Moxa Managed Switch TSN-G5000 Series Command Line Interface

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www.moxa.com/product

Models covered by this user's manual:
TSN-G5000 Series Managed Ethernet Switches

Moxa Managed Switch TSN-G5000 Series Command Line Interface

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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.

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Understanding the Command Line Interface

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

The following topics are covered in this chapter:

❒ **Accessing the Switch**
  ➢ Logging in using the RS-232 Console
  ➢ Logging in using Telnet
❒ **Command Modes**
  ➢ Basic Configuration
  ➢ Understanding All Command Modes
❒ **Help Messages**
❒ **Special Usage and Limitations**
❒ **Abbreviated Commands**
❒ **No and Default Forms of Commands**
❒ **CLI Error Messages**
❒ **Command History**

Accessing the Switch

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

Logging in using the RS-232 Console

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

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

1. Prepare the included RS-232 serial cable with RJ45 interface.
2. Connect the RJ45 interface end to the console port on the switch, and the other end to the computer.
3. Download the **PComm Terminal Emulator** from the Moxa website and install the software.
4. In Windows, click **Start > Moxa > PComm Terminal Emulator**.
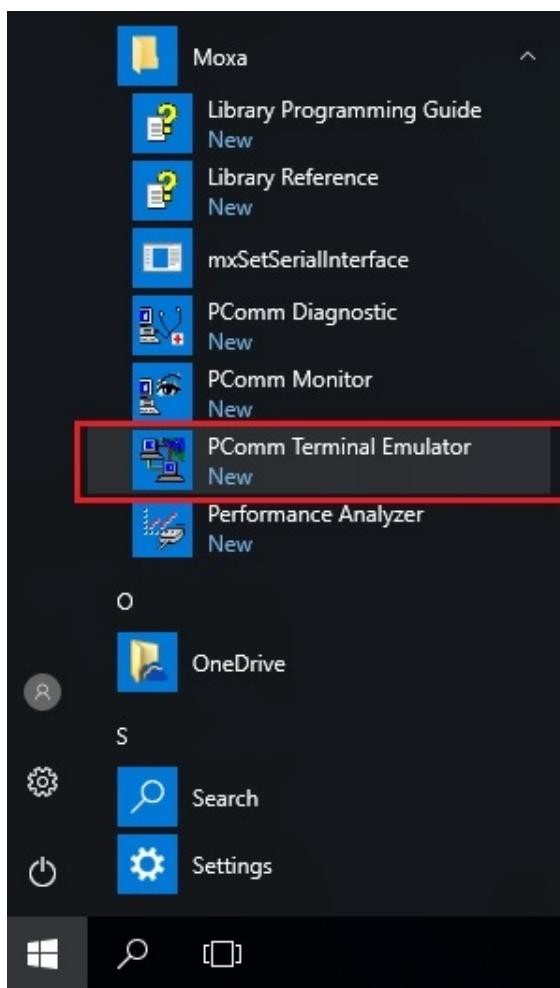
5. Click **Port Manager > Open** to establish a new connection.
   The Property window will appear.
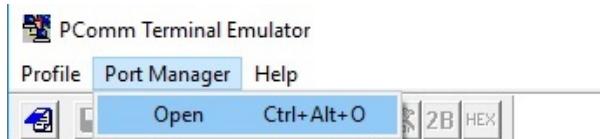
6. On the **Communication Parameter** tab, select the COM port that will be used for the console connection. Configure the fields as follows: **115200** for **Baud rate**, **8** for **Data bits**, **None** for **Parity**, and **1** for **Stop bits**.
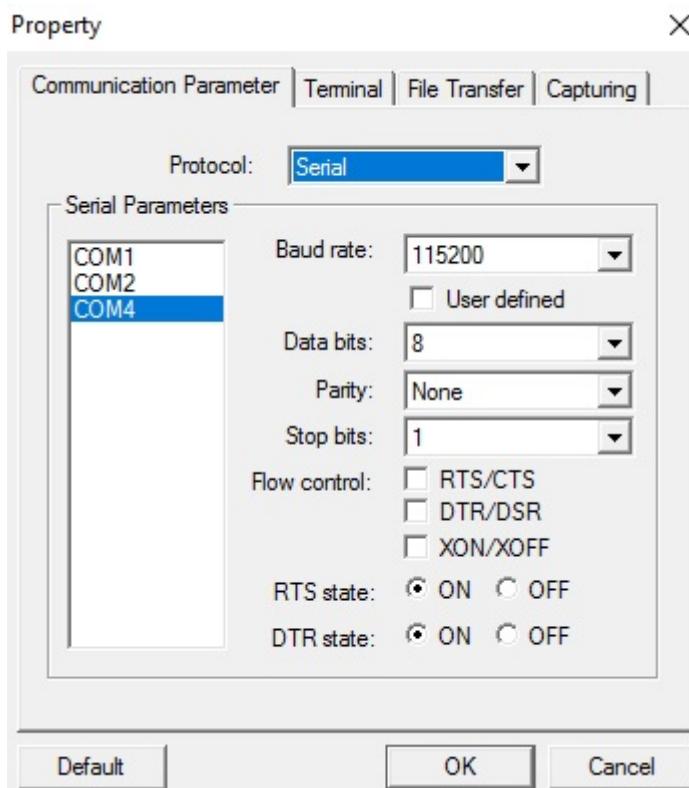
7. On the **Terminal** tab, select **VT100** as the **Terminal Type**, and click **OK** to continue.
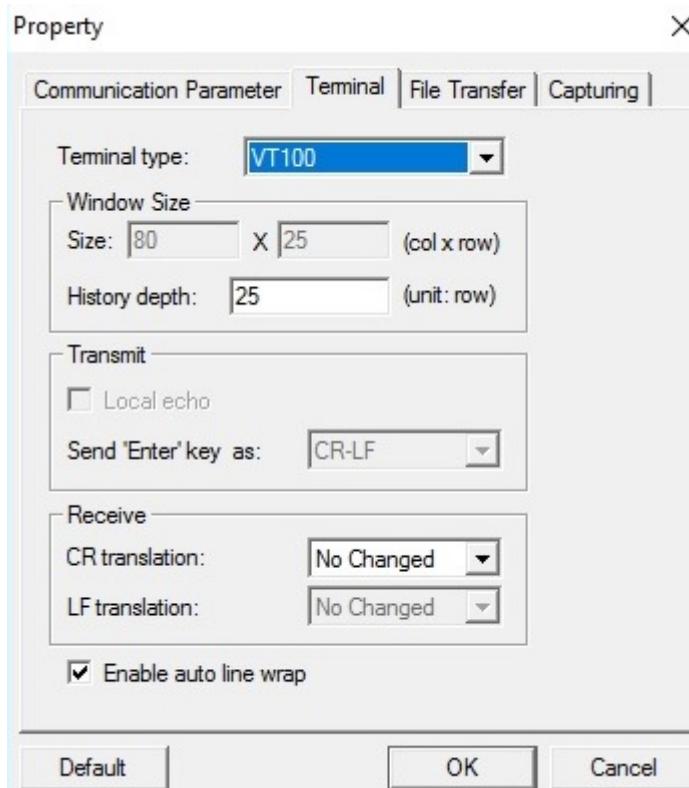
8. Log in to the console using the default login name **admin** and password **moxa**. This password will be required to access any of the consoles (web, serial, Telnet).
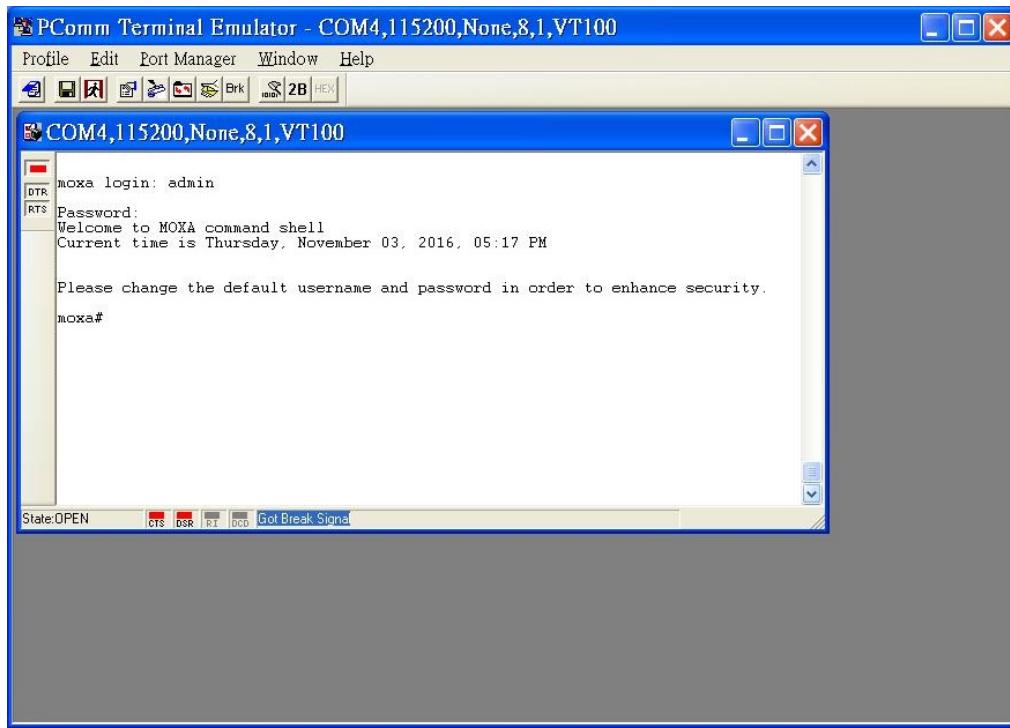
9. When successfully connected to the switch, you can start configuring the switch parameters by using command line instructions.

