permitted MAC ACL Rules

Commands

permit

{**any** | **src** < mac -address> | < mac -address> < mac -mask>}

[{ **any** | **dst** < mac -address> | < mac -address> < mac -mask> }]

[**vlan** <short(1-4094)>]

[**cos** <short(0-7)>]

[**redirect interface** <interface-type> <interface-id>]

[**cos-remark** <short(0-7)>]

[**rate-limit-type simple-token-bucket cir** <integer(1-max_rate)> **cbs** <integer(10-10240)> **conform-action do-nothing violate-action drop**]

Syntax Description	permit	Configure the permitted ACL rule
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(mac-addr/mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(mac-addr/mask)	Configure the filtering of a rule to a specific address/mask
	vlan	Configure the vlan related ACL parameters
	(1-4094)	VLAN index value to filter
	cos	Configure the cos related ACL parameters
	(0-7)	Cos value to filter
	redirect	Configure the redirect related ACL parameters
	interface	Configure the interface related ACL parameters
	(interface-type /interface-id)	Interface to redirect packets that hits ACL rules
	cos-remark	Configure the cos-remark related ACL parameters
	(0-7)	Cos value to remark
	rate-limit-type	Algorithm type of rate limit
	simple-token-bucket	Simple Token Bucket
	cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
	cir(1-max_rate)	Committed Information Rate in Mbps
	cbs	Configures the Committed Burst Size of the rate limit. CBS value ranges from 0 to 10240.
	cbs(10-10240)	Committed Burst Size in Kbytes
	conformAction	Action type of conform packet
do-nothing	Do not perform any action	
violateAction	Action type of violate packet	
drop	Drop the packet	
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support CoS remarking in outbound traffic	
Examples	<pre>moxa(config-mac-acl)# permit 00:90:e8:00:00:12 ff:ff:ff:ff:ff:00 00:90:e8:00:00:33 ff:ff:ff:ff:ff:00 moxa(config-mac-acl)# permit any any vlan 2 cos 1 moxa(config-mac-acl)# permit any any redirect interface ethernet 1/1 moxa(config-mac-acl)# permit any any cos-remark 7</pre>	

	moxa(config-mac-acl)# permit any any redirect interface ethernet 1/1 cos-remark 6 rate-limit-type simple-token-bucket cir 200 cbs 2045 conform-action do-nothing violate-action drop
Error Messages	N/A
Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>

Configure Permitted Goose ACL Rules

Commands

permit goose

{**any** | **src** < mac -address> | < mac -address> < mac -mask>}

[{ **any** | **dst** < mac -address> | < mac -address> < mac -mask> }]

[**vlan** <short(1-4094)>]

[**cos** <short(0-7)>]

[**redirect interface** <interface-type> <interface-id>]

[**cos-remark** <short(0-7)>]

[**rate-limit-type simple-token-bucket cir** <integer(1-max_rate)> **cbs** <integer(10-10240)> **conform-action do-nothing violate-action drop**]

Syntax Description	permit	Configure the permitted ACL rule
	goose	Configure the goose related parameters
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(mac-addr/mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(mac-addr/mask)	Configure the filtering of a rule to a specific address/mask
	vlan	Configure the vlan related ACL parameters
	(1-4094)	VLAN index value to filter
	cos	Configure the cos related ACL parameters
	(0-7)	Cos value to filter
	redirect	Configure the redirect related ACL parameters
	interface	Configure the interface related ACL parameters
	(interface-type /interface-id)	Interface to redirect packets that hits ACL rules
	cos-remark	Configure the cos-remark related ACL parameters
	(0-7)	Cos value to remark
	rateLimitType	Algorithm type of rate limit
	simple-token-bucket	Simple Token Bucket
	cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
	cir(1-max_rate)	Committed Information Rate in Mbps
cbs	Configures the Committed Burst Size of the rate limit. CBS value ranges from 0 to 10240.	
cbs(10-10240)	Committed Burst Size in Kbytes	
conformAction	Action type of conform packet	
do-nothing	Do not perform any action	
violateAction	Action type of violate packet	
drop	Drop the packet	
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support CoS remarking in outbound traffic	
Examples	moxa(config-mac-acl)# permit goose 00:90:e8:00:00:12 ff:ff:ff:ff:ff:00 00:90:e8:00:00:33 ff:ff:ff:ff:ff:00	

	<pre>moxa(config-mac-acl)# permit goose any any vlan 2 cos 1 moxa(config-mac-acl)# permit goose any any redirect interface ethernet 1/1 moxa(config-mac-acl)# permit goose any any cos-remark 7 moxa(config-mac-acl)# permit goose any any redirect interface ethernet 1/1 cos-remark 5 rate-limit-type simple-token-bucket cir 300 cbs 2045 conform-action do-nothing violate-action drop</pre>
Error Messages	N/A
Related Commands	<pre>no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)></pre>

Configure Permitted SMV ACL Rules

Commands

permit smv

{any | src < mac -address> | < mac -address> < mac -mask>}

[{ any | dst < mac -address> | < mac -address> < mac -mask> }]

[vlan <short(1-4094)>]

[cos <short(0-7)>]

[redirect interface <interface-type> <interface-id>]

[cos-remark <short(0-7)>]

[rate-limit-type simple-token-bucket cir <integer(1-max_rate)> cbs <integer(10-10240)> conform-action do-nothing violate-action drop]

Syntax	Description
permit	Configure the permitted ACL rule
smv	Configure the smv related parameters
any	Configure the filtering of a rule to any address
src	Configure the source related ACL parameters
(mac-addr/mask)	Configure the filtering of a rule to a specific address/mask
any	Configure the filtering of a rule to any address
dst	Configure the destination related ACL parameters
(mac-addr/mask)	Configure the filtering of a rule to a specific address/mask
vlan	Configure the vlan related ACL parameters
(1-4094)	VLAN index value to filter
cos	Configure the cos related ACL parameters
(0-7)	Cos value to filter
redirect	Configure the redirect related ACL parameters
interface	Configure the interface related ACL parameters
(interface-type /interface-id)	Interface to redirect packets that hits ACL rules
cos-remark	Configure the cos-remark related ACL parameters
(0-7)	Cos value to remark
rate-limit-type	Algorithm type of rate limit
simple-token-bucket	Simple Token Bucket
cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
cir(1-max_rate)	Committed Information Rate in Mbps
cbs	Configures the Committed Burst Size of the rate limit. CBS value ranges from 0 to 10240.
cbs(10-10240)	Committed Burst Size in Kbytes
conformAction	Action type of conform packet
do-nothing	Do not perform any action
violateAction	Action type of violate packet

	drop	Drop the packet
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support CoS remarking in outbound traffic	
Examples	<pre>moxa(config-mac-acl)# permit smv 00:90:e8:00:00:12 ff:ff:ff:ff:00 00:90:e8:00:00:33 ff:ff:ff:ff:00 moxa(config-mac-acl)# permit smv any any vlan 2 cos 1 moxa(config-mac-acl)# permit smv any any redirect interface ethernet 1/1 moxa(config-mac-acl)# permit smv any any cos-remark 7</pre>	
Error Messages	N/A	
Related Commands	<pre>no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)></pre>	

Configure Permitted Ethertype ACL Rules

Commands

permit ethertype <short(0-65535)>

{**any** | **src** < mac -address> | < mac -address> < mac -mask> }

[{ **any** | **dst** < mac -address> | < mac -address> < mac -mask> }]

[**vlan** <short(1-4094)>]

[**cos** <short(0-7)>]

[**redirect interface** <interface-type> <interface-id>]

[**cos-remark** <short(0-7)>]

[**rate-limit-type simple-token-bucket cir** <integer(1-max_rate)> **cbs** <integer(10-10240)> **conform-action do-nothing violate-action drop**]

Syntax	Description
permit	Configure the permitted ACL rule
ethertype	Configure the ethertype related parameters
(0-65535)	Ethertype value to filter
any	Configure the filtering of a rule to any address
src	Configure the source related ACL parameters
(mac-addr/mask)	Configure the filtering of a rule to a specific address/mask
any	Configure the filtering of a rule to any address
dst	Configure the destination related ACL parameters
(mac-addr/mask)	Configure the filtering of a rule to a specific address/mask
vlan	Configure the vlan related ACL parameters
(1-4094)	VLAN index value to filter
cos	Configure the cos related ACL parameters
(0-7)	Cos value to filter
redirect	Configure the redirect related ACL parameters
interface	Configure the interface related ACL parameters
(interface-type /interface-id)	Interface to redirect packets that hits ACL rules
cos-remark	Configure the cos-remark related ACL parameters
(0-7)	Cos value to remark
rate-limit-type	Algorithm type of rate limit
simple-token-bucket	Simple Token Bucket
cir	Configures the Committed Information Rate of the rate limit. CIR value ranges from 0 to max port speed.
cir(1-max_rate)	Committed Information Rate in Mbps
cbs	Configures the Committed Burst Size of the rate limit. CBS value ranges from 0 to 10240.

	<code>cbs(10-10240)</code>	Committed Burst Size in Kbytes
	conformAction	Action type of conform packet
	do-nothing	Do not perform any action
	violateAction	Action type of violate packet
	drop	Drop the packet
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support CoS remarking in outbound traffic	
Examples	<pre>moxa(config-mac-acl)# permit ethertype 10 00:90:e8:00:00:12 ff:ff:ff:ff:00 00:90:e8:00:00:33 ff:ff:ff:ff:00 moxa(config-mac-acl)# permit ethertype 10 any any vlan 2 cos 1 moxa(config-mac-acl)# permit ethertype 10 any any redirect interface ethernet 1/1 moxa(config-mac-acl)# permit ethertype 10 any any cos-remark 7 moxa(config-mac-acl)# permit ethertype 33333 any any redirect interface ethernet 1/1 cos-remark 4 rate-limit-type simple-token-bucket cir 500 cbs 2045 conform- action do-nothing violate-action drop</pre>	
Error Messages	N/A	
Related Commands	<pre>no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)></pre>	

Configure Unacceptable MAC ACL Rules

Commands

deny

```
{any | src < mac-address> | < mac-address> < mac-mask>}
```

```
[{ any | dst < mac-address> | < mac-address> < mac-mask> }]
```

```
[vlan <short(1-4094)>]
```

```
[cos <short(0-7)>]
```

Syntax Description	deny	Configure the unacceptable ACL rule
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(mac-address/ mac-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(mac-address/ mac-mask)	Configure the filtering of a rule to a specific address/mask
	vlan	Configure the vlan related ACL parameters
	short(1-4094)	VLAN index value to filter
cos	Configure the cos related ACL parameters	
short(0-7)	Cos value to filter	
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support CoS remarking in outbound traffic	
Examples	moxa(config-mac-acl)# deny 00:90:e8:00:00:12 ff:ff:ff:ff:00 00:90:e8:00:00:33 ff:ff:ff:ff:00 moxa(config-mac-acl)# deny any any vlan 2 cos 1	
Error Messages	N/A	
Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>	

Configure Unacceptable Goose ACL Rules

Commands

deny goose

{**any** | src < mac-address> | < mac-address> < mac-mask>}

[{ **any** | dst < mac-address> | < mac-address> < mac-mask> }]

[**vlan** <short(1-4094)>]

[**cos** <short(0-7)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	goose	Configure the goose related ACL parameters
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(mac-address/ mac-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(mac-address/ mac-mask)	Configure the filtering of a rule to a specific address/mask
	vlan	Configure the vlan related ACL parameters
	short(1-4094)	VLAN index value to filter
cos	Configure the cos related ACL parameters	
short(0-7)	Cos value to filter	
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support CoS remarking in outbound traffic	
Examples	moxa(config-mac-acl)# deny goose 00:90:e8:00:00:12 ff:ff:ff:ff:00 00:90:e8:00:00:33 ff:ff:ff:ff:00 moxa(config-mac-acl)# deny goose any any vlan 2 cos 1	
Error Messages	N/A	
Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>	

Configure Unacceptable SMV ACL Rules

Commands

deny smv

{**any** | src < mac-address> | < mac-address> < mac-mask>}

[{ **any** | dst < mac-address> | < mac-address> < mac-mask> }]

[**vlan** <short(1-4094)>]

[**cos** <short(0-7)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	smv	Configure the smv related ACL parameters
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(mac-address/ mac-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(mac-address/ mac-mask)	Configure the filtering of a rule to a specific address/mask
	vlan	Configure the vlan related ACL parameters
	short(1-4094)	VLAN index value to filter
cos	Configure the cos related ACL parameters	
short(0-7)	Cos value to filter	
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support CoS remarking in outbound traffic	
Examples	moxa(config-mac-acl)# deny smv 00:90:e8:00:00:12 ff:ff:ff:ff:00 00:90:e8:00:00:33 ff:ff:ff:ff:00 moxa(config-mac-acl)# deny smv any any vlan 2 cos 1	
Error Messages	N/A	
Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>	

Configure Unacceptable Ethertype ACL Rules

Commands

deny ethertype <short(0-65535)>

{**any** | src < mac-address> | < mac-address> < mac-mask>}

[{ **any** | dst < mac-address> | < mac-address> < mac-mask> }]

[**vlan** <short(1-4094)>]

[**cos** <short(0-7)>]

Syntax Description	deny	Configure the unacceptable ACL rule
	ethertype	Configure the Ethertype related ACL parameters
	short(0-65535)	Ethertype value to filter
	any	Configure the filtering of a rule to any address
	src	Configure the source related ACL parameters
	(mac-address/ mac-mask)	Configure the filtering of a rule to a specific address/mask
	any	Configure the filtering of a rule to any address
	dst	Configure the destination related ACL parameters
	(mac-address/ mac-mask)	Configure the filtering of a rule to a specific address/mask
	vlan	Configure the vlan related ACL parameters
	short(1-4094)	VLAN index value to filter
cos	Configure the cos related ACL parameters	
short(0-7)	Cos value to filter	
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	Only support redirect in inbound traffic Only support CoS remarking in outbound traffic	
Examples	moxa(config-mac-acl)# deny ethertype 00:90:e8:00:00:12 ff:ff:ff:ff:ff:00 00:90:e8:00:00:33 ff:ff:ff:ff:ff:00 moxa(config-mac-acl)# deny ethertype 10 any any vlan 2 cos 1	
Error Messages	N/A	
Related Commands	no rule <short(1-10)> no ip access-list <short(1-16)> show ip access-list <short(1-16)>	

Enable/Disable a MAC ACL Rule

Commands

rule <short(1-10)> {**enable** | **disable**}

Syntax Description	rule	Configure the rule related ACL parameters
	short(1-10)	Rule index
	enable	Enable the rule
	disable	Disable the rule
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-mac-acl)# rule 9 enable moxa(config-mac-acl)# rule 9 disable	
Error Messages	N/A	
Related Commands	show ip access-list <short(1-16)>	

Remove MAC ACL Rules

Commands

no rule <short(1-10)>

Syntax Description	no	Remove configure/delete entry/reset to default value
	rule	Configure the rule related ACL parameters
	short(1-10)	Rule index
Defaults	N/A	
Command Modes	MAC Access-list Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config-ip-acl)# no rule 9	
Error Messages	N/A	
Related Commands	show ip access-list <short(1-16)>	

Remove a MAC Access-list

Commands

no mac access-list <short(1-16)>

Syntax Description	no	Remove configuration / delete entry / reset to default value
	mac	Configure MAC related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa(config)# no mac access-list 10	
Error Messages	N/A	
Related Commands	mac access-list <short(1-16)>	

Apply an IPv4 Access-list to a Port Interface

Commands

ip access-list <short(1-16)> { **in** | **out** }

Syntax Description	ip	Configure IP related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
	in	Apply IP access-list to inbound traffic
	out	Apply IP access-list to outbound traffic
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	The maximum activated ACL groups are 16 (IP-based + MAC-based combined)	
Examples	moxa(config-if)# ip access-list 10 in	
	moxa(config-if)# ip access-list 10 out	
Error Messages	N/A	
Related Commands	ip access-list <short(1-16)> no ip access-list <short(1-16)> { in out }	

Apply an IPv4 Access-list to a VLAN Interface

Commands

ip access-list <short(1-16)> { **in** | **out** }

Syntax Description	ip	Configure IP related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
	in	Apply IP access-list to inbound traffic
	out	Apply IP access-list to outbound traffic
Defaults	N/A	
Command Modes	VLAN interface Configuration Mode	
Usage Guidelines	The maximum activated ACL groups are 16 (IP-based + MAC-based combined)	
Examples	moxa(config-vlan)# ip access-list 10 in	
	moxa(config-vlan)# ip access-list 10 out	
Error Messages	N/A	
Related Commands	ip access-list <short(1-16)>	
	no ip access-list <short(1-16)> { in out }	

Remove an IPv4 Access-list to a Port Interface

Commands

no mac access-list <short(1-16)> { **in** | **out** }

Syntax Description	no	Remove configuration/delete entry/reset to default value
	mac	Configure MAC related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
	in	Apply IP access-list to inbound traffic
	out	Apply IP access-list to outbound traffic
Defaults	N/A	
Command Modes	Port Interface Configuration Mode	
Usage Guidelines	The maximum activated ACL groups are 16 (IP-based + MAC-based combined)	
Examples	moxa(config-if)# no ip access-list 10 in	
	moxa(config-if)# no ip access-list 10 out	
Error Messages	N/A	
Related Commands	ip access-list <short(1-16)>	
	no ip access-list <short(1-16)> { in out }	

