



CHAPTER 3

Auto Smartports and Static Smartports Macros CLI Commands

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debug macro

To enable debugging of the Auto Smartports macro activity, use the **debug macro** command in privileged EXEC. Use the **no** form of this command to disable debugging.

debug macro {**action** | **all** | **api** | **common** | **detector** | **policydir** | **server** | **xml**}

no debug macro {**action** | **all** | **api** | **common** | **detector** | **policydir** | **server** | **xml**}

Syntax Description

action	Displays all action debug messages.
all	Displays all debug messages.
api	Displays all API debug messages.
common	Displays common debug messages.
detector	Displays detector error debug messages.
policydir	Displays policy director debug messages.
server	Displays server debug messages.
xml	Display XML debug messages.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(52)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, 2975, 2960, and 2918 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines

The **undebug macro** command is the same as the **no debug macro** command.

When you enable debugging on a switch stack, it is enabled only on the stack master. To enable debugging on a stack member, you can start a session from the stack master by using the **session switch-number** privileged EXEC command. Then enter the **debug** command at the command-line prompt of the stack member. You also can use the **remote command stack-member-number LINE** privileged EXEC command on the stack master switch to enable debugging on a member switch without first starting a session.

Related Commands

Command	Description
show debugging	Displays information about the enabled types of debugging.

macro

To apply a macro to an interface or to apply and debug a macro on an interface, use the **macro** command in interface configuration mode.

```
macro {apply | trace} macro-name [parameter {value}] [parameter {value}]
[parameter {value}]
```

Syntax Description

apply	Applies a macro to an interface.
trace	Applies a macro to an interface and then debugs it.
<i>macro-name</i>	Specifies the name of the macro.
parameter <i>value</i>	(Optional) Specifies unique parameter values that are specific to the interface. You can enter up to three keyword-value pairs. Parameter keyword matching is case sensitive. All matching occurrences of the keyword are replaced with the corresponding value.

Defaults

This command has no default setting.

Command Modes

Interface configuration

Command History

Release	Modification
12.1(19)EA1	This command was introduced on Catalyst 3750 and 3560 switches.
12.2(18)SE	The parameter value keywords were added on Catalyst 3750 and 3560 switches.
12.2(25)FX	This command was introduced on Catalyst 2960 switches.
12.2(44)SE	This command was introduced on Catalyst 2918 switches.
12.2(46)EX	This command was introduced on Catalyst 2975 switches.
12.2(35)SE2	This command was introduced on the Catalyst 3750-E and 3560-E switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines

You can use the **macro apply** *macro-name* interface configuration command to apply and show the macros running on an interface.

You can use the **macro trace** *macro-name* interface configuration command to apply and then debug the macro to find any syntax or configuration errors.

If a command fails because of a syntax error or a configuration error when you apply a macro, the macro continues to apply the remaining commands to the interface.

When creating a macro that requires the assignment of unique values, use the **parameter value** keywords to designate values specific to the interface.

Keyword matching is case sensitive. All matching occurrences of the keyword are replaced with the corresponding value. Any full match of a keyword, even if it is part of a larger string, is considered a match and is replaced by the corresponding value.

Some macros might contain keywords that require a parameter value. You can use the **macro apply macro-name ?** command to display a list of any required values in the macro. If you apply a macro without entering the keyword values, the commands are invalid and are not applied.

There are Cisco-default Smartports macros embedded in the switch software. You can display these macros and the commands that they contain by using the **show parser macro** user EXEC command.

Follow these guidelines when you apply a Cisco-default Smartports macro on an interface:

- Display all macros on the switch by using the **show parser macro** user EXEC command. Display the contents of a specific macro by using the **show parser macro name macro-name** user EXEC command.
- Keywords that begin with \$ mean that a unique parameter value is required. Append the Cisco-default macro with the required values by using the **parameter value** keywords.

The Cisco-default macros use the \$ character to identify required keywords. You can use the \$ character to define keywords when you create a macro.

When you apply a macro to an interface, the macro name is automatically added to the interface. You can display the applied commands and macro names by using the **show running-config interface interface-id** user EXEC command.

A macro applied to an interface range behaves the same way as a macro applied to a single interface. When you use an interface range, the macro is applied sequentially to each interface within the range. If a macro command fails on one interface, it is still applied to the remaining interfaces.

You can delete a macro-applied configuration on an interface by entering the **default interface interface-id** interface configuration command.

Examples

After you use the **macro name** global configuration command, you can apply it to an interface. This example shows how to apply a user-created macro called *duplex* to an interface:

```
Switch(config-if)# macro apply duplex
```

To debug a macro, use the **macro trace** interface configuration command to find any syntax or configuration errors in the macro as it is applied to an interface.

```
Switch(config-if)# macro trace duplex
Applying command...'duplex auto'
%Error Unknown error.
Applying command...'speed nonegotiate'
```

This example shows how to display the Cisco-default *cisco-desktop* macro and how to apply the macro and set the access VLAN ID to 25 on an interface:

```
Switch# show parser macro cisco-desktop
-----
Macro name : cisco-desktop
Macro type : default

# Basic interface - Enable data VLAN only
# Recommended value for access vlan (AVID) should not be 1
switchport access vlan $AVID
switchport mode access

# Enable port security limiting port to a single
# MAC address -- that of desktop
```

```

switchport port-security
switchport port-security maximum 1

# Ensure port-security age is greater than one minute
# and use inactivity timer
switchport port-security violation restrict
switchport port-security aging time 2
switchport port-security aging type inactivity

# Configure port as an edge network port
spanning-tree portfast
spanning-tree bpduguard enable
-----
Switch#
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)# interface gigabitethernet1/0/4
Switch(config-if)# macro apply cisco-desktop $AVID 25

```

Related Commands

Command	Description
macro description	Adds a description about the macros that are applied to an interface. This is a mandatory command for auto smartports to work.
macro global	Applies a macro on a switch or applies and traces a macro on a switch.
macro global description	Adds a description about the macros that are applied to the switch.
show parser macro	Displays the macro definition for all macros or for the specified macro.

macro auto

To configure and apply a global macro, use the **macro auto** command in privileged EXEC mode. Use the **no** form of this command to return to the default setting.

Using the CLI:

```
macro auto { apply | config } macro-name
```

Using the Cisco IOS shell scripting capability:

```
macro auto apply macro-name

macro auto config macro-name [parameter=value [parameter=value] ...]
```

Syntax Description

apply	Applies the macro.
config	Enters the macro parameters.
<i>macro-name</i>	Specifies the macro name.
<i>parameter=value</i> [<i>parameter=value</i>] ...	<i>parameter=value</i> —Replaces values for global macro parameter values. Enter values in the form of name value pair separated by a space: <name1>=<value1> [<name2>=<value2>...].

Command Default

No macros are applied to the switch.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(55)SE	This command was introduced on the Catalyst 3750-X, 3750-E, 3750, 3560-X, 3560-E, 3560, 2975, 2960, and 2918 switches.

Usage Guidelines

To remove the macro from the switch, enter the **no** forms of the macro commands.

If you enter the **macro auto config macro-name** command, you are prompted to enter values for all the macro parameters.

Use the exact text string when entering the *macro-name* and *parameters*. The entries are case sensitive.

The user-defined values appear only in the **show macro auto** or **show running-config** command output.