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

Logging in using Telnet

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

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

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

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

1. In Windows, click **Start > Run**.
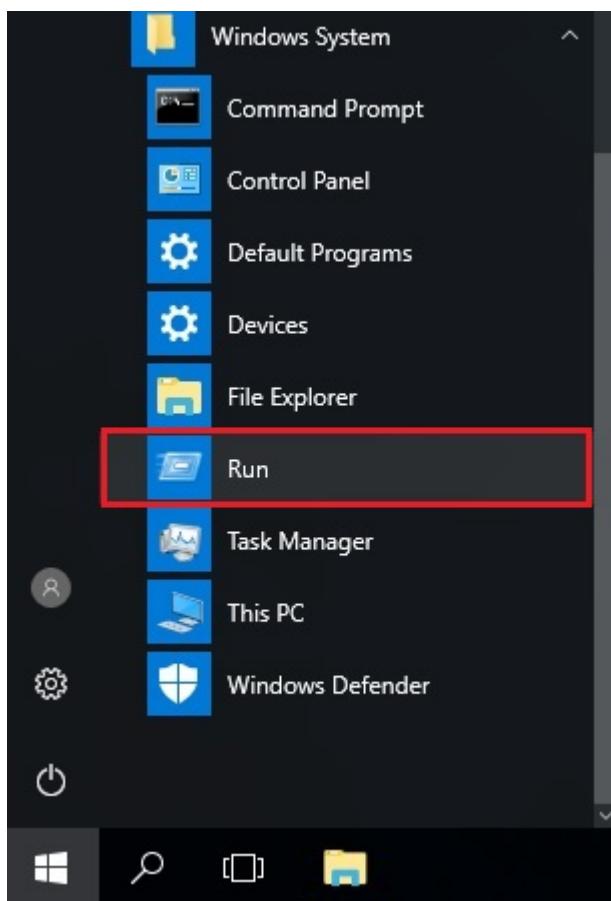
2. In the Windows Run window, enter **telnet** followed by the Moxa switch's IP address (192.168.127.253). You can also issue the Telnet command from a DOS prompt.
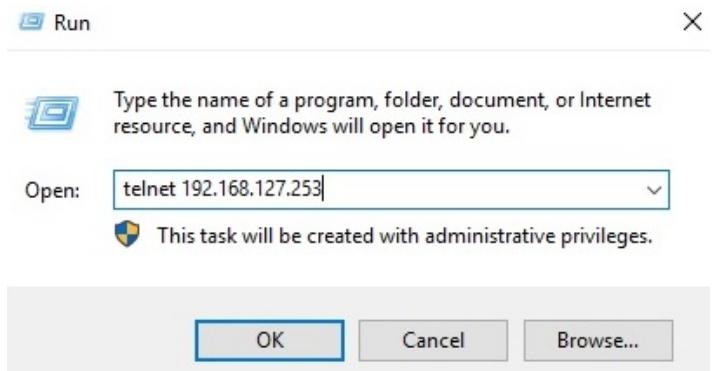
3. Log in to the Telnet console using the default login name **admin** and password **moxa**. This password will be required to access any of the consoles (web, serial, Telnet).
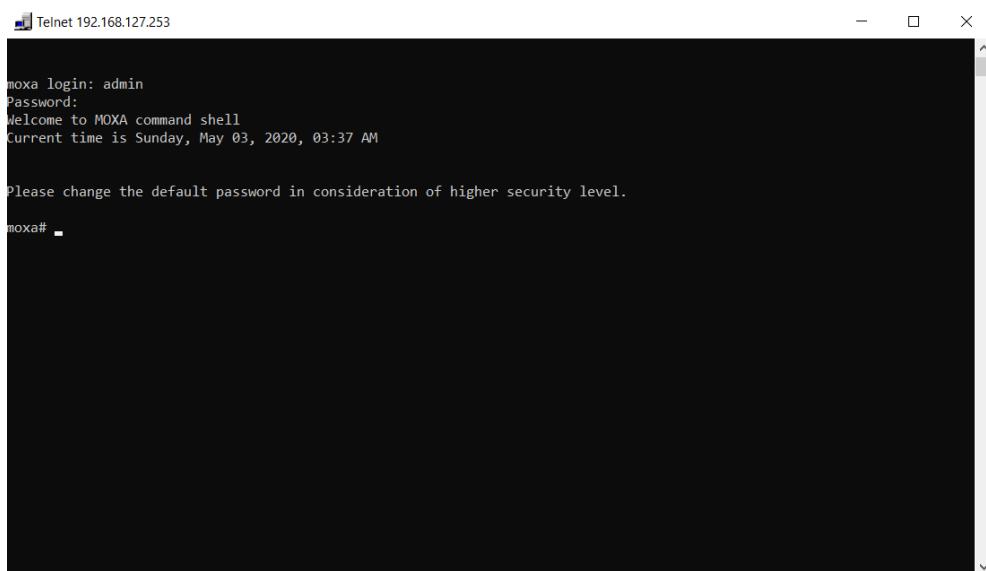
4. When successfully connected to the switch, you can start configuring the switch parameters by using command line instructions.

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

Command Modes

Basic Configuration

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

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

```
moxa# ?

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

moxa#
```

Understanding All Command Modes

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

Mode	Access Method	Prompt	Exit Method	About This Mode
User EXEC	Begin a new session and login as **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	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.

	by an interface identification.			

Refer to the following example of changing configuration modes below.