Remove an IPv4 Access-list to a VLAN Interface

Commands

no ip access-list <short(1-16)> { **in** | **out** }

Syntax Description	no	Remove configuration/delete entry/reset to default value
	ip	Configure IP related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
	in	Apply IP access-list to inbound traffic
	out	Apply IP access-list to outbound traffic
Defaults	N/A	
Command Modes	VLAN Interface Configuration Mode	
Usage Guidelines	The maximum activated ACL groups are 16 (IP-based + MAC-based combined)	
Examples	moxa(config-vlan)# no ip access-list 10 in	
	moxa(config-vlan)# no ip access-list 10 out	
Error Messages	N/A	
Related Commands	ip access-list <short(1-16)>	
	no ip access-list <short(1-16)> { in out }	

Apply a MAC Access-list to a Port Interface

Commands

mac access-list <short(1-16)> { **in** | **out** }

Syntax Description	mac	Configure MAC related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
	in	Apply MAC access-list to inbound traffic
	out	Apply MAC access-list to outbound traffic
Defaults	N/A	
Command Modes	Port Interface Configuration Mode	
Usage Guidelines	The maximum activated ACL groups are 16 (IP-based + MAC-based combined)	
Examples	moxa(config-if)# mac access-list 10 in	
	moxa(config-if)# mac access-list 10 out	
Error Messages	N/A	
Related Commands	mac access-list <short(1-16)>	
	no mac access-list <short(1-16)> { in out }	

Apply a MAC Access-list to a VLAN Interface

Commands

mac access-list <short(1-16)> { **in** | **out** }

Syntax Description	mac	Configure MAC related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
	in	Apply MAC access-list to inbound traffic
	out	Apply MAC access-list to outbound traffic
Defaults	N/A	
Command Modes	VLAN Interface Configuration Mode	
Usage Guidelines	The maximum activated ACL groups are 16 (IP-based + MAC-based combined)	
Examples	moxa(config-vlan)# mac access-list 10 in	
	moxa(config-vlan)# mac access-list 10 out	
Error Messages	N/A	
Related Commands	mac access-list <short(1-16)>	
	no mac access-list <short(1-16)> { in out }	

Remove a MAC Access-list to a Port Interface

Commands

no mac access-list <short(1-16)> { **in** | **out** }

Syntax Description	no	Remove configuration/delete entry/reset to default value
	mac	Configure MAC related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
	in	Apply MAC access-list to inbound traffic
out	Apply MAC access-list to outbound traffic	
Defaults	N/A	
Command Modes	Port Interface Configuration Mode	
Usage Guidelines	The maximum activated ACL groups are 16 (IP-based + MAC-based combined)	
Examples	moxa(config-if)# no mac access-list 10 in	
	moxa(config-if)# no mac access-list 10 out	
Error Messages	N/A	
Related Commands	mac access-list <short(1-16)>	
	no mac access-list <short(1-16)> { in out }	

Remove a MAC Access-list to a VLAN Interface

Commands

no mac access-list <short(1-16)> { in | out }

Syntax Description	no	Remove configuration/delete entry/reset to default value
	mac	Configure MAC related parameters
	access-list	Configure ACL related parameters
	short(1-16)	Access control list index
	in	Apply MAC access-list to inbound traffic
	out	Apply MAC access-list to outbound traffic
Defaults	N/A	
Command Modes	VLAN Interface Configuration Mode	
Usage Guidelines	The maximum activated ACL groups are 16 (IP-based + MAC-based combined)	
Examples	moxa(config-vlan)# no mac access-list 10 in	
	moxa(config-vlan)# no mac access-list 10 out	
Error Messages	N/A	
Related Commands	mac access-list <short(1-16)>	
	no mac access-list <short(1-16)> { in out }	

Show All Access-lists

Commands

show access-list

Syntax Description	show	Display configuration/status information
	access-list	Configure ACL related parameters
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command shows both IP and MAC address lists	
Examples	moxa# show access-list	
	<pre> Mac Access List 1 Name : MyACL1 Out VLAN List : 1 ----- Rule Index : 1 Rule Status : enabled Rule Type : permit Ethertype : any Source MAC Address : 00:00:01:00:02:03/FF:FF:FF:FF:FF:00 Destination MAC Address : 00:00:01:00:02:04/FF:FF:FF:FF:FF:00 Cos : 7 Action : Remark cos to 3 Hit Count : 10 ----- Mac Access List 10 Name : In VLAN List : Out VLAN List : 3 ----- Rule Index : 1 Rule Status : enabled Rule Type : permit Ethertype : any Source MAC Address : any </pre>	

	Destination MAC Address : any Cos : any Action : None Hit Count : 20 ----- Ip Access List 1 Name : IP-ACL-1 In Port List : Eth1/1, Eth1/2, Eth1/3, Eth3/4, Eth4/1 Eth6/2, Eth6/3, Eth7/2, Eth7/3 Out Port List : Eth1/1, Eth1/2, Eth3/3, Eth3/4, Eth6/1 Eth6/2, Eth7/1, Eth7/2, Eth7/4 ----- Rule Index : 1 Rule Status : enabled Rule Type : permit Protocol : any Source IP Address : any Destination IP Address : any Dscp : any Action : Redirect to Eth 6/2 Hit Count : 10 ----- Source Port : 333 Destination Port : 22 Dscp : any Action : None
Error Messages	N/A
Related Commands	ip access-list <short(1-16)> mac access-list <short(1-16)>

Show All IPv4 Access-lists

Commands

show ip access-list

Syntax Description	show	Display configuration/status information
	ip	Display IP related information
	access-list	Configure ACL related parameters
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ip access-lists Ip Access List 1 Name : IP-ACL-1 In Port List : Eth1/1, Eth1/2, Eth1/3, Eth3/4, Eth4/1 Eth6/2, Eth6/3, Eth7/2, Eth7/3 Out Port List : Eth1/1, Eth1/2, Eth3/3, Eth3/4, Eth6/1 Eth6/2, Eth7/1, Eth7/2, Eth7/4 ----- Rule Index : 1 Rule Status : enabled Rule Type : permit Protocol : any Source IP Address : any Destination IP Address : any Dscp : any Action : Redirect to Eth 6/2 Hit Count : 10 ----- Destination IP Address : any ICMP Type : 3 ICMP Code : 15 Dscp : any Action : None ----- Ip Access List 2 Name : 123 In VLAN List : 1, 300, 2536, 4094 Out VLAN List : 2, 40, 336, 594 </pre>	
Error Messages	N/A	
Related Commands	ip access-list <short(1-16)>	

Show Specific IPv4 Access-list

Commands

show ip access-list <short(1-16)>

Syntax Description	show	Display configuration/status information
	ip	Display IP related information
	access-list	Configure ACL related parameters
	short(1-16)	ACL index to display
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre> moxa# show ip access-list 3 Ip Access List 3 Name: ----- Rule Index : 1 Rule Status : enabled Rule Type : permit Protocol : UDP Source IP Address : any Destination IP Address : any Source Port : 333 Destination Port : 22 Dscp : any Action : Remark dscp to 12 Hit Count : 9 ----- Rule Index : 2 Rule Status : enabled Rule Type : permit Protocol : any Source IP Address : any Destination IP Address : any Dscp : any Action : Redirect to Eth 2/2 Remark dscp to 36 Hit Count : 10 ----- Rule Index : 3 Rule Status : enabled Rule Type : permit Protocol : any Source IP Address : any Destination IP Address : any Dscp : any Action : Mirror to Session 5 Remark dscp to 36 Hit Count : 0 ----- Rule Index : 4 Rule Status : enabled Rule Type : permit Protocol : any Source IP Address : any Destination IP Address : any Dscp : any Action : Mirror to Session 5 Hit Count : 5 </pre>	

	Rule Index : 5 Rule Status : enabled Rule Type : permit Protocol : any Source IP Address : any Destination IP Address : any Dscp : any Action : Redirect to Eth 2/2 Hit Count : 10
Error Messages	N/A
Related Commands	ip access-list <short(1-16)>

Show All MAC Access-lists

Commands

show mac access-list

Syntax Description	show	Display configuration/status information
	mac	Display MAC related information
	access-list	Configure ACL related parameters
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre> moxa# show mac access-list Mac Access List 1 Name : MyACL1 Out VLAN List : 1 ----- Rule Index : 1 Rule Status : enabled Rule Type : permit Ethertype : any Source MAC Address : 00:00:01:00:02:03/FF:FF:FF:FF:FF:00 Destination MAC Address : 00:00:01:00:02:04/FF:FF:FF:FF:FF:00 Cos : 7 Action : Remark cos to 3 Hit Count : 10 ----- Rule Index : 2 Rule Status : enabled Rule Type : permit Ethertype : any Source MAC Address : 00:00:01:00:02:03/FF:FF:FF:FF:FF:00 Destination MAC Address : 00:00:01:00:02:04/FF:FF:FF:FF:00:00 Cos : 7 Action : Remark cos to 3 Hit Count : 10 ----- Mac Access List 10 Name : In VLAN List : Out VLAN List : 3 ----- Rule Index : 1 Rule Status : enabled Rule Type : permit Ethertype : any Source MAC Address : any Destination MAC Address : any Cos : any Action : None Hit Count : 0 </pre>	
Error Messages	N/A	
Related Commands	mac access-list <short(1-16)>	

Show Specific MAC Access-list

Commands

show mac access-list <short(1-16)>

Syntax Description	show	Display configuration/status information
	mac	Display MAC related information
	access-list	Configure ACL related parameters
	short(1-16)	ACL index to display
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# show mac access-lists 1 Mac Access List 1 Name : MyACL1 Out VLAN List : 1 ----- Rule Index : 1 Rule Status : enabled Rule Type : permit Ethertype : any Source MAC Address : 00:00:01:00:02:03/FF:FF:FF:FF:FF:00 Destination MAC Address : 00:00:01:00:02:04/FF:FF:FF:FF:FF:00 Cos : 7 Action : Remark cos to 3 Hit Count : 5 ----- Rule Index : 2 Rule Status : enabled Rule Type : permit Ethertype : any Source MAC Address : 00:00:01:00:02:03/FF:FF:FF:FF:FF:00 Destination MAC Address : 00:00:01:00:02:04/FF:FF:FF:FF:00:00 Cos : 7 Action : Remark cos to 3 Hit Count : 8 -----</pre>	
Error Messages	N/A	
Related Commands	mac access-list <short(1-16)>	

Show Port Access-list Configuration

Commands

show interface <interface-type> <interface-id> **access-list**

Syntax Description	show	Display configuration/status information
	interface	Display interface related information
	<interface-type/interface id>	Port index to display
	access-list	Configure ACL related parameters
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	moxa# show interface ethernet 1/1 access-list	
Error Messages	N/A	
Related Commands	ip access-list <short(1-16)> { in out } mac access-list <short(1-16)> { in out }	

Show VLAN Access-list Configuration

Commands

show vlan id <short(1-4094)> **access-list**

Syntax Description	show	Display configuration/status information
	vlan	Display VLAN related information
	id	Display VLAN index related information
	short(1-4094)	VLAN index to display
	access-list	Configure ACL related parameters
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	moxa# show vlan id 1 access-list	
Error Messages	N/A	
Related Commands	ip access-list <short(1-16)> { in out } mac access-list <short(1-16)> { in out }	

Network Loop Protection

Enable/Disable Network Loop Protection

Commands

loop-protect { enable | disable }

Syntax Description	loop-protect	Configure Loop Protection parameters
	enable	Enable Loop Protection
	disable	Disable Loop Protection
Defaults	Disable	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# loop-protect enable	
Error Messages	N/A	
Related Commands	show loop-protect	

Configure the Network Loop Protection Detection Interval

Commands

loop protect detect-interval <integer(1-30)>

Syntax Description	loop-protect	Configure Loop Protection parameters
	detect-interval	Configures loop detection frame interval
	<integer(1-30)>	Specify the interval (in seconds) at which the system will send loop detection frames
Defaults	10	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# loop-protect detect-interval 5	
Error Messages	N/A	
Related Commands	show loop-protect	

Show Network Loop Protection Information

Commands

show loop-protect

Syntax Description	Show	Display configuration/status information		
	loop-protect	Display Loop Protection information		
Defaults	N/A			
Command Modes	Privileged EXEC Mode			
Usage Guidelines	N/A			
Examples	<pre> moxa# show loop-protect Loop Protection Status : Enabled Detection interval: : 1 sec Ports Loop Status Port Status Peer Port ----- - Eth1/1 Normal -- Eth1/2 Normal -- Eth1/3 Normal -- Eth1/4 Normal -- Eth1/5 Normal -- Eth1/6 Normal -- Eth1/7 Normal -- Eth1/8 Normal -- Eth1/9 Normal -- Eth1/10 Normal -- Eth1/11 Looping Disabled Eth1/12 Eth1/12 Looping Disabled Eth1/11 </pre>			
Error Messages	N/A			
Related Commands	N/A			

Binding Database

Configure Binding Database

Commands

ip dhcp snooping binding <mac-address> **vlan** <vlan-id (1-4094)> <ip-address> **interface** { port-channel <port-channel-id > | <interface-type> <interface-id> }

no ip dhcp snooping binding <mac-address> **vlan** <vlan-id (1-4094)>

Syntax Description	ip dhcp snooping binding no ip dhcp snooping binding	Add a binding to DHCP snooping database Delete a binding from DHCP snooping database
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	This command adds/deletes a binding entry.	
Examples	Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.253 interface ethernet 1/1	
Error Messages	<p>If user sets two entry with same VLAN and MAC address: Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.252 interface ethernet 1/2 Invalid: There should not be two entries with the same VLAN ID and Mac Address.</p> <p>If user sets a port channel that does not exist : Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.252 interface port-channel 2 Invalid: The Port-Channel does not exist.</p> <p>If user sets a member port: Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.252 interface ethernet 1/3 Invalid: The port is a member of Port-Channel.</p> <p>If user sets a port that is enabled IP source guard or dynamic ARP inspection and this situation reach maximum number of shared resources: Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.252 interface ethernet 1/3 Invalid: Entry limit reached. To add more entries, delete unnecessary ACL entries, binding database entries used by Dynamic ARP Inspection or IP Source Guard, or GOOSE Check entries.</p> <p>If the user configures more than the maximum number of binding database entries: Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.252 interface ethernet 1/3 Invalid: Reached the maximum number of binding database entries (refer to the Product Diff. section).</p>	
Related Commands	N/A	

Display Binding Database Status

Commands

show ip dhcp snooping [{ interface | vlan <vlan-id> | binding}]

Syntax Description	interface	Display all interface status of DHCP snooping
	vlan	Display the configuration and statistics of DHCP snooping on specific VLAN
	binding	Display DHCP snooping binding database
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command displays DHCP snooping information.	
Examples	<pre> moxa# show ip dhcp snooping Layer 2 DHCP Snooping is globally disabled moxa# show ip dhcp snooping Layer 2 DHCP Snooping is globally enabled MAC Address verification is enabled moxa# show ip dhcp snooping interface Interface DHCP Snooping Port Status ----- ----- Eth1/1 Untrusted Eth1/2 Untrusted Eth1/3 Untrusted Eth1/4 Untrusted moxa# show ip dhcp snooping vlan 1 DHCP Snooping Vlan information ----- VLAN : 1 Snooping status : Enabled Number of Incoming Discovers : 0 Number of Incoming Requests : 0 Number of Incoming Releases : 0 Number of Incoming Declines : 0 Number of Incoming Informs : 0 Number of Transmitted Offers : 0 Number of Transmitted Acks : 0 Number of Transmitted Naks : 0 Total Number Of Discards : 0 Number of MAC Discards : 0 Number of Server Discards : 0 moxa# show ip dhcp snooping vlan 2 DHCP Snooping Vlan information ----- VLAN : 2 Snooping status : Disabled moxa# show ip dhcp snopping binding DHCP Snooping Binding Information ----- VLAN MacAddress IpAddress Interface Type Lease Active ----- 1 00:10:12:13:13:15 12.0.0.1 Eth1/1 static infinite none 1 68:05:ca:2e:37:39 12.0.0.2 Eth2/4 dhcp 113 IPSPG 2 00:10:12:13:17:18 12.0.0.3 Eth1/4 static infinite DAI, IPSPG </pre>	
Error Messages	N/A	
Related Commands	N/A	

DHCP Snooping

Enable/Disable DHCP Snooping

Commands

ip dhcp snooping { enable | disable }

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	snooping	Configure DHCP Snooping parameters
	enable	Globally enable DHCP snooping
	disable	Globally disable DHCP snooping
Defaults	Disable	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# ip dhcp snooping enable	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable DHCP Snooping on a Specific VLAN