Examples

```
To display global macros:

Switch# macro auto apply ?
CISCO_SWITCH_AAA_ACCOUNTING      Configure aaa accounting parameters
CISCO_SWITCH_AAA_AUTHENTICATION  Configure aaa authentication parameters
CISCO_SWITCH_AAA_AUTHORIZATION   Configure aaa authorization parameters
CISCO_SWITCH_AUTO_IP_CONFIG      Configure the ip parameters
```

CISCO_SWITCH_AUTO_PCI_CONFIG	Configure PCI compliant parameters
CISCO_SWITCH_DOMAIN_NAME_CONFIG	Configure domain name
CISCO_SWITCH_ETHERCHANNEL_CONFIG	Configure the etherchannel parameters
CISCO_SWITCH_HOSTNAME_CONFIG	Configure hostname
CISCO_SWITCH_HTTP_SERVER_CONFIG	Configure http server
CISCO_SWITCH_LOGGING_SERVER_CONFIG	Configure logging server
CISCO_SWITCH_MGMT_VLAN_CONFIG	Configure management vlan parameters
CISCO_SWITCH_NAME_SERVER_CONFIG	Configure name server parameters
CISCO_SWITCH_NTP_SERVER_CONFIG	Configure NTP server
CISCO_SWITCH_RADIUS_SERVER_CONFIG	Configure radius server
CISCO_SWITCH_SETUP_SNMP_TRAPS	Configure SNMP trap parameters
CISCO_SWITCH_SETUP_USR_CONFIG	Configure the user parameters
CISCO_SWITCH_SNMP_SOURCE_CONFIG	Configure snmp source interface
CISCO_SWITCH_TACACS_SERVER_CONFIG	Configure tacacs server
CISCO_SWITCH_USER_PASS_CONFIG	Configure username and password

Switch# **macro auto config ?**

CISCO_SWITCH_AAA_ACCOUNTING	Configure aaa accounting parameters
CISCO_SWITCH_AAA_AUTHENTICATION	Configure aaa authentication parameters
CISCO_SWITCH_AAA_AUTHORIZATION	Configure aaa authorization parameters
CISCO_SWITCH_AUTO_IP_CONFIG	Configure the ip parameters
CISCO_SWITCH_AUTO_PCI_CONFIG	Configure PCI compliant parameters
CISCO_SWITCH_DOMAIN_NAME_CONFIG	Configure domain name
CISCO_SWITCH_ETHERCHANNEL_CONFIG	Configure the etherchannel parameters
CISCO_SWITCH_HOSTNAME_CONFIG	Configure hostname
CISCO_SWITCH_HTTP_SERVER_CONFIG	Configure http server
CISCO_SWITCH_LOGGING_SERVER_CONFIG	Configure logging server
CISCO_SWITCH_MGMT_VLAN_CONFIG	Configure management vlan parameters
CISCO_SWITCH_NAME_SERVER_CONFIG	Configure name server parameters
CISCO_SWITCH_NTP_SERVER_CONFIG	Configure NTP server
CISCO_SWITCH_RADIUS_SERVER_CONFIG	Configure radius server
CISCO_SWITCH_SETUP_SNMP_TRAPS	Configure SNMP trap parameters
CISCO_SWITCH_SETUP_USR_CONFIG	Configure the user parameters
CISCO_SWITCH_SNMP_SOURCE_CONFIG	Configure snmp source interface
CISCO_SWITCH_TACACS_SERVER_CONFIG	Configure tacacs server
CISCO_SWITCH_USER_PASS_CONFIG	Configure username and password

To display the parameters for a specific macro:

Switch# **macro auto config CISCO_SWITCH_AUTO_IP_CONFIG ?**

CISCO_SWITCH_DOMAIN_NAME_CONFIG	domain name parameters
CISCO_SWITCH_LOGGING_SERVER_CONFIG	logging host parameters
CISCO_SWITCH_NAME_SERVER_CONFIG	name server parameters
CISCO_SWITCH_NTP_SERVER_CONFIG	ntp server parameters
LINE	Provide parameters of form [Parameters name=value]

<cr>

Switch# **macro auto config CISCO_SWITCH_AUTO_PCI_CONFIG ?**

CISCO_SWITCH_AAA_ACCOUNTING	aaa accounting parameters
CISCO_SWITCH_AAA_AUTHENTICATION	aaa authentication parameters
CISCO_SWITCH_AAA_AUTHORIZATION	aaa authorization parameters
CISCO_SWITCH_HTTP_SERVER_CONFIG	http server parameters
CISCO_SWITCH_RADIUS_SERVER_CONFIG	radius server parameters
CISCO_SWITCH_TACACS_SERVER_CONFIG	tacacs server parameters
LINE	Provide parameters of form [Parameters name=value]

<cr>

Switch# **macro auto config CISCO_SWITCH_SETUP_SNMP_TRAPS ?**

CISCO_SWITCH_SNMP_SOURCE_CONFIG	snmp source parameters
LINE	Provide parameters of form [Parameters name=value]

<cr>

```
Switch# macro auto config CISCO_SWITCH_SETUP_USR_CONFIG ?
CISCO_AUTO_TIMEZONE_CONFIG    timezone parameters
CISCO_SWITCH_HOSTNAME_CONFIG  hostname parameter
LINE                          Provide parameters of form [Parameters
                               name=value]

<cr>
```

To set macro parameters and apply the macro using the CLI:

```
Switch# macro auto config CISCO_SWITCH_ETHERCHANNEL_CONFIG
Enter the port channel id[1-48] for 3K & 2350,[1-6] for 2K: 2
Enter the port channel type, Layer:[2-3(L3 not supported on 2K)]: 2
Enter etherchannel mode for the interface[auto/desirable/on/active/passive]: active
Enter the channel protocol[lacp/none]: lacp
Enter the number of interfaces to join the etherchannel[8-PAGP/MODE:ON,16-LACP]: 7
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/1
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/2
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/3
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/4
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/5
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/6
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/7
Do you want to apply the parameters? [yes/no]: yes
Enter configuration commands, one per line.  End with CNTL/Z.
Enter configuration commands, one per line.  End with CNTL/Z.
Enter configuration commands, one per line.  End with CNTL/Z.
Enter configuration commands, one per line.  End with CNTL/Z.
Enter configuration commands, one per line.  End with CNTL/Z.
Enter configuration commands, one per line.  End with CNTL/Z.
Enter configuration commands, one per line.  End with CNTL/Z.
Switch# macro auto apply CISCO_SWITCH_ETHERCHANNEL_CONFIG
Enter configuration commands, one per line.  End with CNTL/Z.
Switch#
```

You can also use the Cisco IOS shell scripting capability to set the parameters. For examples, see the “Configuring and Applying Global Macros” section in the “Configuring Auto Smartports and Static Smartports Macros” chapter.

Related Commands

Command	Description
macro auto execute	Configures mapping from an event trigger to a built-in macro.
macro auto global processing	Enables Auto Smartports on a switch.
show macro auto	Displays information about macros.
show shell	Displays information about event triggers and macros.

macro auto control

To specify when the switch applies an Auto Smartports macro based on the detection method, device type, or trigger (referred to as event trigger control), use the **macro auto control** command in interface configuration mode. Use the **no** form of this command to disable trigger-to-macro mapping. The switch then does not apply macros based on event triggers.

```
macro auto control { detection [cdp] [lldp] [mac-address] | device [access-point] [ip-camera]
[lightweight-ap] [media-player] [phone] [router] [switch] | trigger [last-resort] }
```

```
no macro auto control { detection [cdp] [lldp] [mac-address] | device [access-point] [ip-camera]
[lightweight-ap] [media-player] [phone] [router] [switch] | trigger [last-resort] }
```

Syntax Description	
detection [cdp] [lldp] [mac-address]	detection —Sets one or more of these as an event trigger: (Optional) cdp—CDP messages (Optional) lldp—LLDP messages (Optional) mac-address—User-defined MAC address groups
device [access-point] [ip-camera] [lightweight-ap] [media-player] [phone] [router] [switch]	device —Sets one or more of these devices as an event trigger: (Optional) access-point—Autonomous access point (Optional) ip-camera—Cisco IP video surveillance camera (Optional) lightweight-ap—Lightweight access point (Optional) media-player—Digital media player (Optional) phone—Cisco IP phone (Optional) router—Cisco router (Optional) switch—Cisco switch
trigger [last-resort]	trigger —Sets a specific event trigger. (Optional) last-resort—Last-resort trigger.