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

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

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

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

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

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

Help Messages

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

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

Special Usage and Limitations

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

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

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

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

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

Abbreviated Commands

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

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

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

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

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

```
moxa# c
EXEC commands :

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

No and Default Forms of Commands

A "**no**" command can 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.

The following topics are covered in this chapter:

❑ **System**
  ➢ System Management
  ➢ Account Management
  ➢ Network
  ➢ Time
❑ **Port**
  ➢ Port Interface
❑ **Layer 2 Switching**
  ➢ VLAN
  ➢ MAC
  ➢ Multicast
❑ **Network Redundancy**
  ➢ Layer 2 Redundancy
❑ **Management**
  ➢ Network Management
❑ **Security**
  ➢ Device Security
  ➢ Network Security
  ➢ Authentication
❑ **Diagnostics**
  ➢ System Status
  ➢ Event Notification
  ➢ Diagnosis
  ➢ Maintenance and Tool

System

System Management

Information Setting

Configure Device Hostname

<u>**Commands**</u>

hostname text
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

<u>**Commands**</u>

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

<u>**Commands**</u>

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	

Show Location Information

<u>**Commands**</u>

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> } **device-firmware**

Syntax Description	**copy**	Copy the target file or input
	device-firmware	The system firmware
	tftp_url	The address of the remote TFTP server in the format "tftp://server/filename"
	sftp_url	The address of the remote SFTP server in the format "sftp://username:password@server/filename"
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# copy tftp://192.168.127.2/FWR_TSN-G5000_v0.1_2019_0904_1452.rom device-firmware	
Error Messages	N/A	
Related Commands	N/A	

Configuration Backup and Restore

Copy Running Configuration

Commands

copy running-config { <tftp_url> | <sftp_url> [included-default] [password <string (60)>] }

copy { <tftp_url> | <sftp_url> } **running-config password <string 60>}**

Syntax Description	**copy**	Copy the target file or input
	running-config	The running configuration to be copied
	tftp_url	The location of the file to be copied on the remote TFTP server
	sftp_url	The location of the file to be copied on the remote SFTP server
	included-default	Include default configurations in the configuration file
	password	The password for the default username
	<string (60)>	The length of the password (max. 60 characters)
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# copy running-config tftp://192.168.127.2/config.ini included-default password 12345	
	moxa# copy tftp://192.168.127.2/config.ini running-config password 12345	
Error Messages	N/A	
Related Commands	N/A	

Copy Startup Configuration

Commands

copy startup-config { <tftp_url> | <sftp_url> [included-default] [password <string (60)>] }

Syntax Description	**copy**	Copy the target file or input
	startup-config	The startup configuration to be copied
	tftp_url	The location of the file to be copied on the remote TFTP server
	sftp_url	The location of the file to be copied on the remote SFTP server
	included-default	Include default configurations in the configuration file
	password	The password for the default username
	<string (60)>	The length of the password (max. 60 characters)
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# copy startup-config tftp://192.168.127.2/config.ini included-default password 12345	
Error Messages	N/A	
Related Commands	N/A	

Account Management

User Account

Configure User Account Setting

Commands

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

no username username

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	# show user USER ACTIVE PRIVILEGE EMAIL admin 1 admin admin@sample.com user 1 user user@sample.com supervisor 1 supervisor supervisor@sample.com	
Error Messages	N/A	
Related Commands	username	

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 numbers flag for password validation
	symbols	Configure at least 1 symbols 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 8	
Error Messages	N/A	
Related Commands	password minimum-length	

Show Password Validation Rules

<u>**Commands**</u>

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	

Network

IP Configuration

Configure IP Management Address

<u>**Commands**</u>

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	

DHCP Server

Show IP DHCP

<u>**Commands**</u>

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

Syntax Description	**show**	Display configuration/status information
	ip	Display IP information
	dhcp	Display DHCP server information
	binding	Display binding information
	static	Display MAC-based IP assignment information
	port-based-ip-assignment	Display port-based IP assignment information
Defaults	N/A	
Command Modes	User EXEC	
	Privileged EXEC	
Usage Guidelines	N/A	
Examples	moxa# show ip dhcp	
	DHCP Server Mode: DHCP / MAC-based IP Assignment	
	DHCP Pool List	

	Index : 1	
	State : Enable	
	First IP Address : 192.168.127.10	
	Last IP Address : 192.168.127.20	
	Netmask : 255.255.255.0	
	Lease Time (secs) : 86400	
	Default Gateway :	
	NTP Server :	
	DNS Server 1 :	
	DNS Server 2 :	
	moxa# show ip dhcp binding	
	Host Name IP Address MAC Address Time Left	
	-------------------- -------------- ----------------- ----------------	
	VirtualBox 192.168.127.10 08:00:27:f6:bf:98 23 h: 59 m: 55 s	
	// A MAC-based IP assignment is created	
	moxa# show ip dhcp static	
	DHCP Server Mode: DHCP / MAC-based IP Assignment	
	MAC-based IP Assignment List	

	Index : 1	
	State : Enable	
	Host Name : host1	
	Host IP Address : 192.168.127.30	
	Host Netmask : 255.255.255.0	
	MAC Address : 08:00:27:f6:bf:98	
	Lease Time (secs) : 86400	
	Default Gateway :	
	NTP Server :	
	DNS Server 1 :	
	DNS Server 2 :	

	moxa# show ip dhcp binding Host Name IP Address MAC Address Time Left -------------------- --------------- ----------------- ---------------- host1 192.168.127.30 08:00:27:f6:bf:98 (static) // A Port-based IP assignment is created moxa# show ip dhcp port-based-ip-assignment DHCP Server Mode: Port-based IP Assignment Port-based IP Assignment List -- Port : 2 State : Enable Static IP Address : 192.168.127.40 Host Netmask : 255.255.255.0 Lease Time (secs) : 86400 Default Gateway : NTP Server : DNS Server 1 : DNS Server 2 : moxa# show ip dhcp binding Host Name IP Address MAC Address Time Left -------------------- --------------- ----------------- ---------------- 192.168.127.40 (static)
Error Messages	N/A
Related Commands	N/A

Configure/Disable DHCP Server Mode

Commands

dhcp-server mode disable

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

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

Enable/Disable IP DHCP Pool

Commands

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

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

Remove IP DHCP Pool

Commands

no ip dhcp pool <integer>

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

Enable/Disable IP DHCP Static Pool

<u>**Commands**</u>

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

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

Remove IP DHCP Static Pool

<u>**Commands**</u>

no ip dhcp static pool <string (63)>

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

DHCP and MAC-based IP Assignment

Configure DHCP Server Pool

Commands

network <ucast_addr> <ucast_addr> <ip_mask>