Commands

ip dhcp snooping vlan <vlan-id>

no ip dhcp snooping vlan <vlan-id>

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	snooping	Configure DHCP Snooping parameters
	vlan	Configure VLAN parameters
	<vlan-id>	Specify the VLAN ID
Defaults	Disable	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	Product(config)# ip dhcp snooping vlan 2	
Error Messages	If user enables DHCP Snooping on same VLAN: Product(config)# ip dhcp snooping vlan 2 Not valid: There should not be two entries with the same VLAN ID.	
Related Commands	N/A	

Set the DHCP Snooping Port Status to Trusted/Untrusted

Commands

ip dhcp snooping { trust | untrust }

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	snooping	Configure DHCP Snooping parameters
	trust	Set the DHCP snooping port status to trusted
	untrust	Set the DHCP snooping port status to untrusted
Defaults	Untrusted	
Command Modes	Interface configuration mode	
Usage Guidelines	This command configures the DHCP snooping port status	
Examples	Product(config-if)# ip dhcp snooping trust	
Error Messages	If port is enabled IP source guard, and user change port status to trusted: Product(config-if)# ip dhcp snooping trust This port is enabled for IP Source Guard. IP Source Guard can only be enabled on an untrusted port.	
	If port is enabled Dynamic ARP Inspection, and user change port status to trusted: Product(config-if)# ip dhcp snooping trust This port is enabled for Dynamic ARP Inspection. Dynamic ARP Inspection can only be enabled on an untrusted port.	
	Change port status on member port: Product(config-if)# ip dhcp snooping trust This port is a member of Port-Channel. DHCP Snooping cannot be enabled on a member port.	
Related Commands	N/A	

Add/Delete a DHCP Snooping Binding Entry

Commands

ip dhcp snooping binding <src_mac> **vlan** <vlan-id> <src_ip> **interface** <interface-type> < slot number>/<port number>

no ip dhcp snooping binding <src_mac> vlan <vlan-id>

Syntax Description	ip	Configure IP-related parameters
	dhcp	Configure DHCP-related parameters
	snooping	Configure DHCP Snooping parameters
	binding	Configure DHCP snooping binding entries
	<src mac>	Specify the source MAC address
	vlan	Configure VLAN parameters
	<vlan id>	Specify the VLAN ID
	<src ip>	Specify the source IP address
	interface	Configure interface parameters
	<interface-type>	Specify the interface type
	<slot number>	Specify the slot number
<port number>	Specify the port number	
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	This command adds a DHCP snooping binding entry. Use the no version of this command to delete an entry.	
Examples	Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.253 interface ethernet 1/1	
Error Messages	If user sets two entry with same VLAN and MAC address: Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.252 interface ethernet 1/2 Not valid: There should not be two entries with the same VLAN ID and Mac Address.	
	If user sets a port channel that does not exist : Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.252 interface port-channel 2 Not valid: The Port-Channel does not exist.	
	If user sets a member port: Product(config)# ip dhcp snooping binding 01:23:45:56:78:86 vlan 1 192.168.127.252 interface ethernet 1/3 Not valid: The port is a member of Port-Channel.	
Related Commands	N/A	

Show DHCP Snooping Information.

Commands

show ip dhcp snooping [{ interface | vlan <vlan-id> | binding}]

Syntax Description	show	Display configuration/status information
	ip	Show IP-related configuration information
	dhcp	Show DHCP-related configuration information
	snooping	Show DHCP Snooping information
	interface	Display DHCP snooping interface information
	vlan	Display the configuration and statistics of DHCP snooping on a specific VLAN
	<vlan id>	Specify the VLAN ID
	binding	Display the DHCP snooping binding database
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command displays DHCP snooping information.	
Examples	<pre>moxa# show ip dhcp snooping Layer 2 DHCP Snooping is globally disabled</pre>	
	<pre>moxa# show ip dhcp snooping Layer 2 DHCP Snooping is globally enabled MAC Address verification is enabled</pre>	
	<pre>moxa# show ip dhcp snooping interface Interface DHCP Snooping Port Status ----- ----- Eth1/1 Untrusted Eth1/2 Untrusted Eth1/3 Untrusted Eth1/4 Untrusted</pre>	
	<pre>moxa# show ip dhcp snooping vlan 1 DHCP Snooping Vlan information ----- VLAN : 1 Snooping status : Enabled Number of Incoming Discovers : 0 Number of Incoming Requests : 0 Number of Incoming Releases : 0 Number of Incoming Declines : 0 Number of Incoming Informs : 0 Number of Transmitted Offers : 0 Number of Transmitted Acks : 0 Number of Transmitted Naks : 0 Total Number Of Discards : 0 Number of MAC Discards : 0 Number of Server Discards : 0</pre>	
	<pre>moxa# show ip dhcp snooping vlan 2 DHCP Snooping Vlan information ----- VLAN : 2 Snooping status : Disabled</pre>	
	<pre>moxa# show ip dhcp snopping binding DHCP Snooping Binding Information ----- VLAN MacAddress IpAddress Interface Type Lease ----- ----- 1 00:10:12:13:13:15 12.0.0.1 Eth1/1 static infinite 1 68:05:ca:2e:37:39 12.0.0.2 Eth2/4 dhcp 113</pre>	

Error Messages	N/A
Related Commands	N/A

IP Source Guard

Enable/Disable IP Source Guard

Commands

ip source guard

no ip source guard

Syntax Description	ip source guard	Enable IP source guard.
	no ip source guard	Disable IP source guard.
Defaults	Disable	
Command Modes	Interface configuration mode	
Usage Guidelines	N/A	
Examples	Enable on untrusted interface: Product(config-if)# ip source guard	
Error Messages	Enable on DHCP Snooping trusted interface: Product(config-if)# ip source guard IP Source Guard must be enabled on a DHCP Snooping untrusted interface.	
	Enable on member port: Product(config-if)# ip source guard This port is a member of Port-Channel. IP Source Guard cannot be enabled on a member port.	

Show IP Source Guard Interface Status

Commands

show ip source guard

Syntax Description	show ip source guard	Display the IP source guard interface status
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command displays IP source guard information.	
Examples	moxa# show ip source guard	
	<pre> Interface IP Source Guard Status ----- - Eth1/1 Disabled Eth1/2 Disabled Eth1/3 Disabled Eth1/4 Disabled Eth2/1 Disabled </pre>	
Error Messages	N/A	

Dynamic ARP Inspection

Enable/Disable Dynamic ARP Inspection

Commands

ip arp inspection

no ip arp inspection

Syntax Description	ip arp inspection no ip arp inspection	Enable dynamic ARP inspection Disable dynamic ARP inspection
Defaults	disable	
Command Modes	interface configuration mode	
Usage Guidelines	N/A	
Examples	Enable on DHCP Snooping untrusted interface: Product(config-if)# ip arp inspection	
Error Messages	Enable on DHCP Snooping trusted interface: Product(config-if)# ip arp inspection Dynamic ARP Inspection must be enabled on a DHCP Snooping untrusted interface. Enable on member port: Product(config-if)# ip arp inspection This port is a member of Port-Channel. Dynamic ARP Inspection cannot be enabled on a member port.	
Related Commands	N/A	

Show Dynamic ARP Inspection

Commands

show ip arp inspection

Syntax Description	show ip arp inspection	Display dynamic ARP inspection interface status
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command displays Dynamic ARP Inspection information.	
Examples	Product# show ip arp inspection interfaces Interface Dynamic ARP Inspection Status ----- Eth1/1 Disabled Eth1/2 Enabled Eth1/3 Disabled Eth1/4 Disabled Eth2/1 Disabled	
Error Messages	N/A	
Related Commands	N/A	

Authentication

Login Authentication

Configure Login Authentication Settings

Commands

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

Syntax Description	login authentication	Configure login parameters
	radius	Configure RADIUS authentication servers
	tacacs	Configure a TACACS authentication system
	local	Configure a local authentication database
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	(config)# login authentication radius (config)# login authentication tacacs (config)# login authentication local (config)# login authentication radius local (config)# login authentication tacacs local	
Error Messages	N/A	
Related Commands	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 }

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	radius-server	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
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	(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	
Error Messages	N/A	
Related Commands	N/A	

Show RADIUS Server Information

Commands

show radius-server

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

TACACS+

Configure TACACS+ Server Host Settings

Commands

tacacs-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 tacacs-server { primary | secondary }

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	tacacs-server	Configure TACACS server parameters
	host	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	
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	(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	
Error Messages	N/A	
Related Commands	N/A	

Show TACACS+ Server Information

Commands

show tacacs server

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

Customer Key Management

Show Customer Key Information

Commands

show customer-key info

Syntax Description	show	Display the related information
	customer-key	Display customer key information
	info	Information
Defaults	N/A	
Command Modes	User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show customer-key info Customer key info ----- Private/Certificate Enable: Yes Label: 111 Algorithm: RSA Length: 2048 Moxa# show customer-key info Customer key info -----	
Error Messages	N/A	
Related Commands	copy customer-key {<tftp_url> <sftp_url>} private {<tftp_url> <sftp_url>} certificate label name clear customer-key signed-config {enable disable}	

Clear Customer Key

Commands

clear customer-key

Syntax Description	clear	Clear the key pair
	customer-key	Key pair generated and imported from customer
Defaults	N/A	
Command Modes	User EXEC	
Usage Guidelines	N/A	
Examples	moxa# clear customer-key	
Error Messages	N/A	
Related Commands	show customer-key info copy customer-key {<tftp_url> <sftp_url>} private {<tftp_url> <sftp_url>} certificate label name	

Enable/Disable Digital Signature

Commands

signed-config {enable | disable}

Syntax Description	signed-config	Digital signature when administrator back up or restore the configuration
	enable	Enable signed-configuration
	disable	Disable signed-configuration
Defaults	Disabled	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# signed-config enable moxa(config)# signed-config disable	
Error Messages	N/A	
Related Commands	N/A	

Diagnostics

System Status

Utilization

Show Device Current Information

Commands

show env {all | power | RAM [statistics] | CPU [statistics]}

Syntax Description	show	Displays the statistics information
	env	Displays switch related information
	all	Current information of all resources such as CPU, RAM and power
	power	Current information of the power (not available on RKS-G4000 Series)
	RAM	Current information of the RAM
	CPU	Current information of the CPU
	statistics	Statistics related information
Defaults	N/A	
Command Modes	Global configuration / User EXEC	
Usage Guidelines	N/A	
Examples	Moxa# show env all CPU Usage in current :1% CPU Usage in past 10 seconds :2% CPU Usage in past 30 seconds :3% CPU Usage in past 300 seconds :3% RAM Usage :54% RAM size :1056632832 bytes Current power consumption : 11 watt For RKS-G4000 Series: Moxa# show env all CPU Usage in current :1% CPU Usage in past 10 seconds :2% CPU Usage in past 30 seconds :3% CPU Usage in past 300 seconds :3% RAM Usage :54% RAM size :1056632832 bytes	
Error Messages	N/A	
Related Commands	N/A	

Show Power

Show Power Status and PoE Power Status

Commands

show power

Syntax Description	show	Displays the statistics information
	power	Display power information
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show power #max num of power module > 1 #with EPS power System Power Information: Index Module present Oper-status ----- 1 Yes on 2 No N/A PoE Power Information: Index Oper-Status ----- 1 Off 2 N/A #max num of power module <= 1 #with EPS power System Power Information: Index Oper-status ----- 1 on 2 off PoE Power Information: Index Oper-Status ----- 1 Off #max num of power module <= 1 #without EPS power System Power Information: Index Oper-status ----- 1 on 2 off </pre>	
Error Messages	N/A	
Related Commands	N/A	

Fiber Check

Show Fiber Check Status

Commands

show fiber-check [interface <iftype> <ifnum>]

Syntax Description	show	Display configuration status information
	fiber-check	Display fiber check information
	interface	Display interface information
	iftype	The interface type
	ifnum	The interface number
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre> moxa# show fiber-check interface ethernet 3/1 Port Eth3/1 Model Name : SFP-1GSXLC-T Serial Number (S/N) : F821150100 Wavelength (nm) : 850 Temperature (Fahrenheit) : 106.81 Temperature (Celsius) : 41.56 Voltage (V) : 3.36 Tx Power (dbm) : -6.54 Rx Power (dbm) : N/A Mode : Auto Temperature Warn (Fahrenheit) : [230.00] Temperature Warn (Celsius) : [110.00] Tx Power Warn (dbm) : [-12.50, -1.00] Rx Power Warn (dbm) : [-21.00, 3.00] moxa# show fiber-check Port Eth3/1 Model Name : SFP-1GSXLC-T Serial Number (S/N) : F821150100 Wavelength (nm) : 850 Temperature (Fahrenheit) : 64.18 Temperature (Celsius) : 17.88 Voltage (V) : 3.36 Tx Power (dbm) : -6.49 Rx Power (dbm) : N/A Mode : Auto Temperature Warn (Fahrenheit) : [230.00] Temperature Warn (Celsius) : [110.00] Tx Power Warn (dbm) : [-12.50, -1.00] Rx Power Warn (dbm) : [-21.00, 3.00] Port Eth3/2 Model Name : SFP-1GSXLC-T Serial Number (S/N) : G415070280 Wavelength (nm) : 850 Temperature (Fahrenheit) : 66.14 Temperature (Celsius) : 18.97 Voltage (V) : 3.36 Tx Power (dbm) : -6.29 Rx Power (dbm) : N/A Mode : Auto Temperature Warn (Fahrenheit) : [230.00] Temperature Warn (Celsius) : [110.00] Tx Power Warn (dbm) : [-12.50, -1.00] </pre>	

	Rx Power Warn (dbm) : [-21.00, 3.00]
Error Messages	N/A
Related Commands	fiber-check celsius-temperature-warning {<degrees-celsius(-128-128)>} fiber-check fahrenheit-temperature-warning <degrees-fahrenheit(-198.4-262.4)> fiber-check mode {auto user-defined} fiber-check rx-power-warning-high <dbm(-40-8.2)> fiber-check rx-power-warning-low <dbm(-40-8.2)> fiber-check tx-power-warning-high <dbm(-40-8.2)> fiber-check tx-power-warning-low <dbm(-40-8.2)>

Disable Fiber Check Warning Settings

Commands

no fiber-check

Syntax Description	no	Remove configuration/reset to default values
	fiber-check	Reset fiber check parameters
Defaults	Mode : Auto	
	Temperature Warn (Fahrenheit) : [N/A]	
	Temperature Warn (Celsius) : [N/A]	
	Tx Power Warn (dbm) : [N/A, N/A]	
	Rx Power Warn (dbm) : [N/A, N/A]	
Command Modes	Privileged EXEC	Global Configuration
Usage Guidelines	N/A	
Examples	moxa(config)# no fiber-check	
Error Messages	N/A	
Related Commands	N/A	

Clear Fiber Check Warning Settings by Port

Commands

no fiber-check

Syntax Description	no	Remove configuration/reset to default values
	fiber-check	Reset fiber check parameters
Defaults	Mode : Auto	
	Temperature Warn (Fahrenheit) : [N/A]	
	Temperature Warn (Celsius) : [N/A]	
	Tx Power Warn (dbm) : [N/A, N/A]	
	Rx Power Warn (dbm) : [N/A, N/A]	
Command Modes	Privileged EXEC	Interface Configuration
Usage Guidelines	N/A	
Examples	moxa(config-if)# no fiber-check	
Error Messages	N/A	
Related Commands	N/A	

Configure Fiber Check Warning Mode

Commands

fiber-check mode {auto | user-defined}

Syntax Description	fiber-check	Configure fiber check parameters
	mode	Configure the fiber check warning mode
	auto	Use the preset warning thresholds
	user-defined	Use user-specified warning thresholds
Defaults	The default mode is auto.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	In auto mode, the default pre-defined warning threshold values are used. In user-defined mode, the user-specified warning threshold values will be used.	
Examples	moxa(config-if)# fiber-check mode auto	
Error Messages	N/A	
Related Commands	show fiber-check [interface <iftyp> <ifnum>]	

Configure Port Fiber Check Temperature (Fahrenheit) Warning Value

Commands

fiber-check fahrenheit-temperature-warning <degrees-fahrenheit(-198.4-262.4)>

Syntax Description	fiber-check	Configure fiber check parameters
	fahrenheit-temperature-warning	Configure the temperature threshold in Fahrenheit
	<degrees-fahrenheit(-198.4-262.4)>	The Fahrenheit temperature warning threshold
Defaults	The default threshold is 262.4 degrees-fahrenheit.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	The user-defined temperature threshold will only be used if the fiber check warning mode is set to user-defined.	
Examples	moxa(config-if)# fiber-check fahrenheit-temperature-warning 262.4	
Error Messages	Invalid: The input data is not within the range.	
Related Commands	show fiber-check [interface <iftyp> <ifnum>]	

Configure Port Fiber Check Temperature (Celsius) Warning Value

Commands

fiber-check celsius-temperature-warning <degrees- celsius (-128-128)>

Syntax Description	fiber-check	Configure fiber check parameters
	celsius-temperature-warning	Configure the temperature threshold in Celsius
	<degrees-celsius (-128-128)>	The Celsius temperature warning threshold
Defaults	The default threshold is 128 degrees-celsius.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	The user-defined temperature threshold will only be used if the fiber check warning mode is set to user-defined.	
Examples	moxa(config-if)# fiber-check celsius-temperature-warning 128	
Error Messages	Invalid: The input data is not within the range	
Related Commands	show fiber-check [interface <iftyp> <ifnum>]	