Command Default	
	The switch uses the device type as the event trigger. If the switch cannot determine the device type, it uses MAC address groups, MAB messages, 802.1x authentication messages, and LLDP messages in random order.

Command Modes	
	Interface configuration

Command History	Release	Modification
	12.2(55)SE	This command was introduced on the Catalyst 3750-X, 3750-E, 3750, 3560-X, 3560-E, 3560, 2975, 2960, and 2918 switches.

Usage Guidelines

If you do not set event triggers, the switch uses the device type as the event trigger. If the switch cannot determine the device type, it uses MAC address groups, MAB messages, 802.1x authentication messages, and LLDP messages in random order.

To verify that a macro is applied to an interface, use the **show macro auto interface** user EXEC command.

Examples

To set LLDP messages and MAC address groups as event triggers:

```
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)# interface gigabitethernet 5/0/2
Switch(config-if)# macro auto control detection lldp mac-address
Switch(config-if)# exit
Switch(config)# end
```

To set access points, video surveillance cameras, and digital media players as event triggers:

```
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)# interface gigabitethernet 5/0/1
Switch(config-if)# macro auto control device access-point ip-camera media-player
Switch(config-if)# exit
Switch(config)# end
```

The switch applies a built-in macro only when it detects an access point, video surveillance camera, or digital media player.

Related Commands

Command	Description
macro auto execute	Configures mapping from an event trigger to a built-in macro.
macro auto global processing	Enables Auto Smartports on a switch.
macro auto mac-address-group	Configures MAC address groups.
macro auto sticky	Configures macro persistence.
shell trigger	Creates event triggers.
show macro auto	Displays information about macros.
show shell	Displays information about event triggers and macros.

macro auto device

To replace macro default parameter values with values that are specific to your switch, use the **macro auto device** command in global configuration mode. Use the **no** form of this command to remove the parameter values.

macro auto device {**access-point** | **ip-camera** | **lightweight-ap** | **media-player** | **phone** | **router** | **switch**} [*parameter=value*]

no macro auto device {**access-point** | **ip-camera** | **lightweight-ap** | **media-player** | **phone** | **router** | **switch**} [*parameter=value*]

Syntax Description		
access-point		Replaces the access-point default parameter value: NATIVE_VLAN=1
ip-camera		Replaces the IP video surveillance camera default parameter value: ACCESS_VLAN=1
lightweight-ap		Replaces the lightweight access point default parameter value: ACCESS_VLAN=1
media-player		Replaces the digital media player default parameter value: ACCESS_VLAN=1
phone		Replaces the IP phone default parameter values: ACCESS_VLAN=1 VOICE_VLAN=2
router		Replaces the router default parameter value: NATIVE_VLAN=1
switch		Replaces the switch default parameter value: NATIVE_VLAN=1
<i>parameter=value</i>		(Optional) Replaces the macro default parameter values. Enter new values in the form of name value pair separated by spaces: [<name1>=<value1> <name2>=<value2>...]

Command Default Macro default parameter values are defined previously.

Command Modes Global configuration

Command History	Release	Modification
	12.2(52)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, 2975, 2960, and 2918 switches.
	12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines Use the **macro auto device** global configuration command to replace macro default parameter values with values that are specific to your switch. Use the **no** form of this command to remove the parameter values.

Use the **show macro device** privileged EXEC command to display the contents of the macros. Use the *parameter=value* keywords to replace default parameter values within a specific macro.

You can also use the **macro auto execute** global configuration command to specify default parameter values. This command also requires that you specify an event trigger and a built-in or user-defined macro. If you enable both the **macro auto device** and the **macro auto execute** commands, the parameters specified in the command last executed is applied to the switch. Only one command is active on the switch.

To verify that a macro is applied to an interface, use the **show macro auto interface** user EXEC command.

Examples

This example shows how to display the IP phone macro parameter values, enable the IP phone macro, and change the default voice VLAN to 20:

```
Switch# show macro auto device phone
Device:phone
Default Macro:CISCO_PHONE_AUTO_SMARTPORT
Current Macro:CISCO_PHONE_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN VOICE_VLAN
Defaults Parameters:ACCESS_VLAN=1 VOICE_VLAN=2
Current Parameters:ACCESS_VLAN=1 VOICE_VLAN=2

Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)# macro auto device phone VOICE_VLAN=20
Switch(config)# end
Switch# show macro auto device phone
Device:phone
Default Macro:CISCO_PHONE_AUTO_SMARTPORT
Current Macro:CISCO_PHONE_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN VOICE_VLAN
Defaults Parameters:ACCESS_VLAN=1 VOICE_VLAN=2
Current Parameters:VOICE_VLAN=20
```

Related Commands

Command	Description
macro auto execute	Configures mapping from an event trigger to a built-in macro.
macro auto global processing	Enables Auto Smartports on a switch.
macro auto mac-address-group	Configures MAC address groups.
macro auto sticky	Configures macro persistence.
shell trigger	Creates event triggers.
show macro auto	Displays information about macros.
show shell	Displays information about event triggers and macros.

macro auto execute

To replace built-in macro default values and to configure mapping from an event trigger to a built-in or user-defined macro, use the **macro auto execute** command in global configuration mode.

macro auto execute *event trigger* {[**builtin** *built-in macro name*] | [**remote** *url*]} [*parameter=value*]

macro auto execute *event trigger* [*parameter=value*] [{ *function contents* }]

no macro auto execute *event trigger* {[**builtin** *built-in macro name*] | [**remote** *url*]} [*parameter=value*]

no macro auto execute *event trigger* [*parameter=value*] [{ *function contents* }]

Syntax Description	
<i>event trigger</i>	Defines mapping from an event trigger to a built-in macro. Specifies an <i>event trigger</i>: - CISCO_CUSTOM_EVENT - CISCO_DMP_EVENT - CISCO_IPVSC_EVENT - CISCO_LAST_RESORT_EVENT - CISCO_PHONE_EVENT - CISCO_ROUTER_EVENT - CISCO_SWITCH_EVENT - CISCO_WIRELESS_AP_EVENT - CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT - WORD—Apply a user-defined event trigger such as a MAC address group.
builtin <i>built-in macro name</i>	(Optional) Specifies a builtin <i>built-in macro name</i>: - CISCO_AP_AUTO_SMARTPORT Specify the parameter value: NATIVE_VLAN=1. - CISCO_DMP_AUTO_SMARTPORT Specify the parameter value: ACCESS_VLAN=1. - CISCO_IPVSC_AUTO_SMARTPORT Specify the parameter value: ACCESS_VLAN=1. - CISCO_LWAP_AUTO_SMARTPORT Specify the parameter value: ACCESS_VLAN=1. - CISCO_PHONE_AUTO_SMARTPORT Specify the parameter values: ACCESS_VLAN=1 and VOICE_VLAN=2. - CISCO_ROUTER_AUTO_SMARTPORT Specify the parameter value: NATIVE_VLAN=1. - CISCO_SWITCH_AUTO_SMARTPORT Specify the parameter value: NATIVE_VLAN=1.