Syntax Description	**network**	Configure network parameters
	<ucast_addr>	The address pool starting IP address
	<ucast_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

<u>**Commands**</u>

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

<u>**Commands**</u>

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

<u>**Commands**</u>

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 NPT 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	

Time

Time Zone

Configure Clock Time Zone

Commands

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

Syntax Description	**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	

System Time

Configure Clock Source

Commands

clock source { local | ntp | sntp | ptp}

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)
	ptp	Use Precision Time Protocol (PTP)
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	N/A	
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 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 Start Date

Commands

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

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

Configure Clock Summertime End Date

Commands

clock summer-time start-date month day year hour minute

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

Configure Clock Summertime Offset

Commands

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

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

Configure NTP Authentication Key

Commands

ntp authentication-key key-index key-id md5 key-string
no ntp authentication-key key-index

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

<u>**Commands**</u>

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

<u>**Commands**</u>

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

show clock

Syntax Description	**show**	Display the configuration/status information.
	clock	Display the 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	

Port

Port Interface

Port Setting

Show Interface Status

<u>**Commands**</u>

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 100 Mbps Auto MDIX(Auto) Eth1/2 not connected - - Auto - Eth1/3 not connected - - Auto - Eth1/4 not connected - - Auto - Eth1/5 not connected - - Auto - Eth1/6 not connected - - Auto - Eth1/7 not connected - - Auto - Eth1/8 not connected - - Auto - moxa#	
Error Messages	N/A	
Related Commands	N/A	

Show Interface Type and ID

<u>**Commands**</u>

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

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

Show Interface Description

<u>**Commands**</u>

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 interface description	
	Interface AdminStatus OperStatus Description	
	--------- ----------- ---------- -----------	
	Eth1/1 up up	
	Eth1/2 up down	
	Eth1/3 up down	
	Eth1/4 up down	
	Eth1/5 up down	
	Eth1/6 up down	
	Eth1/7 up down	
	Eth1/8 up down	
	moxa#	
Error Messages	N/A	
Related Commands	N/A	

Configure Shutdown Settings

<u>**Commands**</u>

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	
	moxa(config)# interface ethernet 1/1	
	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	If the port is a combo port, the port duplex configuration is only effective on the copper interface.	
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	If the port is a combo port, the speed configuration is only effective on the copper interface.	
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 }

Configure mdix Setting

<u>**Commands**</u>

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	If the port is a combo port, the mdix configuration is only effective on the copper interface.	
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	

Configure Auto-Negotiation Setting

<u>**Commands**</u>

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	If the port is a combo port, the auto-negotiation configuration is only effective on the copper interface.	
Examples	moxa(config-if)# auto-negotiation	
Error Messages	N/A	
Related Commands	speed { 10 | 100 } duplex { full | half }	

Layer 2 Switching

VLAN

IEEE 802.1Q

Show VLAN Interface Status

<u>**Commands**</u>
show vlan

Syntax Description	**show**	Display configuration/statistics/general information
	vlan	Display the VLAN interface status
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	N/A	

Examples	moxa# show vlan
	Vlan database
	------------- 	
	Vlan ID : 1
	Member Ports : Eth1/1, Eth1/2, Eth1/3, Eth1/4
	                        Eth1/5, Eth1/6, Eth1/7, Eth1/8
	Untagged Ports : Eth1/1, Eth1/2, Eth1/3, Eth1/4
	                        Eth1/5, Eth1/6, Eth1/7, Eth1/8
	--- 	
	moxa#	

Error Messages	N/A	
Related Commands	vlan <vlan-id> ports add <interface-type> <1/a-b> untagged <interface-type> <1/a-b> vlan active vlan name	

Show VLAN Port Configuration

Commands

show vlan port config port [{ < 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
	interface-type	The Ethernet type
	interface-id integer	The interface ID: slot number/port number
Defaults	N/A	
Command Modes	Privileged EXEC	
	User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show vlan port config port eth 1/1	
	Vlan Port configuration table	
	Port Eth1/1	
	Port Vlan ID: 1	
	Port Mode : Access	
	moxa#	
Error Messages	N/A	
Related Commands	Switchport pvid	
	Switchport acceptable-frame-type	
	Switchport ingress-filter	
	Switchport mode	
	vlan restricted	
	group restricted	
	switchport filtering-utility-criteria	

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 {<interface-type> <interface-id> }]

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

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

show mac-address-table static unicast [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] [interface {<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-id integer	The interface ID: slot number/port number
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show mac-address-table 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 Total Mac Addresses displayed: 3	
Error Messages	N/A	
Related Commands	mac-address-table	

Show MAC Address Table for Dynamic Multicast and Unicast

<u>**Commands**</u>

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

show mac-address-table dynamic unicast [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>]
[interface <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 auto-negotation ranges from 1 to 4094. For example, 4000-4010 will show information for those VLAN IDs.
	interface-id	The slot number/port number
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show mac-address-table dynamic unicast VLAN MAC Address Type Ports ---- ----------- ---- ----- 1 00:60:6e:ba:ba:0b Learnt Eth1/1 Total Mac Addresses Displayed: 1 moxa#	
Error Messages	N/A	
Related Commands	mac-address-table	

Show MAC Address Table for Static Multicast and Unicast

<u>**Commands**</u>

show mac-address-table static multicast [address <aa:aa:aa:aa:aa:aa>] [interface { <interface-type> <interface-id> }]

show mac-address-table static unicast [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] [interface { <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-id	The slot number/port number
Defaults	N/A	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show mac-address-table static unicast vlan 1 Vlan MAC Address Type Ports 1 00:01:02:03:04:05 Static Eth1/5 Total Mac Addresses Displayed: 1 moxa#	
Error Messages	N/A	
Related Commands	mac-address-table	

Show VLAN Management

<u>**Commands**</u>

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 1 moxa#	
Error Messages	N/A	
Related Commands	Management vlan No management vlan	

Create/Delete a VLAN

Commands

vlan <vlan-id>

no vlan <vlan-id>

SyntaxDescription	**vlan/no vlan**	Create/delete a VLAN
	vlan-id	The VLAN identifier
Defaults	N/A	
Command Modes	Configuration	
Usage Guidelines	N/A	
Examples	moxa(config)# vlan 100	
	moxa(config)# no vlan 100	
	moxa(config)#	
Error Messages	N/A	
Related Commands	interface vlan <vlan-id>	
	show vlan	

Configure VLAN Name

Commands

vlan name <vlan name string>

Syntax Description	**vlan name**	Configure VLAN name
	vlan name string	Configure VLAN name string, 32 characters max.
Defaults	N/A	
Command Modes	Global configuration	
Usage Guidelines	N/A	
Examples	moxa# con	
	moxa(config)# vlan 1	