Configure Port Fiber Check Maximum Rx Power Threshold Warning Value

Commands

fiber-check rx-power-warning-high <dbm(-40-8.2)>

Syntax Description	fiber-check	Configure fiber check parameters
	rx-power-warning-high	Configure the warning threshold for the maximum Rx power
	<dbm(-40-8.2)>	The maximum Rx power threshold value
Defaults	The default maximum Rx power warning threshold is 8.2 dBm.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	The threshold that is set by a user will only be referred to if user-defined mode is selected.	
Examples	moxa(config-if)# fiber-check rx-power-warning-high 8.2	
Error Messages	Invalid: rx-power-warning-low > rx-power-warning-high Invalid: The input data is not within the range (-40 ~ 8.2)	
Related Commands	show fiber-check [interface <iftyp> <ifnum>]	

Configure Port Fiber Check Minimum Rx Power Threshold Warning Value

Commands

fiber-check rx-power-warning-low <dbm(-40-8.2)>

Syntax Description	fiber-check	Configure fiber check parameters
	rx-power-warning-low	Configure the warning threshold for the minimum Rx power
	<dbm(-40-8.2)>	The minimum Rx power threshold value
Defaults	The default minimum Rx power warning threshold is -40 dBm.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	The threshold that is set by a user will only be referred to if user-defined mode is selected.	
Examples	moxa(config-if)# fiber-check rx-power-warning-low -40	
Error Messages	Invalid: rx-power-warning-low > rx-power-warning-high Invalid: The input data is not within the range (-40 ~ 8.2)	
Related Commands	show fiber-check [interface <iftyp> <ifnum>]	

Configure Port Fiber Check Tx Power Highest Threshold Warning Value

Commands

fiber-check tx-power-warning-high <dbm(-40-8.2)>

Syntax Description	fiber-check	Configure fiber check parameters
	tx-power-warning-high	Configure the warning threshold for the maximum Tx power
	<dbm(-40-8.2)>	The maximum Tx power threshold value
Defaults	The default maximum Tx power warning threshold is 8.2 dBm.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	The threshold that is set by a user will only be referred to if user-defined mode is selected.	
Examples	moxa(config-if)# fiber-check tx-power-warning-high 8.2	
Error Messages	Invalid: tx-power-warning-low > tx-power-warning-high Invalid: The input data is not within the range (-40 ~ 8.2)	
Related Commands	show fiber-check [interface <iftyp> <ifnum>]	

Configure Port Fiber Check Tx Power Lowest Threshold Warning Value

Commands

fiber-check tx-power-warning-low <dbm(-40-8.2)>

Syntax Description	fiber-check	Configure fiber check parameters
	tx-power-warning-low	Configure the warning threshold for the minimum Tx power
	<dbm(-40-8.2)>	The minimum Tx power threshold value
Defaults	The default minimum Tx power warning threshold is -40 dBm.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	The threshold that is set by a user will only be referred to if user-defined mode is selected.	
Examples	moxa(config-if)# fiber-check tx-power-warning-low -40	
Error Messages	Invalid: tx-power-warning-low > tx-power-warning-high Invalid: The input data is not within the range (-40 to 8.2)	
Related Commands	show fiber-check [interface <iftype> <ifnum>]	

Module Information

Show Module information

Commands

show product information

Syntax Description	show	Display configuration/status information		
	product	Display product information		
	information	Display product information		
Defaults	N/A			
Command Modes	User EXEC Privileged EXEC			
Usage Guidelines	N/A			
Examples	<pre>moxa# show product information Product Information Model : MDS-G4028 Serial Number : 123456789ABC MAC : 00:01:03:05:07:09 Firmware Version : v0.3 Build 2019_0502_2111 Hardware Version : V0.0.0 Module Information Type Module Name Serial Number Hardware Version Module [1] MDS-G4028 123456789ABC V0.0.0 Module [2] -- -- -- Module [3] -- -- -- Module [4] -- -- -- Module [5] -- -- -- Module [6] -- -- -- Module [7] -- -- -- Power Unit [1] -- -- -- Power Unit [2] -- -- --</pre>			
Error Messages	N/A			
Related Commands	N/A			

Network Status

Network Statistics

Show Traffic Statistics

Commands

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

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

Clear Traffic Statistics

Commands

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

Syntax Description	clear	Clear input
	statistics	Clear statistics
	interface-type	The interface type
	interface-id	The interface ID
Defaults	N/A	
Command Modes	Privileged EXEC Mode.	
Usage Guidelines	N/A	
Examples	moxa# clear statistics Ethernet 1/1	
Error Messages	N/A	
Related Commands	show statistics	

LLDP

Show LLDP Information

Commands

show lldp

Syntax Description	show	Display configuration/statistics/general information
	lldp	Display LLDP information
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	Display the global LLDP settings.	
Examples	moxa# show lldp LLDP is disabled Transmit Interval : 30 Holdtime Multiplier : 4 Reinitialization Delay : 2 Tx Delay : 2 Notification Interval : 5 Chassis Id SubType : Mac Address Chassis Id : 00:01:02:03:04:05	
Error Messages	N/A	
Related Commands	config lldp {enable disable} config lldp chassis-id-subtype { chassis-comp <string(255)> if-alias port-comp <string(255)> mac-addr nw-addr if-name local <string(255)> } config lldp holdtime-multiplier <2-10> config lldp notification-interval <seconds(5-3600)> config lldp reinitialization-delay <seconds(1-10)> config lldp transmit-interval <seconds(5-32768)> config lldp tx-delay (1-8192)	

Show the LLDP Interface

Commands

show lldp interface

Syntax Description	show	Display configuration/statistics/general information
	lldp	Display LLDP information
	interface	Show the LLDP interface information
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	Display LLDP port interface information.	
Examples	moxa#show lldp interface Eth1/3: Tx State : Enabled Rx State : Enabled Tx SEM State : INITIALIZE Rx SEM State : WAIT PORT OPERATIONAL Notification Status : Enabled Notification Type : Remote Table Chang DestinationMacAddr : 01:80:c2:00:00:0e	
Error Messages	N/A	
Related Commands	show lldp config-if > lldp {transmit receive} config-if > lldp dest-mac <mac_addr>	

Show LLDP Neighbors

Commands

show lldp neighbors [management-address | cip | detail]

Syntax Description	show	Display configuration/statistics/general information
	lldp	Display LLDP information
	neighbors	Display LLDP neighbor information
	management-address	Display the management address configured in the system
	cip	Display CIP-related configuration
	detail	Display all detailed information
	Defaults	N/A
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	Display LLDP neighbor related configuration.	
Examples	<pre>moxa# show lldp neighbors</pre> <p>Capability Codes : (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device, (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other</p> <p>Local Intf: Eth2/1 Neighbor Chassis ID : 00:00:01:00:00:83 Neighbor Port ID : 00:00:01:00:00:83 Neighbor Port Description : Not Advertised Neighbor System Name : Not Advertised Hold Time : 3601 Capabilities :</p> <p>Total Entries Displayed : 1</p>	
	<pre>moxa# show lldp neighbors detail</pre> <p>Capability Codes : (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device, (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other</p> <p>Chassis Id SubType : Mac Address Chassis Id : 00:00:01:00:00:83 Port Id SubType : Mac Address Port Id : 00:00:01:00:00:83 Port Description : Not Advertised System Name : Not Advertised System Desc : Not Advertised Local Intf : Eth2/1 Time Remaining : 3500 Seconds System Capabilities Tlv : Not Advertised Management Address : Not Advertised</p> <p>Extended 802.3 TLV Info -MAC PHY Configuration & Status Auto-Neg Support & Status : Supported, Enabled Advertised Capability Bits : 8000 Other -Link Aggregation Link Aggregation Tlv : Not Advertised -Maximum Frame Size Tlv : Not Advertised</p> <p>Extended 802.1 TLV Info -Port VLAN Tlv : Not Advertised -Vlan Name Vlan Name Tlv : Not Advertised</p>	

	<pre>Total Entries Displayed : 1 moxa# show lldp neighbors management-address Local Interface Management Address Interface ----- - Eth1/11 129 192.168.127.250 Total Entries Displayed : 1 moxa# show lldp neighbors cip Eth1/1 : Extended EtherNet/IP TLV Info - CIP Identification TLV : Vendor ID : 0x03DF Device Type : 0x002C Product Code : 0x1110 Major Revision : 1 Minor Revision : 1 Serial Number : 1027030 Eth1/2 : Extended EtherNet/IP TLV Info - CIP Identification TLV : Vendor ID : 0x03DF Device Type : 0x002C Product Code : 0x1110 Major Revision : 1 Minor Revision : 1 CIP Serial Sumber : 1027050 Total Entries Displayed : 2</pre>
Error Messages	N/A
Related Commands	<pre>show lldp config-if > lldp {transmit receive} config-if > lldp dest-mac <mac_addr></pre>

Show LLDP Statistics

Commands

show lldp statistics

Syntax Description	show	Display configuration/statistics/general information
	lldp	Display LLDP information
	statistics	Display LLDP remote table statistics information
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	Display LLDP statistics for the local counter	
Examples	<pre>moxa# show lldp statistics Remote Table Last Change Time : 182700 Remote Table Inserts : 2 Remote Table Deletes : 0 Remote Table Drops : 0 Remote Table Ageouts : 0 Remote Table Updates : 0</pre>	
Error Messages	N/A	
Related Commands	show lldp	

Show LLDP Error Information

Commands

show lldp error

Syntax Description	show	Display configuration/statistics/general information
	lldp	Display LLDP information
	error	Display LLDP error information such as memory allocation failures, queue overflows, and table overflows
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	Display the LLDP error counter.	
Examples	moxa# show lldp errors Total Memory Allocation Failures : 0 Total Input Queue Overflows : 0 Total Table Overflows : 0	
Error Messages	N/A	
Related Commands	show lldp config lldp enable config-if lldp tlv-select basic-tlv config-if lldp tlv-select dot1t1v config-if lldp tlv-select dot3tlv	

Show LLDP Traffic Information

Commands

show lldp traffic

Syntax Description	show	Display configuration/statistics/general information
	lldp	Display LLDP information
	traffic	Display the LLDP local traffic
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	Display the local LLDP traffic counter.	
Examples	moxa# show lldp traffic Total Frames Out : 82 Total Entries Aged : 0 Total Frames In : 81 Total Frames Received In Error : 81 Total Frames Discarded : 0 Total TLVS Unrecognized : 324 Total TLVS Discarded : 0 Total PDU length error Drops : 0	
Error Messages	N/A	
Related Commands	show lldp config-if > lldp {transmit receive} config-if > lldp dest-mac <mac_addr>	

Show LLDP Local Configuration

Commands

show lldp local

Syntax Description	show	Display configuration / statistics / general information
	lldp	Display LLDP information
	local	Local configuration
Defaults	N/A	
Command Modes	Privileged EXEC/ User EXEC	
Usage Guidelines	Display LLDP local device related information.	
Examples	<pre> moxb# show lldp local Capability Codes : (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device, (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other Chassis Id SubType : Mac Address Chassis Id : 00:01:02:03:04:05 System Name : moxb System Description : EDS-G4012-8P-4QGS Product Revision: V0.0.0 FW Version: V4.0 System Capabilities Supported : B System Capabilities Enabled : B Management Address : Interface Management Address ----- 129 192.168.127.253 Eth1/1 : Port Id SubType : Interface Alias Port Id : Eth1/1 Port Description : Ethernet Interface Port 01 Enabled Tx TLVs : Port Description, System Name, System Capability, Management Address, CIP Identification Extended 802.3 TLV Info -MAC PHY Configuration & Status Auto-Neg Support & Status : Not Supported, Disabled Advertised Capability Bits : 0000 Operational MAU Type : 0 -Link Aggregation Capability & Status : Not Capable, Not In Aggregation Aggregated Port Id : 0 -Maximum Frame Size : 9216 Extended 802.1 TLV Info -Port VLAN Id : 1 -Vlan Name Vlan Id Vlan Name TxStatus ----- 1 Disabled Extended EtherNet/IP TLV Info - CIP Identification TLV Vendor ID : 0x03DF Device Type : 0x002C Product Code : 0x1110 Major Revision : 1 Minor Revision : 1 </pre>	

	Serial Number	: 1027030
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable LLDP

Commands

lldp enable

lldp disable

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

Configure the Global LLDP Timer Interval

Commands

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

no lldp transmit-interval

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

Configure the LLDP Hold Time Multiplier

Commands

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

no lldp holdtime-multiplier

Syntax Description	no	Remove configuration/delete entry/reset to default value
	lldp	Configure LLDP parameters
	holdtime-multiplier	Configure the hold time multiplier applied to the transmit interval used to calculate the TTL value txTTL
	value	The multiplier value (2 to 10)
Defaults	The default hold time multiplier is 4.	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# lldp holdtime-multiplier 4 moxa(config)# no lldp holdtime-multiplier	
Error Messages	N/A	
Related Commands	show lldp config lldp enable config lldp tx-delay	

Configure the LLDP Transmission Delay

Commands

lldp tx-delay <seconds (1-8192) // tx_delay <= (0.25 x transmit-interval)

no lldp tx-delay

Syntax Description	no	Remove configuration/delete entry/reset to default value
	lldp	Configure LLDP parameters
	tx-delay	Configure the minimum delay between successive LLDP frame transmissions
	seconds	The transmission delay time (1 to 8192 seconds)
Defaults	The default LLDP transmission delay time is 2 seconds.	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Configure the LLDP tx-delay parameter	
Examples	moxa(config)# lldp tx-delay 4 moxa(config)# no lldp tx-delay	
Error Messages	"Invalid: Tx Delay should be less than or equal to the value = 0.25 * Transmit Interval."	
Related Commands	show lldp config lldp enable config lldp transmit-interval	

Configure the LLDP Reinitialization Delay

Commands

lldp reinitialization-delay <seconds (1-10)>

no lldp reinitialization-delay

Syntax Description	no	Remove configuration/delete entry/reset to default value
	lldp	Configure LLDP parameters
	reinitialization-delay	Configure the delay after the admin status becomes 'disabled' before reinitialization is attempted
	seconds	The reinitialization delay (1 to 10 seconds)
Defaults	The default reinitialization delay time is 2 seconds.	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Configure the LLDP reinitialization delay time.	
Examples	moxa(config)# lldp reinitialization-delay 4 moxa(config)# no lldp reinitialization-delay	
Error Messages	N/A	
Related Commands	show lldp config lldp enable	

Configure the LLDP Notification Interval

Commands

lldp notification-interval <seconds(5-3600)>

no lldp notification-interval

Syntax Description	no	Remove configuration/delete entry/reset to default value
	lldp	Configure LLDP parameters
	notification-interval	Configure LLDP event notifications
	seconds	The notification interval (5 to 3600 seconds)
Defaults	The default notification interval time is 5 seconds.	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Configure the LLDP notification interval time.	
Examples	moxa(config)# lldp notification-interval 5 moxa(config)# no lldp notification-interval	
Error Messages	N/A	
Related Commands	show lldp config lldp enable	

Configure LLDP Global Settings

Commands

lldp chassis-id-subtype { chassis-comp <string(255)> | if-alias | port-comp <string(255)> | mac-addr | nw-addr | if-name | local <string(255)> }

Syntax Description	lldp	Configure LLDP parameters
	chassis-id-subtype	Configure the chassis-component and local system sybtypes
	chassis-comp	Specify the value of the entPhysicalAlias object of a chassis component as the chassis identifier
	if-alias	Specify the value of ifAlias of an interface on the containing chassis as the chassis identifier
	port-comp	Specify the value of the entPhysicalAlias object of a port or backplane within the chassis as the chassis identifier
	mac-addr	Specify the unicast source MAC address of a port on the chassis as the chassis identifier
	nw-addr	Specify a network address associated with a particular chassis as the chassis identifier. The encoded address is actually composed of two fields. The first field is a single octet, representing the IANA AddressFamilyNumbers value for the specific address type, and the second field is the network address value.
	if-name	Specify the value of an if Name object of an interface on the containing chassis as the chassis identifier
	local	Specify a locally defined value as the chassis identifier
Defaults	The default chassis ID subtype is mac-addr, representing the system's MAC address.	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Configure the LLDP chassis ID subtype parameters.	
Examples	moxa (config)# lldp chassis-id-subtype chassis-comp moxa	
Error Messages	N/A	
Related Commands	show lldp show lldp local config lldp enable	

Configure LLDP Port Settings

Commands

lldp {transmit | receive}

no lldp {transmit | receive}

Syntax Description	no	Remove configuration/delete entry/reset to default value
	lldp	Configure LLDP parameters
	transmit	Enable the transmission of LLDPDU from one of the ports of the server to the LLDP module
	receive	Enable the reception of LLDPDU from one of the ports of the server to the LLDP module
Defaults	LLPDU transmission and reception are both enabled by default.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	Configure the LLDP TX or RX for the port interface	
Examples	moxa(config-if)# lldp transmit moxa(config-if)# no lldp transmit	
Error Messages	N/A	
Related Commands	show lldp show lldp interface	