<i>parameter=value</i>	(Optional) <i>parameter=value</i> —Replaces default values for parameter values shown for the <i>builtin-macro name</i> , for example, ACCESS_VLAN=1. Enter new values in the form of name value pair separated by a space: [<i><name1>=<value1> <name2>=<value2>...</i>].
<i>{function contents}</i>	(Optional) <i>{function contents}</i> Specifies a user-defined macro to associate with the trigger. Enter the macro contents within braces. Begin the Cisco IOS shell commands with the left brace and end the command grouping with the right brace.
remote url	(Optional) Specifies a remote server location: - The syntax for the local flash file system on the standalone switch or the stack master: flash: - The syntax for the local flash file system on a stack member: flash member number: - The syntax for the FTP: ftp:[[/username[:password]@location]/directory]/filename - The syntax for an HTTP server: http://[[username:password]@]{hostname host-ip}[/directory]/filename - The syntax for a secure HTTP server: https://[[username:password]@]{hostname host-ip}[/directory]/filename - The syntax for the NVRAM: nvr:[[/username:password]@][[/directory]/filename - The syntax for the Remote Copy Protocol (RCP): rcp:[[/username@location]/directory]/filename - The syntax for the Secure Copy Protocol (SCP): scp:[[/username@location]/directory]/filename - The syntax for the TFTP: tftp:[[/location]/directory]/filename

Defaults

This command has no default setting.

Command Modes

Global configuration

Command History

Release	Modification
12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, 2960, and 2918 switches. It replaced the macro name global configuration command.
12.2(52)SE	The remote keyword and <i>url</i> argument were added on the Catalyst 3750-E, 3750, 3560-E, 3560, 2960, and 2918 switches. The command was introduced on Catalyst 2975 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines

Use the **macro auto execute** global configuration command to replace the built-in macro default values with values that are specific to your switch.

The switch automatically maps from event triggers to built-in macros. The built-in macros are system-defined macros in the software image. You can also create user-defined macros by using the Cisco IOS shell scripting capability.

You can create new event triggers by using the **shell trigger** global configuration commands. Use the **show shell triggers** privileged EXEC command to display the contents of the user-defined triggers and macros.

You can use the **macro auto mac-address-group** global configuration command to create event triggers for devices that do not support Cisco Discovery Protocol (CDP) or Link Layer Discovery Protocol (LLDP).

You can use the remote macro feature to store macros in a central location for designated network switches to use. You can then maintain and update the macro files for use by multiple switches. Use **remote url** to configure the remote server location and macro path information. There are no specific file extension requirements for saved macro files.

Auto Smartports macros and antimacros (the antimacro is the portion of the applied macro that removes it at link down) have these guidelines and limitations:

- You can delete or change the built-in macros. However, you can override a built-in macro by creating a user-defined macro with the same name. To restore the original built-in macro, delete the user-defined macro.
- If you enable both the **macro auto device** and the **macro auto execute** global configuration commands, the parameters specified in the command last executed are applied to the switch. Only one command is active on the switch.
- To avoid system conflicts when macros are applied, remove all port configurations except for 802.1x authentication.
- Do not configure port security when enabling Auto Smartports on the switch.
- If the macro conflicts with the original configuration, either the macro does not apply some of the original configuration commands, or the antimacro does not remove them. (The antimacro is the portion of the applied macro that removes the macro at a link-down event.)

For example, if 802.1x authentication is enabled, you cannot remove the switchport-mode access configuration. Remove the 802.1x authentication before removing the switchport mode configuration.

- A port cannot be a member of an EtherChannel when you apply Auto Smartports macros.
- The built-in-macro default data VLAN is VLAN 1. The default voice VLAN is VLAN 2. If your switch uses different access, native, or voice VLANs, use the **macro auto device** or the **macro auto execute** global configuration commands to configure the values.
- For 802.1x authentication or MAC authentication bypass (MAB), to detect non-Cisco devices, configure the RADIUS server to support the Cisco attribute-value pair **auto-smart-port=event trigger**.
- The switch supports Auto Smartport macros only on directly connected devices. Multiple device connections, such as hubs, are not supported.
- If authentication is enabled on a port, the switch ignores a MAC address trigger if authentication fails.
- The order of CLI commands within the macro and the corresponding antimacro can be different.

Examples

This example shows how to use two built-in macros for connecting Cisco switches and Cisco IP phones to the switch. This example modifies the default voice VLAN, access VLAN, and native VLAN for the trunk interface:

```
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#!!! the next command modifies the access and voice vlans
Switch(config)#!!! for the built in Cisco IP phone auto smartport macro
Switch(config)# macro auto execute CISCO_PHONE_EVENT builtin CISCO_PHONE_AUTO_SMARTPORT
ACCESS_VLAN=10 VOICE_VLAN=20
Switch(config)#
Switch(config)#!!! the next command modifies the Native vlan used for inter switch trunks
Switch(config)# macro auto execute CISCO_SWITCH_EVENT builtin CISCO_SWITCH_AUTO_SMARTPORT
NATIVE_VLAN=10
Switch(config)#
Switch(config)#!!! the next command enables auto smart ports globally and also enables
fallback to CDP event trigger when dot1x or mab authentication fails on the device
interface
Switch(config)# macro auto global processing fallback cdp
Switch(config)#
Switch(config)# exit

Switch# !!! here is the running configuration of the interface connected
Switch# !!! to another Cisco Switch after the Macro is applied
Switch#
Switch# show running-config interface gigabitethernet1/0/1
Building configuration...

Current configuration : 284 bytes
!
interface GigabitEthernet1/0/1
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 10
 switchport mode trunk
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust cos
 auto qos voip trust
 macro description CISCO_SWITCH_EVENT
end
```

This example shows how to map a user-defined event trigger called media player to a user-defined macro.

- Connect the media player to an 802.1x- or MAB-enabled switch port.
- On the RADIUS server, set the attribute-value pair to **auto-smart-port=MP_EVENT**.
- On the switch, create the event trigger MP_EVENT, and enter the user-defined macro commands.
- The switch recognizes the attribute-value pair=MP_EVENT response from the RADIUS server and applies the macro associated with this event trigger.

```
Switch(config)# shell trigger MP_EVENT mediaplayer
Switch(config)# macro auto execute MP_EVENT {
if [[ $LINKUP -eq YES ]]; then
conf t
 interface $INTERFACE
  macro description $TRIGGER
  switchport access vlan 1
  switchport mode access
  switchport port-security
  switchport port-security maximum 1
```



```

switchport port-security violation restrict
switchport port-security aging time 2
switchport port-security aging type inactivity
spanning-tree portfast
spanning-tree bpduguard enable
exit
fi
if [[ $LINKUP -eq NO ]]; then
conf t
interface $INTERFACE
    no macro description $TRIGGER
    no switchport access vlan 1
    if [[ $AUTH_ENABLED -eq NO ]]; then
        no switchport mode access
    fi
    no switchport port-security
    no switchport port-security maximum 1
    no switchport port-security violation restrict
    no switchport port-security aging time 2
    no switchport port-security aging type inactivity
    no spanning-tree portfast
    no spanning-tree bpduguard enable
    exit
fi

```

Table 3-1 Supported Cisco IOS Shell Keywords

Command	Description
{	Begin the command grouping.
}	End the command grouping.
[[	Use as a conditional construct.
]]	Use as a conditional construct.
else	Use as a conditional construct.
-eq	Use as a conditional construct.
fi	Use as a conditional construct.
if	Use as a conditional construct.
then	Use as a conditional construct.
-z	Use as a conditional construct.
\$	Variables that begin with the \$ character are replaced with a parameter value.
#	Use the # character to enter comment text.

Table 3-2 *Unsupported Cisco IOS Shell Reserved Keywords*

Command	Description
	Pipeline.
case	Conditional construct.
esac	Conditional construct.
for	Looping construct.
function	Shell function.
in	Conditional construct.
select	Conditional construct.
time	Pipeline.
until	Looping construct.
while	Looping construct.