	moxa(config-vlan)# vlan name test	
Error messages	N/A	
Related commands	N/E	

Configure VLAN Mode Member Ports

Commands

ports add {member ([<iftype> <iface_list>]) | untagged ([<iftype> <iface_list>]}

vlan ports set member ([<iftype> <iface_list>]) [untagged ([<iftype> <iface_list>]

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

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

Syntax Description	**ports/no ports**	Set/delete member/untagged
	add	Add member/untag
	set	Overwrite member/untagged
	slot/port-port	The slot number/port number
	interface-type	The Ethernet type
	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.
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 **vlan** <vlan-id> to enter VLAN config mode.	
Examples	moxa# config	
	moxa(config)# interface ethernet 1/3	
	moxa(config-if)# switchport mode trunk	
	moxa(config-if)# exit	
	moxa(config)# vlan10	
	moxa(config-vlan)#ports add member ethernet 1/3 tagged all	
	moxa(config-vlan)#ports add member ethernet 1/3 tagged ethernet 1/3	
Error Messages	N/A	
Related Commands	vlan active	
	switchport mode	
	show vlan	
	show mac-address-table count	

Configure a Static Unicast MAC Address in the Forwarding Database

Commands

mac-address-table static unicast <aa:aa:aa:aa:aa:aa> vlan <vlan-id> set [interface ([<interface-type> <slot/port-port,slot/port,...>] [<interface-type> <slot/port-port,slot/port,...>]

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-id	The slot number/port number
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 interface ethernet 1/2	
Error Messages	N/A	
Related Commands	mac-address-table static multicast vlan vlan ports add show mac-address-table static unicast	

Configure MAC Address Table Aging Time

Commands

mac-address-table aging-time <10-300 seconds>
no mac-address-table aging-time

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 to its default value.
	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

<u>**Commands**</u>

switchport pvid <vlan-id>
no switchport pvid

Syntax Description	**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	If a PVID does not exist for this system, it will be created automatically after configuration. If the port is configured to be in Access Mode, the actions below will be applied automatically. 1. Remove this port from member port list if it is bound to another VID which is different from PVID 2. Modify this port into an untagged member of this PVID If the port is configured to be in Trunk Mode, the port will automatically be modified into a tagged member of this PVID.	
Examples	moxa(config-if)# switchport pvid 1	
Error Messages	N/A	
Related Commands	switchport	

Configure Switch Port Operation Mode

<u>**Commands**</u>

switchport mode {access | trunk}

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: 1. The acceptable frame type is set as "Admit untagged and pri-tagged". 2. The port is not a tagged member of any VLAN. 3. 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: 1. The acceptable frame type is set as "Admit tagged only" 2. The port is not an untagged member of any VLAN.
Defaults	The default port operation mode is set to Access	
Command Modes	Configuration	
Usage Guidelines	When changing from trunk 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 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 changed into a tagged member.
	Forces the accept frame type to be set to "Admit tagged only"
Examples	moxa (config-if)# switchport mode access
Error Messages	N/A
Related Commands	switchport
	vlan ports
	switchport acceptable-frame-type
	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	Discarding the current operation mode of the port, this command will change the port to access mode and the following changes will automatically apply:	
	Forces the acceptable frame type to be set to "untagged AND priority tagged"	
	Sets PVID to specified a VLAN	
	Changes the port into an untagged member of a specified VLAN and removes this port from any other VLANs.	
	Sets the port mode to access mode	
Examples	moxa(config-if)# switchport access vlan 10	
Error Messages	N/A	
Related Commands	show vlan port config	
	show vlan	

Configure VLAN Management

<u>**Commands**</u>

management vlan <vlan-id>
no management vlan <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
Defaults	The default management VLAN ID is set to 1	
Command Modes	Privileged EXEC User EXEC	
Usage Guidelines	N/A	
Examples	moxa(config)# management vlan 1	
Error Messages	N/A	
Related Commands	N/A	

MAC

Static Unicast

Configure a Static Unicast MAC Address in the Forwarding Database

<u>**Commands**</u>
mac-address-table static unicast <aa:aa:aa:aa:aa:aa> vlan <vlan-id> **set** [interface ([<interface-type>
<slot/port-port,slot/port,...>] [<interface-type> <slot/port-port,slot/port,...>] [status { permanent }]
no mac-address-table static unicast <aa:aa:aa:aa:aa:aa> vlan <vlan-id>

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-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

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-type> <interface-id> }]

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

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

show mac-address-table static unicast [vlan <vlan-range>] [address <aa:aa:aa:aa:aa:aa>] <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-id	The slot number/port number
Defaults	N/A	
Command Modes	Privileged EXEC/User EXEC	
Usage Guidelines	N/A	
Examples	moxa# show mac-address-table 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 Total Mac Addresses displayed: 3	
Error Messages	N/A	
Related Commands	mac-address-table	

Multicast

Static Multicast

Show MAC Address Table for Static Multicast

Commands

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

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
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 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

<u>**Commands**</u>

mac-address-table static multicast <aa:aa:aa:aa:aa:aa> vlan <vlan-id>   {add | set} interface
[<interface-type> <slot/port-port,slot/port,...>] [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
	Set	Overwrite the new interface port
	interface	Configure member ports details.
	status	The status of the static multicast entry.
	permanent	Entry remains even after the next reset of the bridge
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	
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."	
Related Commands	show mac-address-table static multicast	

Network Redundancy

Layer 2 Redundancy

Spanning Tree

Configure Spanning Tree Compatibility

<u>**Commands**</u>

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	

Configure Spanning Tree Priority

<u>**Commands**</u>

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*(ForwardDelay -1)>=MaxAge >= 2*(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*(Forward time -1)>=Max age time >= 2*(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*(ForwardDelay -1)>=MaxAge >= 2*(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*(Forward time -1)>=Max age time >= 2*(Hello time + 1)	
Related Commands	show spanning-tree show spanning-tree detail	

Configure Spanning Tree Maximum Age

<u>**Commands**</u>

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*(ForwardDelay -1)>=MaxAge >= 2*(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*(Forward time -1)>=Max age time >= 2*(Hello time + 1)	
Related Commands	show spanning-tree show spanning-tree detail	

Configure Spanning Tree Transmission Hold Counter

<u>**Commands**</u>

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

<u>**Commands**</u>

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

<u>**Commands**</u>

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 to 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

<u>**Commands**</u>

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	

Clear Spanning Tree Detected Protocols

Commands

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

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
Defaults	N/A	
Command Modes	User EXEC mode	
Usage Guidelines	N/A	
Examples	moxa# clear spanning-tree detected protocols interface ethernet 1/1	
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> }