Configure the LLDP Port ID Subtype

Commands

lldp port-id-subtype { if-alias | port-comp <string(255)> | mac-addr | if-name | local <string(255)> }

Syntax Description	lldp	Configure LLDP parameters
	port-id-subtype	Configure LLDP port subtype
	if-alias	Specify the value of ifAlias of an interface on the containing chassis as the port identifier
	port-comp	Specify the value of the entPhysicalAlias object of a port or backplane within the chassis as the port identifier
	mac-addr	Specify the unicast source MAC address of a port on the chassis as the port identifier
	if-name	Specify the value of an if Name object of an interface on the containing chassis as the port identifier
	local	Specify a locally defined value as the port identifier
Defaults	mac-addr uses sys_mac, others are none.	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	Configure the LLDP notification interval time	
Examples	moxa(config-if)# lldp port-id-subtype mac-addr moxa(config-if)# no lldp port-id-subtype	
Error Messages	N/A	
Related Commands	show lldp config lldp enable	

Configure LLDP TLV Settings

Commands

lldp tlv-select basic-tlv { port-descr | sys-name | sys-descr }

Syntax Description	lldp	Configure LLDP parameters
	tlv-select	Configure basic LLDP TLV transmission parameters
	basic-tlv	Configure basic TLV parameters
	port-descr	Use a port description for the TLV.
	sys-name	Use the system name for the TLV.
	sys-descr	Use the system description for the TLV.
Defaults	mac-addr use sys_mac, others are none	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	Configure the LLDP basic TLV	
Examples	moxa (config-if)# lldp tlv-select basic-tlv port-descr moxa (config-if)# no lldp tlv-select basic-tlv port-descr	
Error Messages	"Invalid: The format of Basic Transmit TLVs are Port Description, Device Name, Device Description, and Device Capability."	
Related Commands	show lldp local	

Configure LLDP TLV DOT1 Settings

Commands

lldp tlv-select dot1tlv { port-vlan-id | {all | <vlan-id>} | vlan-name {all | } | }

Syntax Description	lldp	Configure LLDP parameters
	tlv-select	Configure basic LLDP TLV transmission parameters
	dot1tlv	Configure specific IEEE 802.1 TLV parameters
	port-vlan-id	Use the port PVID for the TLV
	vlan-name	Use a VLAN name for the TLV
Defaults	N/A.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	Configure LLDP DOT1 TLV parameters.	
Examples	moxa (config-if)# lldp tlv-select dot1tlv port-vlan-id moxa (config-if)# no lldp tlv-select dot1tlv port-vlan-id	
Error Messages	N/A	
Related Commands	show lldp local show lldp neighbors show lldp errors	

Configure LLDP TLV DOT3 Settings

Commands

lldp tlv-select dot3tlv { link-aggregation | max-framesize }

Syntax Description	lldp	Configure LLDP parameters
	tlv-select	Configure basic LLDP TLV transmission parameters
	dot3tlv	Configure specific IEEE 802.3 TLV parameters
	link-aggregation	Configure the link aggregation protocol statistics for each port on the device
	max-framesize	Specify the maximum frame size of the TLV
Defaults	N/A.	
Command Modes	Privileged EXEC Interface Configuration	
Usage Guidelines	Configure LLDP DOT3 TLV parameters.	
Examples	moxa (config-if)# lldp tlv-select dot3tlv macphy-config moxa (config-if)# no lldp tlv-select dot3tlv macphy-config	
Error Messages	"Invalid: The value of 802.3 Transmit TLVs capability are Link Aggregation Statistics and Maximum Frame Size."	
Related Commands	show lldp local show lldp neighbors show lldp errors	

ARP Table

Show IP ARP Table

Commands

show ip arp

Syntax Description	show	Display configuration/status information
	ip	Display IP information
	arp	Display the ARP table
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip arp	
	IP Address	MAC Address Interface
	-----	-----
	192.168.127.95	00:19:cb:d6:db:b4 vlan1
	Total ARP Entries displayed: 1	
Error Messages	N/A	
Related Commands	N/A	

Clear ARP Cache

Commands

clear ip arp

Syntax Description	clear	Clear/flush the dynamically learnt ARP entries
	ip	Clear IP-related information
	arp	Clear ARP cache entries
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# clear ip arp	
Error Messages	N/A	
Related Commands	N/A	

Tools

Port and VLAN Mirroring

Enable/Disable Mirroring

Commands

port-mirror {enable | disable}

Syntax Description	port-mirror	Configure port mirror parameters
	enable	Enable mirroring
	disable	Disable mirroring
Defaults	Port mirroring is enabled by default.	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# port-mirror enable	
	moxa# configure moxa(config)# port-mirror disable	
Error Messages	N/A	
Related Commands	N/A	

Display the mirroring information that is present in the system

Commands

show monitor { **session** <session-id (1-7)> | **range** <session-list> | **vlan** | **port** }

Syntax Description	show	Display configuration/status information
	monitor	Display Port Mirror information
	session	Mirroring information related to a specific session
	session-id	Session index of the mirroring session
	range	Mirroring information for the specified list of mirroring session
	session-list	Session list (Example: 1-7)
	vlan	Display vlan Mirror session
	port	Display port Mirror session
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	N/A	
Examples	moxa-product# show monitor session 1	
	Mirroring is globally Enabled. Rspan Intermediate is Enabled. Rspan Intermediate Vlan Id : 5. ----- [SPAN] Session : 1 Reflect Port Mode Enabled Source Ports Rx : None Tx : None Both : Eth1/1 Reflect Port : Eth1/2 Session Status : Active ----- moxa-product# show monitor range 1-7	
		Mirroring is globally Enabled. Rspan Intermediate Disabled.

	<pre> ----- [SPAN] Session : 1 Reflect Port Mode Enabled Source Ports Rx : None Tx : None Both : Eth1/1 Reflect Port : Eth1/2 Session Status : Active ----- % Session 2 does not exist % Session 3 does not exist % Session 4 does not exist % Session 5 does not exist ----- [RSPAN] Session : 6 Reflect Port Mode Disabled Rspan Type : Source Rspan Vlan Id : 3 Source Ports Rx : None Tx : None Both : Eth1/3,po1 Designated Port : Eth1/4 Session Status : Active ----- [RSPAN] Session : 7 Reflect Port Mode Disabled Rspan Type : Destination Rspan Vlan Id : 4 Source Ports Rx : None Tx : None Both : None Destination Port(s) : Eth2/1,Eth2/2 Session Status : Active ----- moxa-product# show monitor vlan Mirroring is globally Enabled. Rspan Intermediate is Disabled. ----- [SPAN] Session : 1 Reflect Port Mode Disabled Source Vlans Rx : 2 Destination Port(s) : Eth1/4 Session Status : Active ----- </pre>
Error Messages	<pre> % Invalid: Monitor session range must be in between (1-7) • Example: Key "range 1-8" % Invalid: Invalid Session List • Example: Key "range 0-7" </pre>
Related Commands	N/A

Configure the Source for a Mirroring Session

Commands

monitor session <session-id (1-7)> { **source** { **interface** { **port-channel** <port-channel-id> | <interface-type> <interface-id> } [{ **rx** | **tx** | **both** }] }}

Syntax Description	monitor	Configure port mirroring parameters
	session	Configure the mirroring session
	session-id	The index of the mirroring session
	source	Configure the mirroring source port
	interface	Configure the interface
	port-channel	Configure the port channel interface
	port-channel-id	Specify the port channel ID, the range is from 1 to (total ports/2)
	interface-type	Specify the interface type
	interface-id	Specify the interface number
	rx, tx, both	Specify the traffic type to mirror: received, transmitted, or both
Defaults	The traffic type to mirror is set to Both by default.	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa-product# configure moxa-product(config)# monitor session 1 source interface ethernet 1/1 moxa-product# configure moxa-product(config)# monitor session 1 source interface ethernet 1/1 rx moxa-product# configure moxa-product(config)# monitor session 1 source interface ethernet 1/1 tx moxa-product# configure moxa-product(config)# monitor session 1 source interface port-channel 1</pre>	
Error Messages	<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 RSPAN session cannot be active when the RSPAN Intermediate Role is enabled. % 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. % Invalid: When GVRP is enabled, the Reflect Port Mode cannot be enabled or the RSPAN session cannot be active. % Invalid: The RSPAN destination session cannot configure the Tx source port or Rx source port. % Invalid: The source port VLAN ID cannot be the same as the RSPAN VLAN ID. % Invalid: The source port of the SPAN session with the Reflect Port Mode enabled must be a VLAN access port.</pre>	
Related Commands	<pre>moxa-product(config)# no monitor session <session-id (1-7)> { source { interface { port-channel <port-channel-id> <interface-type> <interface-id> } }}</pre>	

Remove Source Port Configurations for a Mirroring Session

Commands

no monitor session <session-id (1-7)> {**source { interface** {port-channel <port-channel-id> | <interface-type> <interface-id> }}}

Syntax Description	no	Remove configuration/delete entry/reset to default value
	monitor	Configure port mirroring parameters
	session	Configure the mirroring session
	session-id	The index of the mirroring session
	source	Configure the mirroring source port
	interface	Configure the interface
	port-channel	Configure the port channel interface
	port-channel-id	Specify the port channel ID, the range is from 1 to (total ports/2)
	interface-type	Specify the interface type
interface-id	Specify the interface number	
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa-product# configure moxa-product(config)# no monitor session 1 source interface ethernet 1/1 moxa-product# configure moxa-product(config)# no monitor session 1 source interface port-channel 1</pre>	
Error Messages	N/A	
Related Commands	<pre>moxa-product(config)# monitor session <session-id (1-7)> { source { interface { port-channel <port-channel-id> <interface-type> <interface-id> } [{ rx tx both }] } }</pre>	

Configure the Destination for a Mirroring Session

Commands

monitor session <session-id (1-7)> **destination** {**interface** <interface-type> <interface-id>} [**reflect-port-mode**]

Syntax Description	monitor	Configure Port Mirror parameters
	session	Mirroring session related configuration
	session-id	Index of mirroring session
	destination	Destination port related configuration
	interface	Interface related configuration
	interface-type	Interface type
	interface-id	Interface number
	reflect-port-mode	Enable Reflect Port Mode
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa# configure moxa(config)# monitor session 1 destination interface ethernet 1/2 reflect-port-mode</pre>	
Error Messages	<p>% Invalid: Duplicated destination port.</p> <p>% Invalid: The destination port conflicts with the Tx source port or Rx source port.</p> <p>% Invalid: If the port is a Port-Channel member, it cannot be set to the destination port, RX source port, or TX source port.</p> <p>% Invalid: If the port is set as the ring port of Turbo Ring v2, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the coupling port of Turbo Ring v2, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the Turbo Chain head/tail/member port, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the RSTP port, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the Dual Homing redundant port, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the MSTP port, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the MRP port, it cannot be set to the destination port.</p> <p>% Invalid: If Dot1x is enabled on this port, it cannot be set to the destination port.</p> <p>% Invalid: The RSPAN destination session cannot be active with the Reflect Port Mode enabled.</p> <p>% Invalid: There is more than one destination port.</p> <p>% Invalid: The reflect port cannot be configured to the Management VLAN ID.</p> <p>% Invalid: The PVID of the reflect port is in a session that conflicts with the reflect port PVID or the RSPAN VLAN ID of another session, or the RSPAN Intermediate VLAN ID.</p> <p>% Invalid: The RSPAN VLAN ID of an RSPAN session conflicts with the PVID of the reflect port in another session.</p> <p>% Invalid: When GVRP is enabled, the Reflect Port Mode cannot be enabled or the RSPAN session cannot be active.</p> <p>% Invalid: The Speed/Duplex settings of the reflect port must be in AUTO mode and enabled.</p> <p>% Invalid: Invalid RSPAN session type.</p> <p>% Invalid: The source port of the RSPAN session with the Reflect Port Mode enabled must be a VLAN access port.</p> <p>% Invalid: The source port of the SPAN session with the Reflect Port Mode enabled must be a VLAN access port.</p> <p>% Invalid: The SPAN reflect port must be a VLAN trunk or hybrid port.</p> <p>% Invalid: This device does not support Reflect Port mode for VLAN mirroring. (L2 models) Please make sure PVID of reflect port is different from the management VLAN ID to prevent looping. [y/N] (L3 models) Please make sure PVID of reflect port is different from VLAN interfaces to prevent looping. [y/N]</p>	

Related Commands	moxa-product(config)# no monitor session <session-id (1-7)> destination { interface <interface-type> <interface-id> } [reflect-port-mode]
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Delete the Destination Configuration for a Mirroring Session

Commands

no monitor session <session-id (1-7)> destination {interface <interface-type> <interface-id>} [**reflect-port-mode**]

Syntax Description	no	Remove configuration/delete entry/reset to default value
	monitor	Configure port mirroring parameters
	session	Configure the mirroring session
	session-id	The index of the mirroring session
	destination	Configure the mirroring destination port
	interface	Configure the interface
	interface-type	Specify the interface type
	interface-id	Specify the interface number
	reflect-port-mode	Disable Reflect Port Mode
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# no monitor session 1 destination interface ethernet 1/2 reflect-port-mode	
Error Messages	N/A	
Related Commands	moxa(config)# monitor session <session-id (1-7)> destination { interface <interface-type> <interface-id>} [reflect-port-mode]	

Delete Mirroring Configurations

Commands

no monitor session {range <session-list> | session-id (1-7)}

Syntax Description	no	Remove configuration/delete entry/reset to default value
	monitor	Configure port mirroring parameters
	session	Configure the mirroring session
	range	The list of sessions for which the mirroring configuration should be removed
	session-list	The mirroring session list
	session-id	The index of the mirroring session
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# no monitor session 1 moxa# configure moxa(config)# no monitor session range 1-7	
Error Messages	% Invalid: Monitor session range must be in between (1-7) Example: Key "range 1-8" % Invalid: Invalid Session List Example: Key "range 0-7"	
Related Commands	N/A	

Configure the Designated Port for a Mirroring Session

Commands

monitor session <session-id (6-7)> **designated** { interface <interface-type> <interface-id> } [**reflect-port-mode**]

Syntax Description	monitor	Configure port mirroring parameters
	session	Configure the mirroring session
	session-id	The index of the mirroring session
	designated	Configure the designated port parameters
	interface	Configure interface-related configuration
	interface type	Specify the interface type
	interface-id	Specify the interface ID
	reflect-port-mode	Enable Reflect Port Mode
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa-product# configure moxa-product(config)# monitor session 6 designated interface ethernet 1/2 reflect-port-mode</pre>	
Error Messages	<p>% Invalid: Duplicated destination port.</p> <p>% Invalid: The destination port conflicts with the Tx source port or Rx source port.</p> <p>% Invalid: If the port is a Port-Channel member, it cannot be set to the destination port, RX source port, or TX source port.</p> <p>% Invalid: If the port is set as the ring port of Turbo Ring v2, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the coupling port of Turbo Ring v2, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the Turbo Chain head/tail/member port, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the RSTP port, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the Dual Homing redundant port, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the MSTP port, it cannot be set to the destination port.</p> <p>% Invalid: If the port is set as the MRP port, it cannot be set to the destination port.</p> <p>% Invalid: If Dot1x is enabled on this port, it cannot be set to the destination port.</p> <p>% Invalid: There is more than one destination port.</p> <p>Invalid: The reflect port cannot be configured to the Management VLAN ID.</p> <p>% Invalid: The PVID of the reflect port must be equal to the RSPAN VLAN ID in an RSPAN source session.</p> <p>% Invalid: The RSPAN VLAN ID of an RSPAN session conflicts with the PVID of the reflect port in another session.</p> <p>% Invalid: When GVRP is enabled, the Reflect Port Mode cannot be enabled or the RSPAN session cannot be active.</p> <p>% Invalid: The Speed/Duplex settings of the reflect port must be in AUTO mode and enabled.</p> <p>% Invalid: Invalid RSPAN session type</p> <p>% Invalid: The RSPAN reflect port must be a VLAN trunk or hybrid port.</p>	
Related Commands	<pre>moxa-product(config)# no monitor session <session-id (6-7)> designated { interface <interface-type> <interface-id> } [reflect-port-mode]</pre>	

Remove the Designated Port Configurations for a Mirroring Session

Commands

no monitor session <session-id (6-7)> **designated { interface** <interface-type> <interface-id> }
[reflect-port-mode]

Syntax Description	no	Remove configuration / delete entry / reset to default value
	monitor	Configure port mirroring parameters
	session	Configure the mirroring session
	session-id	The index of the mirroring session
	designated	Configure the designated port parameters
	interface	Configure interface-related configuration
	interface-type	Specify the interface type
	interface-id	Specify the interface ID
	reflect-port-mode	Disable Reflect Port Mode
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product# configure moxa-product(config)# no monitor session 6 designated interface ethernet 1/2 reflect-port-mode	
Error Messages	N/A	
Related Commands	moxa-product(config)# monitor session <session-id (6-7)> designated { interface <interface-type> <interface-id> } [reflect-port-mode]	