Related Commands

Command	Description
macro auto device	Configures macro default parameter values.
macro auto global processing	Enables Auto Smartports on a switch.
macro auto mac-address-group	Configures MAC address groups.
macro auto sticky	Configures macro persistence.
shell trigger	Creates event triggers.
show macro auto	Displays information about macros.
show shell	Displays information about event triggers and macros.

macro auto file

To deregister the Cisco IOS shell scripts and to register user-defined scripts, use the **macro auto file** command in global configuration mode. Use the **no** form of this command to remove the registration of system-defined scripts from the policy engine.

```
macro auto file {directory word} | {register word type [system | user]}
```

```
no macro auto file {directory word} | {register word type [system | user]}
```

Syntax Description

directory word	Specifies the auto execution user file directory path.
register word type	Specifies the name and type of the file to register.
system	(Optional) Searches for a system policy file.
user	(Optional) Searches for a user policy file.

Defaults

There is no default.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, 2975, 2960, and 2918 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines

Use the **macro auto file** global configuration command to deregister the Cisco IOS shell scripts and to register user-defined scripts.

Examples

This example shows how to deregister the system-defined file *Mandatory.cdp.sh*, copy the user-defined script to flash, register the location of the user-defined file, register the file *Mandatory.cdp.sh*, and how to verify your entries:

```
Switch# directory flash:
Directory of flash:/

   3  -rwx           3533   Mar 1 1993  00:02:26 +00:00  Mandatory.cdp.sh

Switch(config)# no macro auto file register Mandatory.cdp.sh
Switch(config)# macro auto file directory "flash:"
Switch(config)# macro auto file register Mandatory.cdp.sh type user
Switch(config)# end
Switch# show running config | inc macro

macro auto file directory "flash:/"
macro auto file register Mandatory.cdp.sh type user
```

For ASP EEM registers the following policy scripts:

Mandatory.cdp.sh	Mandatory.link.sh	Mandatory.lldp.sh
Mandatory.identity.sh	Mandatory.link2.sh	Mandatory.mat.sh

Related Commands	Command	Description
	macro auto global processing	Enables Auto Smartports on a switch.
	shell trigger	Creates event triggers.
	show macro auto	Displays information about macros.
	show shell	Displays information about event triggers and macros.

macro auto global control

To specify when the switch applies an Auto Smartports macro based on the detection method, device type, or trigger (referred to as event trigger control), use the **macro auto global control** command in global configuration mode. Use the **no** form of this command to disable trigger-to-macro mapping. The switch then does not apply macros based on event triggers.

```
macro auto global control { detection [cdp] [lldp] [mac-address] | device [access-point]
[ip-camera] [lightweight-ap] [media-player] [phone] [router] [switch] | trigger
[last-resort]}
```

```
no macro auto global control { detection [cdp] [lldp] [mac-address] | device [access-point]
[ip-camera] [lightweight-ap] [media-player] [phone] [router] [switch] | trigger
[last-resort]}
```

Syntax Description	
detection [cdp] [lldp] [mac-address]	detection —Sets one or more of these as an event trigger: (Optional) cdp—CDP messages (Optional) lldp—LLDP messages (Optional) mac-address—User-defined MAC address groups
device [access-point] [ip-camera] [lightweight-ap] [media-player] [phone] [router] [switch]	device —Sets one or more of these devices as an event trigger: (Optional) access-point—Autonomous access point (Optional) ip-camera—Cisco IP video surveillance camera (Optional) lightweight-ap—Lightweight access point (Optional) media-player—Digital media player (Optional) phone—Cisco IP phone (Optional) router—Cisco router (Optional) switch—Cisco switch
trigger [last-resort]	trigger —Sets a specific event trigger. (Optional) last-resort—Last-resort trigger.

Command Default The switch uses the device type as the event trigger. If the switch cannot determine the device type, it uses MAC address groups, MAB messages, 802.1x authentication messages, and LLDP messages in random order.

Command Modes Global configuration

Command History	Release	Modification
	12.2(55)SE	This command was introduced on the Catalyst 3750-X, 3750-E, 3750, 3560-X, 3560-E, 3560, 2975, 2960, and 2918 switches.

Usage Guidelines

If you do not set event triggers, the switch uses the device type as the event trigger. If the switch cannot determine the device type, it uses MAC address groups, MAB messages, 802.1x authentication messages, and LLDP messages in random order.

To verify that a macro is applied to a switch, use the **show macro auto global** user EXEC command.

Examples

To set CDP messages, LLDP messages and MAC address groups as event triggers:

```
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)# macro auto global control detection cdp lldp mac-address
Switch(config)# end
```

To set autonomous access points, lightweight access points, and IP phones:

```
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)# macro auto global control device access-point lightweight-ap phone
Switch(config)# end
```

Related Commands

Command	Description
macro auto execute	Configures mapping from an event trigger to a built-in macro.
macro auto global processing	Enables Auto Smartports on a switch.
macro auto mac-address-group	Configures MAC address groups.
macro auto sticky	Configures macro persistence.
shell trigger	Creates event triggers.
show macro auto	Displays information about macros.
show shell	Displays information about event triggers and macros.

macro auto global processing

To enable Auto Smartports macros on the switch, use the **macro auto global processing** command in global configuration mode. Use the **no** form of this command to disable the macros.

macro auto global processing [fallback cdp]

no macro auto global processing [fallback cdp]

Syntax Description	fallback cdp (Optional) Use the Cisco Discovery Protocol (CDP) as the fallback mechanism if authentication fails.
---------------------------	--

Command Default	Auto Smartports is disabled.
------------------------	------------------------------

Command Modes	Global configuration
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Command History	Release	Modification
	12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, 2960, and 2918 switches.
	12.2(52)SE	The command changed from macro auto global processing [cdp-fallback] to macro auto global processing [fallback cdp] on Catalyst 3750-E, 3750, 3560-E, 3560, 2960, and 2918 switches. The command was introduced on Catalyst 2975 switches.
	12.2(53)SE2	This command was introduced on Catalyst 3750-X and 3560-X switches.

Usage Guidelines	Use the macro auto global processing global configuration command to globally enable macros on the <i>switch</i> . To disable macros on a specific <i>port</i> , use the no macro auto processing command in interface mode.
-------------------------	--

When using 802.1x or MAB authentication, you need to configure the RADIUS server to support the Cisco attribute-value pair **auto-smart-port=event trigger**. If authentication fails, the macro is not applied. To ensure macro application even if 802.1x or MAB authentication fails, use the **fallback cdp** keywords for the **macro auto global processing** command. If the 802.1x or MAB authentication fails on the interface, the switch uses the fallback CDP event trigger.

When CDP-identified devices advertise multiple capabilities, the switch chooses a capability first by switch and then by router.

To verify that a macro is applied to an interface, use the **show macro auto interface** privileged EXEC command.

Examples

This example shows how enable Auto Smartports on the switch and to disable the feature on a specific interface:

```
Switch(config)# macro auto global processing
Switch(config)# interface interface_id
Switch(config-if)# no macro auto processing
```

Related Commands

Command	Description
macro auto device	Configures macro default parameter values.
macro auto execute	Configures mapping from an event trigger to a built-in macro.
macro auto mac-address-group	Configures MAC address groups.
macro auto sticky	Configures macro persistence.
shell trigger	Creates event triggers.
show macro auto	Displays information about macros.
show shell	Displays information about event triggers and macros.

macro auto mac-address-group

To create an event trigger for devices that do not support Cisco Discovery Protocol (CDP) or Link Layer Discover Protocol (LLDP), use the **macro auto mac-address-group** command in global configuration mode. Use the **no** form of this command to delete the group.

macro auto mac-address-group *name* [**mac-address list** *list*] | [**oui** [*list list* | **range** *start-value size number*]]

no macro auto mac-address-group *name* [**mac-address list** *list*] | [**oui** [*list list* | **range** *start-value size number*]]

Syntax Description

<i>name</i>	Specifies the group name.
oui	(Optional) Specifies an operationally unique identifier (OUI) list or range . list—Enter an OUI list in hexadecimal format separated by spaces. range—Enter the starting OUI hexadecimal value (<i>start-value</i>). size—Enter the length of the range (<i>number</i>) from 1 to 5 to create a list of sequential addresses.
mac-address list <i>list</i>	(Optional) Configures a list of MAC addresses separated by a space.