show spanning-tree interface { ethernet <slot/port> } detail

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
	detail	Detailed information about the port and bridge
Defaults	N/A	
Command Modes	User EXEC Mode	
Usage Guidelines	N/A	
Examples	moxa# show spanning-tree interface ethernet 1/2 moxa# show span in eth 1/1 Root State Cost Prio Type ----------- ----- ----- ----- ----- Disabled Disable 200000000 128 SharedLAN moxa#	
Error Messages	N/A	
Related Commands	N/A	

Show Spanning Tree Details

<u>**Commands**</u>

show spanning-tree [detail]

Syntax Description	**show**	Display the configuration/statistics/general information
	spanning-tree	Spanning Tree related information
	detail	Detailed Spanning Tree information
Defaults	N/A	
Command Modes	User EXEC Mode	
Usage Guidelines	N/A	

Examples	moxa# show spanning-tree
	
	Root Id Priority 0
	      Address 00:00:00:00:00:00
	      Cost 0
	      Port 0
	      Max Age 20 sec
	      Forward Delay 15 sec
	      Hello Time 2 sec
	
	Spanning tree Protocol has been disabled
	Bridge Id Priority 32768
	      Address 00:90:E8:11:22:31
	      Hello Time 2 sec
	      Max Age 20 sec
	      Forward Delay 15 sec
	
	<pre>Port Role State Cost Prio Type
	---- ---- ----- ---- ---- ------
	Eth1/1 Disabled Discarding 20000 128 SharedLan
	Eth1/2 Disabled Discarding 20000 128 SharedLan
	Eth1/3 Disabled Discarding 20000 128 SharedLan
	Eth1/4 Disabled Discarding 20000 128 SharedLan
	Eth1/5 Disabled Discarding 20000 128 SharedLan
	Eth1/6 Disabled Discarding 20000 128 SharedLan
	Eth1/7 Disabled Discarding 20000 128 SharedLan
	Eth1/8 Disabled Discarding 20000 128 SharedLan</pre>moxa#	

Error Messages	N/A	
Related Commands	N/A	

Management

Network Management

SNMP

Show SNMP Server Information

<u>**Commands**</u>

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

<u>**Commands**</u>

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

<u>**Commands**</u>

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	
Related Commands	snmp-server	

Configure SNMP Server Access Mode

<u>**Commands**</u>

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 enabled 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

<u>**Commands**</u>

snmp-server community read-only <community-name(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
	string (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	Configure the community name of the SNMP server
	string (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

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

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)#	
	moxa(config)# snmp-server user testAuthPriv authority read-write auth-type md5 auth-passwd 1111111111 encryption des encryption-key 2222222222	
	moxa(config)#	
	moxa(config)#	
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-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
Related Commands	snmp-server
	show snmp-server

Delete SNMP Server User Account

<u>Commands</u>

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	moxa(config)# no snmp-server user testNoAuthNoPriv	
	moxa(config)# no snmp-server user testAuthNoPriv	
	moxa(config)# no snmp-server user testAuthPriv	
Error Messages	% 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	
Related Commands	snmp-server	
	show snmp-server	

Configure SNMP Server Transport Protocol Mode

<u>Commands</u>

snmp-server transport-protocol { udp | tcp }

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

SNMP Trap/Inform

Show SNMP Trap Information

<u>**Commands**</u>

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	
Related Commands	snmp-trap	

Show SNMP Trap User Account Information

<u>**Commands**</u>

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	

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

<u>**Commands**</u>

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

<u>**Commands**</u>

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# config moxa(config)# snmp-trap user test auth-type none encryption disable moxa(config)# snmp-trap user test auth-type md5 auth-passwd 1111111111 encryption disable moxa(config)# snmp-trap user test auth-type md5 auth-passwd 1111111111 encryption des encryption-key 2222222222	
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	

Security

Device Security

Management 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 1661	
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	

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 (0-1440)>

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

Show Session Timeout Information

<u>**Commands**</u>

show session timeout

Syntax	**show**	Display running information
Description	**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

<u>**Commands**</u>

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

<u>**Commands**</u>

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

<u>**Commands**</u>

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

<u>**Commands**</u>

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

no trusted-access <ucast_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
	ucast_addr	Configure the network or host IP address
	ip_mask	Configure the subnet mask of the IP address
	"/"	Configure the CIDR notation
	short (0-32)	Configure the prefix length
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

<u>**Commands**</u>

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

<u>**Commands**</u>

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

<u>**Commands**</u>

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

<u>**Commands**</u>

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	

Export Web SSL Certificate Signing Request via TFTP/SFTP

<u>**Commands**</u>

web signing-request export {<tftp_url> | <sftp_url>}

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

Re-generate New SSH Key

<u>Commands</u>

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

Traffic Storm Control

Enable/Disable Storm Control

<u>Commands</u>

storm-control { bc | mc | bc_mc } level <rate-value(1000-1488000)>
no storm-control {bc | mc | bc_mc }

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
	bc_mc	Configure broadcast and multicast packet storm control parameters
	level	Configure the control suppression level
	rate-value 1000-1488000	The storm control rate value
Defaults	N/A	
Command Modes	Privileged EXEC Global Configuration	
Usage Guidelines	N/A	
Examples	moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# storm-control bc level 1000 moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# storm-control bc_mc level 2000 moxa# configure moxa(config)# interface ethernet 1/1 moxa(config-if)# no storm-control bc	
Error Messages	'Invalid: The value of traffic storm control should be less than ingress rate limit threshold.'	

	'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)
Related Commands	moxa(config-if)# no storm-control {bc | mc | bc_mc }
	moxa# show [<ifXtype> <ifnum>] storm-control

Show Storm Control Status

Commands

show storm control interface [<ifXtype> <ifnum>]

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	moxa# show storm-control interface ethernet 1/1 Storm control configuration Port Idx: 1 Broadcast Storm Control : Enabled Broadcast Storm Control Level : 13000 Multicast Storm Control : Disabled moxa#	
Error Messages	N/A	
Related Commands	moxa(config-if)# storm-control {bc | mc | bc_mc } level <rate-value(625-1488100)> moxa(config-if)# no storm-control {bc | mc | bc_mc }	

Authentication

Login Authentication

Configure Login Authentication Settings

Commands

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

Syntax Description	**login**	Configure login parameters
	authentication	Configure authentication 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

<u>**Commands**</u>

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	

Diagnostics

System Status

Utilization

Show Device Current Information

<u>**Commands**</u>

show env {all | power | RAM | CPU }

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

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# config	
	moxa(config)# clear statistics interface ethernet 1/1	
Error messages	N/A	
Related commands	show statistics	