Configure the RSPAN Session Type and VLAN

Commands

monitor session <session-id (6-7)> **rspan-type** {source | destination} **vlan** <vlan-id (1-4094)>

Syntax Description	monitor	Configure port mirroring parameters
	session	Configure the mirroring session
	session-id	The index of the mirroring session
	rspan-type	Configure RSPAN session type parameters
	source	Enable the RSPAN source session
	destination	Enable the RSPAN destination session
	vlan	Configure RSPAN session VLAN parameters
	vlan-id	Specify the VLAN ID
Defaults	N/A	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa-product# configure moxa-product(config)# monitor session 6 rspan-type source vlan 3 moxa-product# configure moxa-product(config)# monitor session 7 rspan-type destination vlan 2</pre>	
Error Messages	<p>% Invalid: The RSPAN VLAN ID must be configured to an existing VLAN ID.</p> <p>% Invalid: Duplicated RSPAN VLAN ID.</p> <p>% Invalid: The RSPAN session cannot be active when the RSPAN Intermediate Role is enabled.</p> <p>% Invalid: The RSPAN destination session cannot be active with the Reflect Port Mode enabled.</p> <p>% Invalid: There is more than one RSPAN source session.</p> <p>% Invalid: There is more than one RSPAN destination session.</p> <p>% Invalid: The PVID of the reflect port is in a session that conflicts with the reflect port PVID or the RSPAN VLAN ID of another session, or the RSPAN Intermediate VLAN ID.</p> <p>% Invalid: The RSPAN VLAN ID of an RSPAN session conflicts with the PVID of the reflect port in another session.</p> <p>% Invalid: When GVRP is enabled, the Reflect Port Mode cannot be enabled or the RSPAN session cannot be active.</p> <p>% Invalid: When the RSPAN destination session is active, at least one VLAN trunk port must be enabled.</p> <p>(L2 models) Please make sure RSPAN vlan is different from the management VLAN ID to prevent looping. [y/N]</p> <p>(L3 models) Please make sure RSPAN vlan is different from VLAN interfaces to prevent looping. [y/N]</p>	
Related Commands	N/A	

Configure the RSPAN Intermediate Role

Commands

monitor rspan-intermediate-role {enable | disable} [vlan <vlan-id (1-4094)>]

Syntax Description	monitor	Configure port mirroring parameters
	rspan-intermediate-role	Configure RSPAN intermediate role parameters
	enable	Enable the RSPAN intermediate role
	disable	Disable the RSPAN intermediate role
	vlan	Configure RSPAN session VLAN parameters
	vlan-id	Specify the VLAN ID
Defaults	disable	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa-product# configure moxa-product(config)# monitor rspan-intermediate-role enable vlan 2 moxa-product# configure moxa-product(config)# monitor rspan-intermediate-role disable</pre>	
Error Messages	<p>% Invalid: When GVRP is enabled, the RSPAN Intermediate cannot be enabled.</p> <p>% Invalid: The RSPAN Intermediate VLAN ID must be configured to an existing VLAN ID.</p> <p>% Invalid: When the RSPAN Intermediate Role is enabled, at least one VLAN trunk port must be active.</p> <p>% Invalid: The PVID of the reflect port is in a session that conflicts with the reflect port PVID or the RSPAN VLAN ID of another session, or the RSPAN Intermediate VLAN ID.</p> <p>% Invalid: Maximum number of Intermediate VLAN IDs reached.</p> <p>% Invalid: This Intermediate VLAN ID is already in use.</p> <p>(L2 models) Please make sure intermediate VLAN ID is different from the management VLAN ID to prevent looping. [y/N]</p> <p>(L3 models) Please make sure intermediate VLAN IDs are different from VLAN interfaces to prevent looping. [y/N]</p>	
Related Commands	N/A	

Configure the source vlan for a mirroring session

Commands

monitor session <session-id (1-7)> { **source { vlan <vlan-range> } [{rx}]** }

Syntax Description	monitor	Configure Port Mirror parameters
	session	Mirroring session related configuration
	session-id	Index of mirroring session
	source	Source port related configuration
	vlan	Interface related configuration
	vlan-range	a series of VLANs(1-4094) separated by a comma
	rx	Mirror received
Defaults	rx	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	<pre>moxa-product# configure moxa-product(config)# monitor session 1 source vlan 2 moxa-product# configure moxa-product(config)# monitor session 1 source vlan 2 rx</pre>	
Error Messages	<p>% Invalid: Only one VLAN Mirroring session can be active at any given time. % Invalid: Port Mirroring and VLAN Mirroring cannot be configured at the same time. % Invalid: The source VLAN ID for VLAN Mirroring cannot be the same as the RSPAN or reflect port VLAN. % Invalid: The source VLAN ID must be an existing VLAN ID. % Invalid: Only one source (source VLAN or source port) for the Mirroring session can be configured at any given time. % Invalid: The RSPAN destination session cannot configure the Tx source port or Rx source port or Rx source vlan. % Invalid: Maximum number of TX Source VLANs reached (4). % Invalid: Maximum number of RX Source VLANs reached (4). % Invalid: VLAN mirroring is not supported in RSPAN mode. Invalid: TX Source VLAN used in another session. Invalid: RX Source VLAN used in another session.</p>	
Related Commands	<pre>moxa-product(config)# no monitor session <session-id (1-7)> { source { vlan <vlan-range> } [{ rx }] }</pre> <pre>moxa-product(config)# monitor session <session-id (1-7)> { source { interface { port-channel <port-channel-id> <interface-type> <interface-id> } [{ rx }] } }</pre>	

Remove the source vlan for a mirroring session

Commands

no monitor session <session-id (1-7)> { **source { vlan** <vlan-range>} [{ **rx** }]}

Syntax Description	no	Remove configuration/delete entry/reset to default value
	monitor	Configure Port Mirror parameters
	session	Mirroring session related configuration
	session-id	Index of mirroring session
	source	Source port related configuration
	vlan	Interface related configuration
	vlan-range	a series of VLANs(1-4094) separated by a comma
	rx, tx, both	Mirror received/transmitted/both received and transmitted traffic
Defaults	both	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa-product# configure moxa-product(config)#no monitor session 1 source vlan 2 moxa-product# configure moxa-product(config)# no monitor session 1 source vlan 2 rx	
Error Messages	N/A	
Related Commands	moxa-product(config)# monitor session <session-id (1-7)> { source { vlan <vlan-range>} [{ rx }]}	

Ping Host

Commands

For Layer 2 models:

ping host [**repeat** repeat-count] [**size** payload-size] [**timeout** request-timeout] [**ttl** ttl-size]

For Layer 3 models:

ping host [**repeat** repeat-count] [**size** payload-size] [**timeout** request-timeout] [**ttl** ttl-size] [**source** ip-address] [**vlan** vlan-id]

Syntax Description	ping	Ping a target to check its status
	host	IP address or domain name of the node to be pinged
	repeat	Number of ping packets that are sent to the destination address
	repeat-count	Repeat value
	size	Size of the ping packet
	payload-size	Length of ping packet value
	timeout	Time in seconds after which the entity waiting for the ping response times out
	request-timeout	Timeout value
	ttl	Time to live
	ttl-count	TTL value
	source	IP address of the router to use as a source address for the probes
	ip-address	IP address
	vlan	VLAN related configuration
	vlan-id	Specified vlan id
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<p>Examples 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</p> <p>--- 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</p> <p>moxa# ping 192.168.20.22 ttl 10 source 192.168.20.33 vlan 20 PING 192.168.20.22 (192.168.20.22) from 192.168.20.33 tap0.20: 56(84) bytes of data. 64 bytes from 192.168.20.22: icmp_seq=1 ttl=64 time=2.09 ms 64 bytes from 192.168.20.22: icmp_seq=2 ttl=64 time=2.04 ms 64 bytes from 192.168.20.22: icmp_seq=3 ttl=64 time=2.11 ms 64 bytes from 192.168.20.22: icmp_seq=4 ttl=64 time=1.98 ms 64 bytes from 192.168.20.22: icmp_seq=5 ttl=64 time=1.94 ms 64 bytes from 192.168.20.22: icmp_seq=6 ttl=64 time=2.06 ms 64 bytes from 192.168.20.22: icmp_seq=7 ttl=64 time=2.07 ms 64 bytes from 192.168.20.22: icmp_seq=8 ttl=64 time=2.08 ms 64 bytes from 192.168.20.22: icmp_seq=9 ttl=64 time=2.07 ms 64 bytes from 192.168.20.22: icmp_seq=10 ttl=64 time=2.18 ms --- 192.168.20.22 ping statistics --- 10 packets transmitted, 10 received, 0% packet loss, time 9012ms rtt min/avg/max/mdev = 1.935/2.060/2.176/0.063 ms</p>	
Error Messages	Invalid: Source IP or outgoing VLAN not found or invalid.	
Related Commands	N/A	

Traceroute

Commands

For Layer 2 models: **traceroute** host [**ttl** ttl-size] [**waittime** time-value]

For Layer 3 models: **traceroute** host [**ttl** ttl-size] [**waittime** time-value] [**source** ip-address] [**vlan** vlan-id]

Syntax Description	traceroute	Ping a target to check its status
	host	IP address or domain name of the node to be pinged
	ttl	Max ttl value
	ttl-size	TTL value
	waittime	Time (in seconds) to wait for a response to a probe
	time-value	time value
	source	IP address of the router to use as a source address for the probes
	ip-address	IP address
	vlan	VLAN related configuration
	vlan-id	Specified vlan id
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# traceroute 192.168.40.55 ttl 10 source 192.168.20.33 vlan 30 traceroute to 192.168.40.55 (192.168.40.55), 10 hops max, 60 byte packets 1 192.168.30.44 (192.168.30.44) 17.076 ms 17.362 ms 17.487 ms 2 192.168.40.55 (192.168.40.55) 20.361 ms * *</pre>	
Error Messages	Invalid: Source IP or outgoing VLAN not found or invalid.	
Related Commands	N/A	

Event Logs and Notifications

Event Logs

Show Logging Event Log

Commands

show logging event-log

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

Show Log Capacity

Commands

show logging log-capacity

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

Clear the Event Log

Commands

clear logging event-log

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

Export an Event Log File

Commands

copy event-log {tftp://server/filename | sftp://<user-name>:<pass-word>@server/filename}

Syntax Description	copy	Copy the target file or input
	event-log	Export the system event log
	tftp://server/filename	The address of the remote TFTP server and target filename in the format "tftp://server/filename"
	sftp://<username>:<password>@server/filename	The address of the remote SFTP server and target filename in the format "sftp://username:password@server/filename"
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# copy event-log tftp://192.168.127.11/test1.log	
Help Message	Copy the system logs to a remote site	
Error Messages	N/A	
Related Commands	show logging event-log	

Configure Event Log Capacity Settings

Commands

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

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

Delete Logging Log Capacity Threshold

Commands

no logging log-capacity threshold

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

Configure Oversized Log Action Settings

Commands

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

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

Copy the Event Log

Commands

copy event-log { <tftp_url> | <sftp_url> }

Syntax Description	copy	Copy the target file or input
	event-log	Copy the system event log
	tftp_url	The address of the remote TFTP server and filename in the format "tftp://server/filename"
	sftp_url	The address of the remote SFTP server and filename in the format "sftp://username:password@server/filename"
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# copy event-log tftp://www.test.com	
Error Messages	N/A	
Related Commands	N/A	

Event Notification

Show Event Notification Settings

Commands

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

Syntax Description	show	Displays running information for the feature
	event-notification	Display event notification settings
	general-event	Show general event notification settings
	poe-event	Show PoE event notification settings
	port-event	Show port event notification settings
	switching-event	Show switching event notification settings
Defaults	N/A	
Command Modes	Privileged EXEC /User EXEC	
Usage Guidelines	N/A	
Examples	<pre>moxa# show event-notification poe-event PD Power On Event Enable :Enabled Registered Action :Trap, Email, PD Power Off Event Enable :Enabled Registered Action :Trap, Email, Low Input Voltage Event Enable :Enabled Registered Action :Trap, Email, PD Over Current Event Enable :Enabled Registered Action :Trap, Email, PD No Response Event Enable :Enabled Registered Action :Trap, Email, Over Power Budget Limit Event Enable :Enabled Registered Action :Trap, Email, Power Detection Failure Event Enable :Enabled Registered Action :Trap, Email, moxa# show event-notification port-event Port link up Event Enable :Enabled Registered Action :Trap, Email,</pre>	

	Registered Port :1/1, 1/2, 1/3, 1/4, 2/1, 2/2, 2/3, 2/4, 3/1, 3/2, 3/3, 3/4 , 4/1, 4/2, 4/3, 4/4, 5/1, 5/2, 5/3, 5/4, 6/1, 6/2, 6/3, 6/4, 7/1, 7/2, 7/3, 7/4 , Port link down Event Enable :Enabled Registered Action :Trap, Email, Registered Port :1/1, 1/2, 1/3, 1/4, 2/1, 2/2, 2/3, 2/4, 3/1, 3/2, 3/3, 3/4 , 4/1, 4/2, 4/3, 4/4, 5/1, 5/2, 5/3, 5/4, 6/1, 6/2, 6/3, 6/4, 7/1, 7/2, 7/3, 7/4 , Port shutdown by Rate Limit Event Enable :Enabled Registered Action :Trap, Email, Registered Port :1/1, 1/2, 1/3, 1/4, 2/1, 2/2, 2/3, 2/4, 3/1, 3/2, 3/3, 3/4 , 4/1, 4/2, 4/3, 4/4, 5/1, 5/2, 5/3, 5/4, 6/1, 6/2, 6/3, 6/4, 7/1, 7/2, 7/3, 7/4 , Port recovery by Rate Limit Event Enable :Enabled Registered Action :Trap, Email, Registered Port :1/1, 1/2, 1/3, 1/4, 2/1, 2/2, 2/3, 2/4, 3/1, 3/2, 3/3, 3/4 , 4/1, 4/2, 4/3, 4/4, 5/1, 5/2, 5/3, 5/4, 6/1, 6/2, 6/3, 6/4, 7/1, 7/2, 7/3, 7/4 , Port shutdown by Port Security Event Enable :Enabled Registered Action :Trap, Email, Registered Port :1/1, 1/2, 1/3, 1/4, 2/1, 2/2, 2/3, 2/4, 3/1, 3/2, 3/3, 3/4 , 4/1, 4/2, 4/3, 4/4, 5/1, 5/2, 5/3, 5/4, 6/1, 6/2, 6/3, 6/4, 7/1, 7/2, 7/3, 7/4
Error Messages	N/A
Related Commands	event-notification general-event event-notification poe-event event-notification port-event event-notification switching-event

Configure General Event Notifications

Commands

event-notification general-event all

event-notification general-event cold-start

event-notification general-event all action trap mgmt-relay

event-notification general-event cold-start action email pwr1-relay

no event-notification general-event all

no event-notification general-event cold-start action email pwr2-relay

Syntax	no	Disable the configuration/deletes the entry/reset to default values
	event-notification	Configure event notification settings
	general-event	Configure notifications for general events
	all	Notify for all general events
	cold-start	Notify when the system performs a cold start
	warm-start	Notify when the system performs a warm start
	config-change	Notify when the system configuration changes
	login-success	Notify when a user successfully logs in
	login-fail	Notify when a user failed to log in
	login-lockout	Notify when a user is locked out due to the login policy
	account-setting-changed	Notify when the user account information changes, including create account, remove account, and change of username, permission
	password-changed	Notify when the user account password changes
	config-import	Notify when the system configuration is imported
	ssl-certificated-changed	Notify when the system certificate changes
	log-capacity	Notify when the system log reaches the capacity threshold
	power-on	Notify when the power supply is on
	power-off	Notify when the power supply is off
	di-on	Notify when the digital input is on
	di-off	Notify when the digital input is off
	action	Set the action for event notifications
	trap	Set the trap action for notifications
	email	Set the email action for notifications
	mgmt-relay	Set the MGMT relay action for notifications
	pwr1-relay	Set the PWR1 relay action for notifications
	pwr2-relay	Set the PWR2 relay action for notifications
Defaults	All configuration, trap, email event notifications are enabled by default.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa# config moxa(config)# event-notification general-event all action trap moxa(config)# no event-notification general-event all action trap email	
Error Messages	N/A	
Related Commands	show event-notification event-notification poe-event event-notification port-event event-notification switching-event	