Defaults

No groups are defined.

Command Modes

Group configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, 2975, 2960, and 2918 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines

Use the **macro auto mac-address-group** global configuration command to create an event trigger for devices that do not support CDP or LLDP. Use the MAC address group as a trigger to map to a built-in or user-defined macro by using the **macro auto execute** global configuration command. At link-up the switch detects the device type and applies the specified macro.

The switch supports up to ten MAC address groups. Each group can have up to 32 OUI and 32 MAC configured addresses.

Examples

This example shows how to create a MAC-address-group event trigger called *address_trigger* and how to verify your entries:

```
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)# macro auto address-group mac address_trigger
Switch(config-addr-grp-mac)# mac-address list 2222.3333.3334 22.33.44 a.b.c
Switch(config-addr-grp-mac)# oui list 455555 233244
Switch(config-addr-grp-mac)# oui range 333333 size 2
Switch(config-addr-grp-mac)# exit
Switch(config)# end
Switch# show running configuration
!
!macro auto mac-address-group address_trigger
oui list 333334
oui list 333333
oui list 233244
oui list 455555
mac-address list 000A.000B.000C
mac-address list 0022.0033.0044
mac-address list 2222.3333.3334
!
```

<output truncated>

Related Commands

Command	Description
macro auto device	Configures macro default parameter values.
macro auto execute	Configures mapping from an event trigger to a built-in macro.
macro auto global processing	Enables Auto Smartports on a switch.
macro auto sticky	Configures macro persistence.
shell trigger	Creates event triggers.
show macro auto	Displays information about macros.
show shell	Displays information about event triggers and macros.

macro auto sticky

To configure macros remain active after a link-down event, referred to as *macro persistence*, use the **macro auto sticky** command in global configuration command mode. Use the **no** form of this command to disable the macro persistence.

macro auto sticky

no macro auto sticky

Syntax Description This command has no arguments or keywords.

Defaults Macro persistence is disabled.

Command Modes Global configuration

Command History	Release	Modification
	12.2(52)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, 2975, 2960, and 2918 switches.
	12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines Use the **macro auto sticky** global configuration command so that macros remain active after a link-down event.

Examples This example shows how to enable macro persistence on an interface:

```
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)# interface gigabitethernet 2/0/1
Switch(config-if)# macro auto port sticky
Switch(config-if)# exit
Switch(config)# end
```

Related Commands	Command	Description
	macro auto device	Configures macro default parameter values.
	macro auto execute	Configures mapping from an event trigger to a built-in macro.
	macro auto global processing	Enables Auto Smartports on a switch.
	macro auto mac-address-group	Configures MAC address groups.
	shell trigger	Creates event triggers.

Command	Description
show macro auto	Displays information about macros.
show shell	Displays information about event triggers and macros.

macro description

To enter a description about which macros are applied to an interface, use the **macro description** command in interface configuration mode. Use the **no** form of this command to remove the description.

This command is mandatory for auto smartports to work.

macro description *text*

no macro description *text*

Syntax Description

description *text* Enters a description about the macros that are applied to the specified interface.

Defaults

This command has no default setting.

Command Modes

Interface configuration

Command History

Release	Modification
12.1(19)EA1	This command was introduced on the Catalyst 3750 and 3560 switches.
12.2(25)FX	This command was introduced on the Catalyst 2960 switches.
12.2(44)SE	This command was introduced on the Catalyst 2918 switches.
12.2(46)EX	This command was introduced on the Catalyst 2975 switches.
12.2(35)SE2	This command was introduced on the Catalyst 3750-E and 3560-E switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines

Use the **description** keyword to associate comment text or the macro name with an interface. When multiple macros are applied on a single interface, the description text is from the last applied macro.

You can verify your settings by entering the **show parser macro description** privileged EXEC command.

Examples

This example shows how to add a description to an interface:

```
Switch(config-if)# macro description duplex settings
```

Related Commands

Command	Description
macro apply	Applies a macro on an interface.
macro global	Applies a macro on a switch or applies and traces a macro on a switch
macro global description	Adds a description about the macros that are applied to the switch.
macro trace	Applies and traces a macro on an interface.
show parser macro	Displays the macro definition for all macros or for the specified macro.

macro global

To apply a macro to a switch or to apply and debug a macro on a switch, use the **macro global** command in global configuration mode.

```
macro global {apply | trace} macro-name [parameter {value}] [parameter {value}]
[parameter {value}]
```

Syntax Description

apply	Applies a macro to the switch.
trace	Applies a macro to a switch and debugs the macro.
<i>macro-name</i>	Specifies the name of the macro.
parameter <i>value</i>	(Optional) Specifies unique parameter values that are specific to the switch. You can enter up to three keyword-value pairs. Parameter keyword matching is case sensitive. All matching occurrences of the keyword are replaced with the corresponding value.

Defaults

This command has no default setting.

Command Modes

Global configuration

Command History

Release	Modification
12.2(20)SE	This command was introduced on the Catalyst 3750 and 3560 switches.
12.2(25)FX	This command was introduced on the Catalyst 2960 switches.
12.2(44)SE	This command was introduced on the Catalyst 2918 switches.
12.2(46)EX	This command was introduced on the Catalyst 2975 switches.
12.2(35)SE2	This command was introduced on the Catalyst 3750-E and 3560-E switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines

Use the **macro global apply** *macro-name* global configuration command to apply the macro to an interface.

Use the **macro global trace** *macro-name* global configuration command to apply and then debug the macro to find any syntax or configuration errors.

If a command fails when you apply a macro because of a syntax error or a configuration error, the macro continues to apply the remaining commands to the switch.

When creating a macro that requires the assignment of unique values, use the **parameter** *value* keywords to designate values specific to the switch.

Keyword matching is case sensitive. All matching occurrences of the keyword are replaced with the corresponding value. Any full match of a keyword, even if it is part of a larger string, is considered a match and is replaced by the corresponding value.

Some macros might contain keywords that require a parameter value. You can use the **macro global apply macro-name ?** command to display a list of any required values in the macro. If you apply a macro without entering the keyword values, the commands are invalid and are not applied.

There are Cisco-default Smartports macros embedded in the switch software. You can display these macros and the commands they contain by using the **show parser macro** user EXEC command.

Follow these guidelines when you apply a Cisco-default Smartports macro on a switch:

- Display all macros on the switch by using the **show parser macro** user EXEC command. Display the contents of a specific macro by using the **show parser macro name macro-name** user EXEC command.
- Keywords that begin with \$ mean that a unique parameter value is required. Append the Cisco-default macro with the required values by using the **parameter value** keywords.

The Cisco-default macros use the \$ character to help identify required keywords. There is no restriction on using the \$ character to define keywords when you create a macro.

When you apply a macro to a switch, the macro name is automatically added to the switch. You can display the applied commands and macro names by using the **show running-config** user EXEC command.

You can delete a global macro-applied configuration on a switch only by entering the **no** version of each command in the macro.