Event Notification

Show Event Notification

Commands

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

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

Configure Event Notification Settings

Commands

event-notification general-event all

event-notification general-event cold-start

event-notification general-event all action trap email relay

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

no event-notification general-event all

Syntax Description	**no**	Disable the configuration/deletes the entry/reset to default value
	event-notification	Configure event notifications
	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 system certification 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 on
	di-on	Notify when the digital input is on
	di-off	Notify when the digital input is off
	action	Set action for event notification
	trap	Set trap action for notification
	email	Set email action for notification
	relay	Set relay action for notification
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 email relay moxa(config)# no event-notification general-event all action trap email relay	
Error Messages	N/A	
Related Commands	show event-notification event-notification port-event event-notification switching-event	

Configure Notification for Switching Event Settings

<u>**Commands**</u>

event-notification switching-event all

event-notification switching-event all action trap email relay

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

no event-notification switching -event all

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
	rstp-topology-changed	Notify when the RSTP network topology changes
	lldp-table-changed	Notify when the LLDP remote table changes
	action	Set action for event notification
	trap	Set trap action for notification
	email	Set email action for notification
	relay	Set relay action for notification
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 switching-event all action trap	
	moxa(config)# no event-notification switching-event all action trap email	
Error Messages	N/A	
Related Commands	show event-notification	
	event-notification general-event	
	event-notification port-event	

Relay Alarm Cut-off

Configure Relay Alarm Cut-off Settings

<u>**Commands**</u>

relay alarm cut-off relay

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

Email Notification

Configure Email Notification Server

<u>Command</u>

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 server parameters
	server-address	Configure the email notification server IP address
	server-port	Configure the email-notification server port
	username	Configure the email notification server username
	password	Configure the email notification 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 Email Notification Sender

<u>Commands</u>

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 Email Notification Server TLS Mode Setting

<u>Commands</u>

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 the TLS mode
	disable	Disable the 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 Email Notification Receiver

<u>Commands</u>

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
	index	Configure the index of the receiver
	string (60)	The receiver's name up to 60 characters
	integer (1-5)	The number index of the receiver ranging from 1 to 5
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

<u>Commands</u>

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	

Syslog

Configure Logging Server

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 IP address
	dns_host_name	The host domain name
	port	Configure port parameters
	integer (1-65535)	The 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 Logging Server

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 syslog 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 Logging Syslog Server

Commands

logging syslog-server { enable | disable }

Syntax Description	**logging**	Configure logging 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	

Show Syslog Server Configuration

Commands

show logging syslog-server

Syntax Description	**show**	Display configuration/status information
	logging	Display logging information
	syslog-server	Display syslog server information
Defaults	N/A	
Command Modes	Privileged EXEC / User EXEC	
Examples	moxa# show logging syslog-server Syslog Server Configuration Syslog Enable: disable Index Server Address Port Status ----- ------------------------------- ----- ----- 1 111.2.21.1 514 enable 2 200.2.2.2 2540 enable 3 disable		
Help Message	Display the Syslog logging server table	
Error Messages	N/A	
Related Commands	logging server enable logging-server <short(1-3)> {ipv4 <ucast_addr>	<dns_host_name>} [port <integer(1-65535)>]	

Diagnosis

LLDP

Show LLDP Information

<u>**Commands**</u>

show lldp

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

Show LLDP Neighbors

<u>**Commands**</u>

show lldp neighbors

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

Show LLDP Traffic

show lldp traffic

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

Enable/Disable LLDP Function

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	

Configure Global LLDP Transmission 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 ranging from 5 to 32768 seconds
Defaults	The interval between successive transmit cycles is set to 30 seconds by default	
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 LLDP Holdtime Multiplier

<u>**Commands**</u>

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	A multiplier on the transmit-interval used to compute the TTL value of txTTL.
	value	The multiplier value ranging from 2 to 10
Defaults	The default holdtime multiplier is set to 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	

Ping

Ping the Host

Commands

ping host [repeat repeat-count] [size payload-size] [timeout request-timeout]

Syntax Description	**ping**	Ping a target to check its status
	host	The IP address or domain name of the node to be pinged
	repeat	The number of ping packets that are sent to the destination address
	repeat-count	The repeat value
	size	The size of the ping packet
	payload-size	The length of the ping packet value
	timeout	The time in seconds after which the entity waiting for the ping response times out
	request-timeout	The timeout value
Defaults	N/A	
Command Modes	User EXEC Privileged EXEC	
Usage Guidelines	N/A	
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 --- 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	
Error Messages	N/A	
Related Commands	N/A	

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	
	--------------- ----------------	
	192.168.127.113 00:05:1b:a1:ae:62	
	192.168.127.112 00:05:1b:a3:53:d6	
Error Messages	N/A	
Related Commands	N/A	

Event Log

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

Show Logging 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 Logging Event Log

Commands

clear logging event-log

Syntax Description	**clear**	Clear the event
	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 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	The system event log
	tftp://server/filename	The address of the remote TFTP server in the format "tftp://server/filename"
	sftp://<username>:<password>@server/filename	The address of the remote SFTP server 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 the log capacity
	threshold	Configure the log capacity threshold
	short (50-100)	The log capacity threshold in percentage
Defaults	The default log threshold is set to 80 entries	
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	Configure logging parameters
	log-capacity	Configure the log capacity
	threshold	Configure the log capacity threshold
Defaults	The default log threshold is set to 80 entries	
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 Setting

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	

Maintenance and Tool

Locator

Show the Locator

Commands

locator [duration]

Syntax Description	**locator**	Activate the device locator so that the LED on the device blinks
	duration	The duration of locator activation 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

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

Logout

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	