Configure PoE Event Notifications

Commands

event-notification poe-event all

event-notification poe-event pd-power-on

event-notification poe-event all action trap mgmt-relay

event-notification poe-event pd-power-on action email pwr1-relay

no event-notification poe-event all

no event-notification poe-event cold-start action email pwr2-relay

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	event-notification	Configure event notification settings
	poe-event	Configure notifications for PoE events
	all	Notify for all PoE events
	pd-power-on	Notify when a powered device powers on
	pd-power-off	Notify when a powered device powers off
	low-input-voltage	Notify when the input voltage from the power sourcing equipment is low
	pd-over-current	Notify when the current exceeds the threshold
	pd-no-response	Notify when the device does not receive a response from the powered device
	over-power-budget-limit	Notify when the PoE power consumption exceeds the budget
	power-detection-failure	Notify when a power failure is detected
	action	Set the action for event notifications
	trap	Set the trap action for notifications
	email	Set the email action for notifications
	mgmt-relay	Set the MGMT relay action for notifications
	pwr1-relay	Set the PWR1 relay action for notifications
pwr2-relay	Set the PWR2 relay action for notifications	
Defaults	All configuration, trap, email event notifications are enabled by default.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa# config moxa(config)# event-notification poe-event all action trap moxa(config)# no event-notification poe-event all action trap email	
Error Messages	N/A	
Related Commands	show event-notification event-notification general-event event-notification port-event event-notification switching-event	

Configure Port Event Notifications

Commands

event-notification port-event all

event-notification port-event cold-start

event-notification port-event all action trap mgmt-relay

event-notification port-event cold-start action email pwr1-relay

no event-notification port-event all

no event-notification port-event cold-start action email pwr2-relay

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	event-notification	Configure event notifications
	port-event	Configure notifications for port events
	all	Notify for all port events
	port-link-up	Notify when a port link goes up
	port-link-down	Notify when a port link goes down
	port-shutdown-by-rate-limit	Notify when a port shuts down by rate limit
	port-recovery-by-rate-limit	Notify when a port recovers by rate limit
	port-shutdown-by-port-security	Notify when a port shuts down by port security
	action	Set the action for event notifications
	trap	Set the trap action for notifications
	email	Set the email action for notifications
	mgmt-relay	Set the MGMT relay action for notifications
	pwr1-relay	Set the PWR1 relay action for notifications
	pwr2-relay	Set the PWR2 relay action for notifications
Defaults	All configuration, trap, email event notifications are enabled by default. Port event notifications are enabled for all ports by default.	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa# config moxa(config)# event-notification port-event all action trap moxa(config)# no event-notification port-event all action trap email moxa (config-if)# event-notification port-event all	
Error Messages	N/A	
Related Commands	show event-notification event-notification general-event event-notification poe-event event-notification switching-event	

Configure Switching Event Notifications

Commands

event-notification switching-event { all | topology-changed | coupling-changed | master-changed | master-mismatched | rstp-topology-changed | rstp-root-changed | rstp-migration | rstp-invalid-bpdu | rstp-new-port-role | redundant-port-health-check-fail | dual-homing-path-changed | dot1x-auth-fail | lldp-table-changed | rmon-raising-alarm | rmon-falling-alarm } [action [trap] [email] [mgmt-relay] [pwr1-relay] [pwr2-relay]

no event-notification switching-event { all | topology-changed | coupling-changed | master-changed | master-mismatched | rstp-topology-changed | rstp-root-changed | rstp-migration | rstp-invalid-bpdu | rstp-new-port-role | redundant-port-health-check-fail | dual-homing-path-changed | dot1x-auth-fail | lldp-table-changed | rmon-raising-alarm | rmon-falling-alarm } [action [trap] [email] [mgmt-relay] [pwr1-relay] [pwr2-relay]

Syntax Description	no	Disable the configuration/deletes the entry/resets to default value
	event-notification	Configure event notifications
	switching-event	Configure notifications for switching events
	all	Notify for all switching events
	topology-changed	Notify when the network topology changes
	Turbo-ring-topology-changed	Notify when the Turbo Ring v2 topology changes
	Turbo-chain-topology-changed	Notify when the Turbo Chain topology changes
	Dual-homing-topology-changed	Notify when the dual-homing topology changes
	coupling-changed	Notify when the Turbo Ring v2 coupling changes
	master-changed	Notify when the Turbo Ring v2 master changes
	master-mismatched	Notify when the Turbo Ring v2 master mismatches
	rstp-topology-changed	Notify when the RSTP network topology changes
	rstp-root-changed	Notify when the RSTP root device changes
	rstp-migration	Notify for RSTP migration
	rstp-invalid-bpdu	Notify when the RSTP device receives an invalid BPDU
	rstp-new-port-role	Notify when the RSTP port role changes
	redundant-port-health-check-fail	Notify when the redundant port health check fails
	dual-homing-path-changed	Notify when the dual homing path changes
	dot1x-auth-fail	Notify when 802.1x authentication fails
	lldp-table-changed	Notify when the LLDP remote table changes
	rmon-raising-alarm	Notify when RMON alarm variables values reach or exceed the raising threshold
	rmon-falling-alarm	Notify when RMON alarm variables values reach or fall below the falling threshold
	action	Set the action for event notifications
	trap	Set the trap action for notifications
	email	Set the email action for notifications
	mgmt-relay	Set the MGMT relay action for notifications
	pwr1-relay	Set the PWR1 relay action for notifications
	pwr2-relay	Set the PWR2 relay action for notifications
Defaults	All configuration, trap, email event notifications are enabled by default	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	<pre>moxa# config moxa(config)# event-notification switching-event all action trap moxa(config)# no event-notification switching -event all action trap email</pre>	
Error Messages	N/A	
Related Commands	<pre>show event-notification event-notification general-event event-notification poe-event</pre>	

Syslog

Configure Logging Server Settings

Commands

logging-server <short(1-3)> { ipv4 <ucast_addr> | <dns_host_name> } [port <integer(1-65535)>]

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

Delete a Logging Server Entry

Commands

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

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

Enable/Disable the Syslog Server

Commands

logging syslog-server { enable | disable }

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

Config Logging Format to RFC5424

Commands

logging-format rfc5424

Syntax Description	logging-format	Syslog format
	rfc5424	Syslog format with RFC5424
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# logging-format rfc5424	
Error Messages	N/A	
Related Commands	show logging server	

Reset to Default Logging Format

Commands

no logging-format

Syntax Description	no	Remove configuration / delete entry / reset to default value
	logging-format	Set to default syslog format
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# no logging-format	
Error Messages	N/A	
Related Commands	show logging server	

Configure Logging Message Format to CEF

Commands

logging-format message CEF

Syntax Description	logging-format	Syslog format
	message	Set syslog message format
	CEF	Set syslog message format with CEF
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# logging-format message CEF	
Error Messages	N/A	
Related Commands	show logging server	

Reset Logging Message Format to Default

Commands

no logging-format message

Syntax Description	no	Remove configuration / delete entry / reset to default value
	logging-format	Set to default syslog format
	message	Set to default syslog message format
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# no logging-format message	
Error Messages	N/A	
Related Commands	show logging server	

Show the Syslog Server Configuration

Commands

show logging syslog-server

Syntax Description	show	Display configuration/status information
	logging	Display logging server information
	syslog-server	Display syslog server information
Defaults	N/A	
Command Modes	Privileged EXEC / User EXEC	
Examples	<pre>moxa# show logging syslog-server 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</pre>	
Help Message	Display the Syslog logging server table	
Error Messages	N/A	
Related Commands	<pre>logging server enable logging-server <short(1-3)> {ipv4 <ucast_addr> <dns_host_name>} [port <integer(1-65535)>]</pre>	

Copy the Syslog Server Client Certificate and Key

Commands

copy syslog-server {tftp://server/filename | sftp://<user-name>:<pass-word>@server/filename} client-certificate {tftp://server/filename | sftp://<user-name>:<pass-word>@server/filename} client-private-key {tftp://server/filename | sftp://<user-name>:<pass-word>@server/filename} ca-certificate

Syntax Description	copy	Perform copy operation
	syslog-server	Syslog-server configuration
	client-certificate	SYSLOG client certificate file
	client-private-key	SYSLOG client private key file
	ca-certificate	SYSLOG on CA certificate file
	tftp	File in remote location to be copied
	sftp	File in remote location to be copied
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	Moxa# copy syslog-server tftp://192.168.127.200/filename1 client-certificate tftp://192.168.127.200/filename2 client-private-key tftp://192.168.127.200/filename3 ca-certificate Moxa# copy syslog-server sftp://username:password@192.168.127.200/filename1 client-certificate sftp://username:password@192.168.127.200/filename2 client-private-key sftp://username:password@192.168.127.200/filename3 ca-certificate	
Error Messages	The certificate and key are not in the same set. Invalid certificate file. Only supports .pem, .crt, and .cer file formats. Invalid private key file. Only supports .pem and .key file formats. Invalid CA certificate file. Only supports .pem, .crt, and .cer file formats.	
Related Commands	show logging syslog-server clear syslog-server certificate-and-key	

Clear the Syslog Server Client Certificate and Key

Commands

clear syslog-server certificate-and-key

Syntax Description	clear	Perform the clear operation
	syslog-server	Clear the syslog server configuration
	certificate-and-key	Clear the syslog authentication certificate and key file
Defaults	N/A	
Command Modes	Privileged EXEC	
Examples	moxa# clear syslog-server certificate-and-key	
Error Messages	N/A	
Related Commands	show logging syslog-server copy syslog-server client-certificate {<tftp_url> <sftp_url>} client-key {<tftp_url> <sftp_url>} ca-key {<tftp_url> <sftp_url>}	

Disable Syslog Server TLS Authentication

Commands

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

Syntax Description	logging-server	Configure logging server parameters
	short(1-3)	The index of the syslog server
	authentication	Configure the authentication method
	disable	Disable authentication
	tls	Use TLS authentication
Defaults	Disabled	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# logging-server 1 authentication tls moxa(config)# logging-server 2 authentication disable	
Error Messages	The authentication certificate and key do not exist.	
Related Commands	no logging-server <short(1-3)> show logging server	

SNMP Trap/Inform

Show SNMP Trap Information

Commands

show snmp-trap information

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

Show SNMP Trap User Account Information

Commands

show snmp-trap user

Syntax Description	show	Display the configuration/statistics/general information
	snmp-trap	Display SNMP trap information
	user	Display SNMP trap user accounts
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa# show snmp-trap user ----- snmp-trap user-account : 1 ----- user-name : testNoAuthNoPriv authenticate-type : none encryption-method : disable	
Error Messages	% 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')	
Related Commands	snmp-trap	

Show SNMP Trap Host Information

Commands

show snmp-trap host

Syntax Description	show	Display the configuration/statistics/general information
	snmp-trap	Display SNMP trap information
	host	Display SNMP trap host information
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	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 :	
Error Messages	% Can't get snmp-trap host information % Can't get snmp-trap host table % Can't get snmp-trap host table index('%d')	
Related Commands	snmp-trap	

Email Settings

Configure Email Notification Server Settings

Command

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

Syntax	Description	
	email-notification	Configure email notification parameters
	server	Configure email server parameters
	server-address	Configure the email notification server IP address
	ucast_addr	The email notification server IP address
	server-port	The email notification server IP port
	username	Configure the email notification server username
	string(60)	The email server username
	password	Configure the email notification server password
	string(60)	The email server password
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	(config)# email-notification server-address 1.2.3.4 username aaa password bbb	
Error Messages	N/A	
Related Commands	N/A	

Configure the Email Notification Sender

Commands

email-notification sender <string (60)>

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

Configure the Email Notification Server TLS Mode Setting

Commands

email-notification server tls {enable | disable}

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

Configure the Email Notification Recipient

Commands

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

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

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

Show Email Notification Server Settings

Commands

show email-notification server

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

Relay Alarm

Configure Relay Alarm Cut-off Settings

Commands

relay alarm cut-off mgmt-relay

relay alarm cut-off pwr1-relay

relay alarm cut-off pwr2-relay

Syntax Description	relay	Configure relay parameters
	alarm	Configure the relay alarm
	cut-off	Configure relay alarm cut-off settings
	mgmt-relay	Cut off the mgmt-relay alarm
	pwr1-relay	Cut off the pwr1-relay alarm
	pwr2-relay	Cut off the pwr2-relay alarm
Defaults	N/A	
Command Modes	Global	
Usage Guidelines	N/A	
Examples	moxa# relay alarm cut-off mgmt-relay	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable fault-led-display

Commands

relay alarm fault-led-display enable

relay alarm fault-led-display disable

Syntax Description	relay	Relay related command
	alarm	Set relay alarm related command
	fault-led-display	Set relay fault-led-display related command
	enable	Enable fault-led-display
	disable	Disable fault-led-display
Defaults	Fault LED Display is default disable	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# config moxa(config)# relay alarm fault-led-display enable moxa(config)# relay alarm fault-led-display disable	
Error Messages	N/A	
Related Commands	N/A	

Show Relay Alarm

Commands

show relay alarm status {mgmt-relay | pwr1-relay | pwr2-relay}

Syntax Description	show	Displays running information for the feature
	relay	Display relay information
	alarm	Display relay alarm information
	status	Display all relay status
	mgmt-relay	Display mgmt-relay status
	pwr1-relay	Display pwr1-relay status
	pwr2-relay	Display pwr2-relay status
Defaults	N/A	
Command Modes	Privileged EXEC /User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show relay alarm status Relay Alarm Status: mgmt-relay : Short pwr1-relay : Open pwr2-relay : Not Present moxa# show relay alarm status mgmt-relay Relay Alarm Status: mgmt-relay : Short	
Error Messages	N/A	
Related Commands	show relay alarm status mgmt-relay show relay alarm status pwr1-relay show relay alarm status pwr2-relay	

Show fault-led-display

Commands

show relay alarm fault-led-display

Syntax Description	show	Displays running information for the feature
	relay	Display relay information
	alarm	Display relay alarm information
	fault-led-display	Display relay alarm fault-led-display configuration
Defaults	N/A	
Command Modes	Privileged EXEC /User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show relay alarm fault-led-display Relay Alarm Fault-LED-Display :Enabled	
Error Messages	N/A	
Related Commands	N/A	

Maintenance and Tools

Locator

Show the Locator

Commands

locator [duration]

Syntax Description	locator	Activate the device locator to force the device LEDs to blink
	duration	The duration of the locator in seconds
Defaults	The locator duration is set to 60 seconds by default.	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# locator 100	
Error Messages	N/A	
Related Commands	N/A	

Reboot

Reboot the Switch

Commands

reload

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

Reset to Default

Reset to Default

Commands

reload factory-default [all]

Syntax Description	reload	Halt and perform a warm restart
	factory-default	Halt and perform a warm restart with factory default
	all	Reset startup configurations, log files, certificate, and key to factory default
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# reload factory-default Are you sure you want to reset the system configuration to the factory default settings? [Y/N] Resetting device into factory default and restarting... moxa# reload factory-default all Are you sure you want to reset the system configuration and all user data including configuration, log files, and credential keys to the factory default settings? [Y/N] Resetting device into factory default and restarting...	
Error Messages	N/A	
Related Commands	N/A	

Log Out

Commands

exit

Syntax Description	exit	Log out from the device
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# exit	
Error Messages	N/A	
Related Commands	N/A	

Enable or Disable the Tech Support Mechanism

Commands

tech-support system [enable | disable]

Syntax Description	tech-support	Configure tech support troubleshooting settings
	system	Configure tech support for the switch system
	enable	Enable the tech support function
	disable	Disable the tech support function
Defaults	Disable	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# tech-support system enable Warning! The Telnet/HTTP service will be disabled. Account Name: moxasupport Account Password: nZParGhefA	
Error Messages	"% Error! tech-support system hasn't yet been enabled." "% Account: Invalid: Max user account amount reached."	
Warning Messages	"Warning! The Telnet/HTTP service will be disabled." "Please save config to eliminate the account, moxasupport, from the system."	
Related Commands	tech-support system login	

Log In to the Tech Support Mechanism

Commands

tech-support system login

Syntax Description	tech-support	Configure tech support troubleshooting settings
	system	Configure tech support for the switch system
	login	Log in to the Linux shell
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# tech-support system login CLI console locked Enter Password to unlock the console: #	
Error Messages	"% Error! tech-support system hasn't yet been enabled."	
Warning Messages	N/A	
Related Commands	tech-support system enable	

Industrial Applications

IEC 61850

MMS

Enable/Disable MMS

Commands

mms {enable | disable}

Syntax Description	mms	Configure MMS parameters
	enable	Enable MMS
	disable	Disable MMS
Defaults	Enabled	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# mms enable moxa(config)# mms disable	
Error Messages	N/A	
Related Commands	N/A	

Configure MMS IED Name

Commands

mms ied <iedname>

Syntax Description	mms	Configure MMS parameters
	ied	Configure the IED name
	<iedname>	Specify the IED name
Defaults	Switch model name	
Command Modes	Global Configuration	
Usage Guidelines	This command is to configure MMS IED name.	
Examples	moxa (config)# mms ied test	
Error Messages	N/A	
Related Commands	N/A	

Configure MMS RCB Settings

Commands

mms rcb < rcb name > { dchg < **enable** | **disable** > | qchg < **enable** | **disable** > | dupd < **enable** | **disable** > | integrity < **enable** | **disable** > | bufTime <1-4294967295> | intgPd <1-4294967295> }

mms rcb {urcbLnkSt | brcbLnkSt | urcbSysSt | brcbSysSt} {{dchg | qchg | dupd | integrity} {**enable** | **disable**} | {bufTime | intgPd} <value (1-4294967295)>}