Examples

After you have created a new macro by using the **macro auto execute** global configuration command, you can apply it to a switch. This example shows how to see the **snmp** macro, how to apply the macro, set the hostname to test-server, and set the IP precedence value to 7:

```
Switch# show parser macro name snmp
Macro name : snmp
Macro type : customizable

#enable port security, linkup, and linkdown traps
snmp-server enable traps port-security
snmp-server enable traps linkup
snmp-server enable traps linkdown
#set snmp-server host
snmp-server host ADDRESS
#set SNMP trap notifications precedence
snmp-server ip precedence VALUE

-----
Switch(config)# macro global apply snmp ADDRESS test-server VALUE 7
```

To debug a macro, use the **macro global trace** global configuration command to find any syntax or configuration errors in the macro when you apply it to a switch. In this example, the **ADDRESS** parameter value was not entered, the **snmp-server host** command failed, and the remainder of the macro is applied to the switch:

```
Switch(config)# macro global trace snmp VALUE 7
Applying command...'snmp-server enable traps port-security'
Applying command...'snmp-server enable traps linkup'
Applying command...'snmp-server enable traps linkdown'
Applying command...'snmp-server host'
%Error Unknown error.
Applying command...'snmp-server ip precedence 7'
```

Related Commands	Command	Description
	macro apply	Applies a macro on an interface.
	macro description	Adds a description about the macros that are applied to an interface.
	macro global description	Adds a description about the macros that are applied to the switch.
	macro trace	Applies and traces a macro on an interface.
	show parser macro	Displays the macro definition for all macros or for the specified macro.

macro global description

To enter a description about the macros that are applied to a switch, use the **macro global description** command in global configuration mode. Use the **no** form of this command to remove the description.

macro global description *text*

no macro global description *text*

Syntax Description

description *text* Enters a description about the macros that are applied to the switch.

Defaults

This command has no default setting.

Command Modes

Global configuration

Command History

Release	Modification
12.2(20)SE	This command was introduced on the Catalyst 3750 and 3560 switches.
12.2(25)FX	This command was introduced on the Catalyst 2960 switches.
12.2(44)SE	This command was introduced on the Catalyst 2918 switches.
12.2(46)EX	This command was introduced on the Catalyst 2975 switches.
12.2(35)SE2	This command was introduced on the Catalyst 3750-E and 3560-E switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines

Use the **description** keyword to associate comment text or the macro name with a switch. When multiple macros are applied on a switch, the description text is from the last applied macro.

You can verify your settings by entering the **show parser macro description** privileged EXEC command.

Examples

This example shows how to add a description to a switch:

```
Switch(config)# macro global description uddld aggressive mode enabled
```

Related Commands

Command	Description
macro apply	Applies a macro on an interface.
macro description	Adds a description about the macros that are applied to an interface.
macro global	Applies a macro on a switch or applies and traces a macro on a switch.
macro trace	Applies and debugs a macro on an interface.
show parser macro	Displays the macro definition for all macros or for the specified macro.

shell trigger

To create an event trigger, use the **shell trigger** command in global configuration mode. Use the **no** form of this command to delete the trigger.

shell trigger *identifier description*

no shell trigger *identifier description*

Syntax Description	<i>identifier</i>	Specifies the event trigger identifier. The identifier should have no spaces or hyphens between words.
	<i>description</i>	Specifies the event trigger description text.

Defaults	System-defined event triggers: - CISCO_DMP_EVENT - CISCO_IPVSC_AUTO_EVENT - CISCO_PHONE_EVENT - CISCO_SWITCH_EVENT - CISCO_ROUTER_EVENT - CISCO_WIRELESS_AP_EVENT - CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT
----------	--

Command Modes	Global configuration
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Command History	Release	Modification
	12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
	12.2(52)SE	This command was introduced on the Catalyst 2975 switches.
	12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines	Use this command to create user-defined event triggers for use with the macro auto device and the macro auto execute global configuration commands. To support dynamic device discovery when using IEEE 802.1x authentication, you need to configure the RADIUS authentication server to support the Cisco attribute-value pair: auto-smart-port=<i>event trigger</i>.
------------------	---

Examples

This example shows how to create a user-defined event trigger called RADIUS_MAB_EVENT:

```
Switch# configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Switch(config)# shell trigger RADIUS_MAB_EVENT MAC_AuthBypass Event  
Switch(config)# end
```

Related Commands

Command	Description
macro auto device	Configures macro default parameter values.
macro auto execute	Configures mapping from an event trigger to a built-in macro.
macro auto global processing	Enables Auto Smartports on a switch.
macro auto mac-address-group	Configures MAC address groups.
macro auto sticky	Configures macro persistence.
shell trigger	Creates event triggers.
show macro auto	Displays information about macros.
show shell	Displays information about event triggers and macros.

show macro auto

To display Auto Smartports macro information, use the **show macro auto** command in user EXEC mode.

```
show macro auto { address-group [address-group-name] | device [access-point] [ip-camera]
                  [lightweight-ap] [media-player] [phone] [router] [switch] | event manager | global
                  [event_trigger] | interface [interface_id] } [{begin | exclude | include} expression]
```

Syntax Description

address-group [<i>address-group-name</i>]	Displays address-group information. (Optional) <i>address-group-name</i> —Displays information for the specified address group.
device [access-point] [ip-camera] [lightweight-ap] [media-player] [phone] [router] [switch]	Displays device information about one or more devices. (Optional) access-point—Autonomous access point (Optional) ip-camera—Cisco IP video surveillance camera (Optional) lightweight-ap—Lightweight access point (Optional) media-player—Digital media player (Optional) phone—Cisco IP phone (Optional) router—Cisco router (Optional) switch—Cisco switch
event manager	Displays embedded event manager information.
global [<i>event_trigger</i>]	Displays Auto Smartports information about the switch. (Optional) <i>event_trigger</i> —Displays information about the specified event trigger.
interface [<i>interface_id</i>]	Displays interface status. (Optional) <i>interface_id</i> —Displays information about the specified interface.

Command Modes

User EXEC

Command History

Release	Modification
12.2(52)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, 2975, 2960, and 2918 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.
12.2(55)SE	The global keyword was added on the Catalyst 3750-X, 3750-E, 3750, 3560-X, 3560-E, 3560, 2975, 2960, and 2918 switches. The address-group , device , event manager , and interface keywords are not optional.

Usage Guidelines

Use this command to display the Auto Smartports information for the switch. Use the **show macro auto device** privileged EXEC command to display the configurable parameters for a device.

Expressions are case sensitive. For example, if you enter **! exclude output**, the lines that contain output do not appear, but the lines that contain Output appear.

Examples

This example shows how to use the **show macro auto device** privileged EXEC command to view the configuration on the switch:

```
Switch> show macro auto device
Device:lightweight-ap
Default Macro:CISCO_LWAP_AUTO_SMARTPORT
Current Macro:CISCO_LWAP_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN
Defaults Parameters:ACCESS_VLAN=1
Current Parameters:ACCESS_VLAN=1

Device:access-point
Default Macro:CISCO_AP_AUTO_SMARTPORT
Current Macro:CISCO_AP_AUTO_SMARTPORT
Configurable Parameters:NATIVE_VLAN
Defaults Parameters:NATIVE_VLAN=1
Current Parameters:NATIVE_VLAN=1

Device:phone
Default Macro:CISCO_PHONE_AUTO_SMARTPORT
Current Macro:CISCO_PHONE_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN VOICE_VLAN
Defaults Parameters:ACCESS_VLAN=1 VOICE_VLAN=2
Current Parameters:ACCESS_VLAN=1 VOICE_VLAN=2

Device:router
Default Macro:CISCO_ROUTER_AUTO_SMARTPORT
Current Macro:CISCO_ROUTER_AUTO_SMARTPORT
Configurable Parameters:NATIVE_VLAN
Defaults Parameters:NATIVE_VLAN=1
Current Parameters:NATIVE_VLAN=1

Device:switch
Default Macro:CISCO_SWITCH_AUTO_SMARTPORT
Current Macro:CISCO_SWITCH_AUTO_SMARTPORT
Configurable Parameters:NATIVE_VLAN
Defaults Parameters:NATIVE_VLAN=1
Current Parameters:NATIVE_VLAN=1

Device:ip-camera
Default Macro:CISCO_IP_CAMERA_AUTO_SMARTPORT
Current Macro:CISCO_IP_CAMERA_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN
Defaults Parameters:ACCESS_VLAN=1
Current Parameters:ACCESS_VLAN=1

Device:media-player
Default Macro:CISCO_DMP_AUTO_SMARTPORT
Current Macro:CISCO_DMP_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN
Defaults Parameters:ACCESS_VLAN=1
Current Parameters:ACCESS_VLAN=1
```