Syntax Description	mms	Configure MMS parameters
	rcb	Configure RCB parameters
	enable	Enable the specified RCB parameters
	disable	Disable the specified RCB parameters
	urcbLnkSt	Configure the urcbLnkSt table
	brcbLnkSt	Configure the brcbLnkSt table
	urcbSysSt	Configure the urcbSysSt table
	brcbSysSt	Configure the brcbSysSt table
	dchg	Configure the dchg for the specific RCB
	qchg	Configure the qchg for the specific RCB
	dupd	Configure the dupd for the specific RCB
	integrity	Configure the integrity for the specific RCB
	bufTime	Configure the buffer time for the specific RCB
intgPd	Configure the integrity period for the specific RCB	
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	This command is to configure RCB attributes.	
Examples	moxa (config)# mms rcb rcname1 dchg disable	
Error Messages	N/A	
Related Commands	N/A	

Export the MMS CID File

Commands

mms cid export { tftp://server/filename | sftp://<user-name>:<pass-word>@server/filename }

Syntax Description	mms	Configure MMS parameters
	cid	Configure the CID file
	export	Export the CID file
	tftp://server/filename	The address of the remote TFTP server and filename in the format "tftp://server/filename"
	sftp://<user-name>:<pass-word>@server/filename	The address, username, and password of the remote SFTP server and filename in the format "sftp://username:password@server/filename"
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	This command is to export the CID file of the switch.	
Examples	moxa (config)# mms cid export tftp://192.168.127.50/export_cid	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable MMS T-profile Security

Commands

mms t-profile security { enable | disable }

Syntax Description	mms	Configure MMS parameters
	t-profile	Configure T-profile settings
	security	Configure security setting
	enable	Enable T-profile security
	disable	Disable T-profile security
Defaults	Enabled	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# mms t-profile security enable	
Error Messages	N/A	
Related Commands	N/A	

Import/Export the MMS T-Profile CA File

Commands

mms t-profile ca import { tftp://server/filename | sftp://<user-name>:<pass-word>@server/filename }

mms t-profile ca export { tftp://server/filename | sftp://<user-name>:<pass-word>@server/filename }

Syntax Description	mms	Configure MMS parameters
	t-profile	Configure T-profile settings
	ca	Configure the CA file
	import	Import the CA file
	export	Export the CA file
	tftp://server/filename	The address of the remote TFTP server and filename in the format "tftp://server/filename"
sftp://<user-name>:<pass-word>@server/filename	The address, username, and password of the remote SFTP server and filename in the format "sftp://username:password@server/filename"	
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	This command is to import or export the T-profile CA file of the switch.	
Examples	moxa(config)# mms t-profile ca import tftp://192.168.127.50/tprofile_ca moxa(config)# mms t-profile ca export tftp://192.168.127.50/tprofile_ca	
Error Messages	N/A	
Related Commands	N/A	

Import/Export the T-profile Certificate File

Commands

mms t-profile certificate import { tftp://server/filename | sftp://<user-name>:<password>@server/filename }

mms t-profile certificate export { tftp://server/filename | sftp://<user-name>:<password>@server/filename }

Syntax Description	mms	Configure MMS parameters
	t-profile	Configure T-profile settings
	certificate	Configure certificate settings
	import	Import the certificate file
	export	Export the certificate
	tftp://server/filename	The address of the remote TFTP server and filename in the format "tftp://server/filename"
sftp://<user-name>:<password>@server/filename	The address, username, and password of the remote SFTP server and filename in the format "sftp://username:password@server/filename"	
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	This command is to import or export the T-profile certificate file of the switch.	
Examples	moxa(config)# mms t-profile certificate import tftp://192.168.127.50/tpprofile_pfx moxa(config)# mms t-profile certificate export tftp://192.168.127.50/tpprofile_pfx	
Error Messages	N/A	
Related Commands	N/A	

Enable/Disable MMS A-profile Security

Commands

mms a-profile security { enable | disable }

Syntax Description	mms	Configure MMS parameters
	a-profile	Configure the A-profile settings
	security	Configure security settings
	enable	Enable A-profile security
	disable	Disable A-profile security
Defaults	Enabled	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# mms a-profile security enable	
Error Messages	N/A	
Related Commands	N/A	

Import/Export the A-profile Certificate File

Commands

mms a-profile certificate import { tftp://server/filename | sftp://<user-name>:<password>@server/filename }

mms a-profile certificate export { tftp://server/filename | sftp://<user-name>:<password>@server/filename }

Syntax Description	mms	Configure MMS parameters
	a-profile	Configure A-profile settings
	certificate	Configure certificate settings
	import	Import the certificate file
	export	Export the certificate file
	tftp://server/filename	The address of the remote TFTP server and filename in the format "tftp://server/filename"
	sftp://<user-name>:<password>@server/filename	The address, username, and password of the remote SFTP server and filename in the format "sftp://username:password@server/filename"
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	This command is to import or export the A-profile certificate file of the switch.	
Examples	moxa(config)# mms a-profile certificate import tftp://192.168.127.50/tprofile_pfx moxa(config)# mms a-profile certificate export tftp://192.168.127.50/tprofile_pfx	
Error Messages	N/A	
Related Commands	N/A	

Show the MMS Status

Commands

show mms enable

Syntax Description	show	Display the configuration
	mms	Display MMS settings
	enable	Display the MMS status
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command shows MMS status information.	
Examples	moxa# show mms enable mms enable	
Error Messages	N/A	
Related Commands	N/A	

Show the MMS IED Name

Commands

show mms iedname

Syntax Description	show	Display the configuration
	mms	Display MMS settings
	iedname	Display the IED name
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command shows MMS IED information.	
Examples	moxa# show mms iedname IED name: RKS4000	
Error Messages	N/A	
Related Commands	N/A	

Show MMS RCB Information

Commands

show mms rcb

Syntax Description	show	Display the configuration
	mms	Display MMS settings
	rcb	Display RCB information
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command shows MMS RCB information.	
Examples	<pre> moxa# show mms rcb Report Control Block Table ----- urcbLnkSt DataChange = ENABLED QualityChange = DISABLED DataUpdate = DISABLED Integrity = ENABLED BufferTime = 1000 IntegrityPeriod = 5000 ----- brcbLnkSt DataChange = ENABLED QualityChange = DISABLED DataUpdate = DISABLED Integrity = ENABLED BufferTime = 1000 IntegrityPeriod = 5000 ----- urcbSysSt DataChange = ENABLED QualityChange = DISABLED DataUpdate = DISABLED Integrity = ENABLED BufferTime = 1000 IntegrityPeriod = 5000 ----- brcbSysSt DataChange = ENABLED QualityChange = DISABLED DataUpdate = DISABLED Integrity = ENABLED BufferTime = 1000 IntegrityPeriod = 5000 </pre>	
Error Messages	N/A	
Related Commands	N/A	

Show the MMS T-profile Status

Commands

show mms t-profile enable

Syntax Description	show	Display the configuration
	mms	Display MMS settings
	t-profile	Display T-profile settings
	enable	Display the T-profile status
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command is used to check if MMS T-profile is enabled.	
Examples	moxa# show mms t-profile enable mms t-profile enable	
Error Messages	N/A	
Related Commands	N/A	

Show the MMS A-profile Status

Commands

show mms a-profile enable

Syntax Description	show	Display the configuration
	mms	Display MMS settings
	a-profile	Display A-profile settings
	enable	Display the A-profile status
Defaults	N/A	
Command Modes	Privileged EXEC Mode	
Usage Guidelines	This command is used to check if MMS A-profile is enabled.	
Examples	moxa# show mms a-profile enable mms a-profile enable	
Error Messages	N/A	
Related Commands	N/A	

GOOSE Check

Show GOOSE Check Information

Commands

show goose-check

Syntax Description	show	Show running system information
	goose-check	Display GOOSE Check setting
Defaults	N/A	
Command Modes	Privileged EXEC mode	
Usage Guidelines	N/A	
Examples	moxa# show goose-check GOOSE Check : Enabled GOOSE Lock : Disabled GOOSE Check Tamper Response : No Action	
Error Messages	N/A	
Related Commands	goose-check	

Display GOOSE Monitoring Table

Commands

show goose-check table [basic | status]

Syntax Description	show	Show running system information
	goose-check	Display GOOSE Check information
	table	Display GOOSE monitoring table
	basic	Display GOOSE basic information
	status	Display GOOSE received counter and status
Defaults	N/A	
Command Modes	Privileged EXEC mode	
Usage Guidelines	N/A	
Examples	moxa# show goose-check table basic	
	<pre> Index APP ID GOOSE Address GoCB Name VID Port Type ----- ----- - 1 0x0017 01:0C:CD:01:00:01 REF615LD0/gcbgoose1 1 1/1 Static 2 0x0018 01:0C:CD:01:00:01 REF615LD0/gcbgoose2 1 2/1 Static 3 0x0019 01:0C:CD:01:00:01 REF615LD0/gcbgoose3 2 3/1 Dynamic 4 0x0020 01:0C:CD:01:00:01 REF615LD0/gcbgoose4 40 4/1 Dynamic </pre>	
Error Messages	moxa# show goose-check table status	
	<pre> Lock Violation Status : Normal Index APP ID GOOSE Address Rx Counter status ---- - 1 0x0017 01:0C:CD:01:00:01 0 Healthy 2 0x0018 01:0C:CD:01:00:01 0 Healthy 3 0x0019 01:0C:CD:01:00:01 12 Timeout 4 0x0020 01:0C:CD:01:00:01 8 SA Tampered </pre>	
Related Commands	goose-check	

Enable/disable GOOSE Check Function

Commands

goose-check { enable | disable }

Syntax Description	goose-check	Configure GOOSE Check
	enable	Enable GOOSE Check
	disable	Disable GOOSE Check
Defaults	Disabled	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# goose-check enable	
	moxa(config)# goose-check disable	
Error Messages	% Goose Check: Invalid: Entry limit reached. To add more GOOSE Check entries, delete unnecessary ACL entries, binding database entries used by Dynamic ARP Inspection or IP Source Guard, or GOOSE Check entries.	
Related Commands	show goose-check	

Enable/disable GOOSE Check GOOSE lock Function

Commands

goose-check lock

no goose-check lock

Syntax Description	goose-check	Configure GOOSE Check
	lock	Configure GOOSE lock
Defaults	Disabled	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# goose-check lock moxa(config)# no goose-check lock	
Error Messages	% Goose Check: Invalid: The gooseLockEnable command is unavailable if GOOSE Check is disabled.	
Related Commands	show goose-check	

Configure response of tamper event

Commands

goose-check tamper-response drop

goose-check tamper-response port-disable

no goose-check tamper-response

Syntax Description	goose-check	Configure GOOSE Check
	tamper-response	Configure GOOSE Check tamper response
	drop	Drop incoming tampered GOOSE messages
	port-disable	Disable admin status of tampered GOOSE messages ingress ports
Defaults	Disabled	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# goose-check tamper-response drop moxa(config)# goose-check tamper-response port-disable moxa(config)# no goose-check tamper-response	
Error Messages	% Goose Check: Invalid: The tamperResponse command is unavailable if GOOSE Check is disabled.	
Related Commands	show goose-check	

Add GOOSE Address

Commands

goose-check add [appid] [address]

no goose-check [appid] [address]

Syntax Description	goose-check	Configure GOOSE Check
	add	Add a static entry
	appid	GOOSE application identifier (hex format)
	address	The destination MAC address of GOOSE message
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# goose-check add 0xA0F1 01:0C:CD:01:00:23	
	moxa(config)# no goose-check 0xA0F1 01:0C:CD:01:00:23	
Error Messages	% Goose Check: Invalid: The 4 bytes of the MAC address prefix should be in the format: 01:0c:cd:01 % Goose Check: Invalid: The same static goose entry already exists. % Goose Check: Invalid: Reached the maximum number of GOOSE entries (100).	
Related Commands	N/A	

Reset counter

Commands

goose-check reset [appid] [address]

Syntax Description	goose-check	Configure GOOSE Check
	reset	Reset received counter and timeout counter
	appid	GOOSE application identifier (hex format)
	address	The destination MAC address of GOOSE message
Defaults	NULL	
Command Modes	Interface configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# goose-check reset 0xA0F1 01:0C:CD:01:00:23	
Error Messages	% Goose Check: Invalid: The 4 bytes of the MAC address prefix should be in the format: 01:0c:cd:01	
Related Commands	N/A	

Modbus TCP

Enable/Disable Modbus TCP

Commands

modbus-tcp { enable|disable}

Syntax Description	modbus-tcp	Configure Modbus TCP parameters
	enable	Enable Modbus TCP
	disable	Disable Modbus TCP
Defaults	Disabled	
Command Modes	Global Configuration Mode	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# modbus-tcp enable moxa(config)# modbus-tcp disable	
Error Messages	N/A	
Warning Messages	Are you sure you want to enable a non-secure protocol (Modbus TCP)? [y/N]	
Related Commands	show modbus-tcp	

Show Modbus TCP Information

Commands

Show **modbus-tcp**

Syntax Description	show	Display configuration/status information
	modbus-tcp	Display Modbus TCP information
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show modbus-tcp Modbus TCP Service: Disabled Listening TCP Port: 502 Maximum Session: 5	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

EtherNet/IP

Enable/Disable EtherNet/IP

Commands

eip {enable | disable}

Syntax Description	eip	Configure EtherNet/IP parameters
	enable	Enable EtherNet/IP on the switch
	disable	Disable EtherNet/IP on the switch
Defaults	Disable	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# eip enable moxa(config)# eip disable	
Error Messages	N/A	
Warning Messages	Are you sure you want to enable a non-secure protocol EtherNet/IP? [y/N]	
Related Commands	show eip	

Show EtherNet/IP Information

Commands

show eip

Syntax Description	show	Display configuration / statistics / general information
	eip	Display EtherNet/IP information
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show eip EtherNet/IP Status: Enabled	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

PROFINET

Enable/Disable PROFINET

Commands

profinet {enable | disable}

Syntax Description	profinet	Configure PROFINET parameters
	enable	Enable PROFINET on the switch
	disable	Disable PROFINET on the switch
Defaults	Disable	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)#profinet enable moxa(config)#profinet disable	
Error Messages	N/A	
Warning Messages	"Are you sure you want to enable a non-secure protocol (PROFINET)? [y/N]"	
Related Commands	N/A	

Configure the PROFINET Device Name

Commands

profinet device-name <profinet-device-name>

Syntax Description	profinet	Configure PROFINET parameters
	device-name	Configure PROFINET device name parameters
	profinet-device-name	Specify the device name in accordance to the PROFINET naming rules defined by IEC 61158-6-10
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)#no profinet interface	
Error Messages	Invalid: The maximum number of characters for a device name is 240. Invalid: The device name cannot be in IP address format. Invalid: The device name cannot start with "port-" followed by 3 or more digits. Invalid: Each label must be between 1 and 63 characters long. Invalid: Labels cannot start or end with a period (.). Invalid: Labels cannot start or end with a dash (-). Invalid: Only a-z, 0-9 . - are allowed.	
Warning Messages	N/A	
Related Commands	N/A	

Reset the PROFINET Device Name

Commands

no profinet device-name

Syntax Description	no	Disable the configuration/delete the entry/reset to default value
	profinet	Configure PROFINET parameters
	device-name	Reset the PROFINET device name
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)#no profinet device-name	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

Show PROFINET Information

Commands

show profinet

Syntax Description	show	Display configuration / statistics / general information
	profinet	Display PROFINET information
Defaults	N/A	
Command Modes	Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# show profinet PROFINET: Disabled Device Name: Interface Name: vlan1 Link Status: Disconnected	
Error Messages	N/A	
Warning Messages	N/A	
Related Commands	N/A	

A. Protocol port numbers for external interfaces

Protocol: TCP

Service Type	Port Number	Default state	Port can be modified	CLI Command to show port status
SSH	22	Enabled	Y	show ip service information
Telnet	23	Disabled	Y	show ip service information
E-Mail Server (SMTP)	25	Disabled	Y	show email-notification server
TACACS+	49	Disabled	Y	show tacacs server
HTTP	80	Enabled	Y	show ip service information
MMS	102	Disabled	N	N/A
HTTPS	443	Enabled	Y	show ip service information
Moxa Service	443	Enabled	N	N/A
Modbus	502	Disabled	N	Show Modbus TCP Information
Ethernet/IP	44818	Disabled	N	N/A

Protocol: UDP

Service Type	Port Number	Default state	Port can be modified	CLI Command to show port status
DHCP Server	67	Disabled	N	N/A
NTP	123	Disabled	N	N/A
SNMP	161	Disabled	Y	show ip service information
PTP (IP based)	319/320	Disabled	N	N/A
Syslog	514	Disabled	Y	show logging syslog-server
RADIUS	1812	Disabled	Y	Show RADIUS Server Information
Ethernet/IP	2222	Disabled	N	N/A
PROFINET	34964/49152	Disabled	N	N/A
Moxa Service	40404	Enabled	N	N/A