This example shows how to use the **show macro auto address-group** *name* privileged EXEC command to view the TEST3 address group configuration on the switch:

Switch> **show macro auto address-group TEST3**
 MAC Address Group Configuration:

Group Name	OUI	MAC ADDRESS
TEST3	2233.33	0022.0022.0022
	2233.34	

Related Commands

Command	Description
macro auto device	Configures macro default parameter values.
macro auto execute	Configures mapping from an event trigger to a built-in macro.
macro auto global processing	Enables Auto Smartports on a switch.
macro auto mac-address-group	Configures MAC address groups.
macro auto sticky	Configures macro persistence.
shell trigger	Creates event triggers.
show shell	Displays information about event triggers and macros.

show parser macro

To display the parameters for all configured macros or for one macro on the switch, use the **show parser macro** command in user EXEC mode.

show parser macro [{**brief** | **description** [**interface** *interface-id*] | **name** *macro-name*}] [| {**begin** | **exclude** | **include**} *expression*]

Syntax Description	brief	(Optional) Displays the name of each macro.
	description [interface <i>interface-id</i>]	(Optional) Displays all macro descriptions or the description of a specific interface.
	name <i>macro-name</i>	(Optional) Displays information about a single macro identified by the macro name.
	begin	(Optional) Displays begins with the line that matches the <i>expression</i> .
	exclude	(Optional) Displays excludes lines that match the <i>expression</i> .
	include	(Optional) Displays includes lines that match the specified <i>expression</i> .
	<i>expression</i>	Expression in the output to use as a reference point.

Command Modes User EXEC

Command History	Release	Modification
	12.1(19)EA1	This command was introduced on the Catalyst 3750 and 3560 switches.
	12.2(25)FX	This command was introduced on the Catalyst 2960 switches.
	12.2(44)SE	This command was introduced on the Catalyst 2918 switches.
	12.2(46)EX	This command was introduced on the Catalyst 2975 switches.
	12.2(35)SE2	This command was introduced on the Catalyst 3750-E and 3560-E switches.
	12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

Examples This is a partial output example from the **show parser macro** command. The output for the Cisco-default macros varies depending on the switch platform and the software image running on the switch:

```
Switch# show parser macro
Total number of macros = 6
-----
Macro name : cisco-global
Macro type : default global
# Enable dynamic port error recovery for link state
# failures
errdisable recovery cause link-flap
errdisable recovery interval 60
```

<output truncated>

```
-----
Macro name : cisco-desktop
Macro type : default interface
# macro keywords $AVID
# Basic interface - Enable data VLAN only
# Recommended value for access vlan (AVID) should not be 1
switchport access vlan $AVID
switchport mode access
```

<output truncated>

```
-----
Macro name : cisco-phone
Macro type : default interface
# Cisco IP phone + desktop template
# macro keywords $AVID $VVID
# VoIP enabled interface - Enable data VLAN
# and voice VLAN (VVID)
# Recommended value for access vlan (AVID) should not be 1
switchport access vlan $AVID
switchport mode access
```

<output truncated>

```
-----
Macro name : cisco-switch
Macro type : default interface
# macro keywords $NVID
# Access Uplink to Distribution
# Do not apply to EtherChannel/Port Group
# Define unique Native VLAN on trunk ports
# Recommended value for native vlan (NVID) should not be 1
switchport trunk native vlan $NVID
```

<output truncated>

```
-----
Macro name : cisco-router
Macro type : default interface
# macro keywords $NVID
# Access Uplink to Distribution
# Define unique Native VLAN on trunk ports
# Recommended value for native vlan (NVID) should not be 1
switchport trunk native vlan $NVID
```

<output truncated>

```
-----
Macro name : snmp
Macro type : customizable
```

```
#enable port security, linkup, and linkdown traps
snmp-server enable traps port-security
snmp-server enable traps linkup
snmp-server enable traps linkdown
#set snmp-server host
snmp-server host ADDRESS
#set SNMP trap notifications precedence
snmp-server ip precedence VALUE
-----
```


This is an example of output from the **show parser macro name** command:

```
Switch# show parser macro name standard-switch10
Macro name : standard-switch10
Macro type : customizable
macro description standard-switch10
# Trust QoS settings on VOIP packets
auto qos voip trust
# Allow port channels to be automatically formed
channel-protocol pagp
```

This is an example of output from the **show parser macro brief** command:

```
Switch# show parser macro brief
default global : cisco-global
default interface: cisco-desktop
default interface: cisco-phone
default interface: cisco-switch
default interface: cisco-router
customizable : snmp
```

This is an example of output from the **show parser macro description** command:

```
Switch# show parser macro description
Global Macro(s): cisco-global
Interface      Macro Description(s)
-----
Gi1/0/1        standard-switch10
Gi1/0/2        this is test macro
-----
```

This is an example of output from the **show parser macro description interface** command:

```
Switch# show parser macro description interface gigabitethernet1/0/2
Interface      Macro Description
-----
Gi1/0/2        this is test macro
-----
```

Related Commands

Command	Description
macro apply	Applies a macro on an interface or applies and traces a macro on an interface.
macro description	Adds a description about the macros that are applied to an interface.
macro global	Applies a macro on a switch or applies and traces a macro on a switch.
macro global description	Adds a description about the macros that are applied to the switch.
show running-config	Displays the operating configuration.

show shell

To display shell information, use the **show shell** command in user EXEC mode.

show shell [**environment** | **functions** [**brief** | *shell_function*] | **triggers**] [{**begin** | **exclude** | **include**} *expression*]

Syntax Description

environment	(Optional) Displays shell environment information.
functions [brief <i>shell_function</i>]	(Optional) Displays macro information. brief—Names of the shell functions. <i>shell_function</i>—Name of a shell function.
triggers	(Optional) Displays event trigger information.
begin	(Optional) Displays begins with the line that matches the <i>expression</i> .
exclude	(Optional) Displays excludes lines that match the <i>expression</i> .
include	(Optional) Displays includes lines that match the specified <i>expression</i> .
<i>expression</i>	Expression in the output to use as a reference point.

Command Modes

User EXEC

Command History

Release	Modification
12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, 2960, and 2918 switches.
12.2(52)SE	This command was introduced on the Catalyst 2975 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.

Usage Guidelines

Use this command to display the shell information for the switch.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain output do not appear, but the lines that contain Output appear.

Examples

This example shows how to use the **show shell triggers** privileged EXEC command to view the event triggers in the switch software:

```
Switch# show shell triggers
User defined triggers
-----
Built-in triggers
-----
Trigger Id: CISCO_CUSTOM_EVENT
Trigger description: Custom macroevent to apply user defined configuration
Trigger environment: User can define the macro
Trigger mapping function: CISCO_CUSTOM_AUTOSMARTPORT

Trigger Id: CISCO_DMP_EVENT
Trigger description: Digital media-player device event to apply port configuration
```

Trigger environment: Parameters that can be set in the shell - \$ACCESS_VLAN=(1)
The value in the parenthesis is a default value
Trigger mapping function: CISCO_DMP_AUTO_SMARTPORT

Trigger Id: CISCO_IPVSC_EVENT
Trigger description: IP-camera device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - \$ACCESS_VLAN=(1)
The value in parenthesis is a default value
Trigger mapping function: CISCO_IP_CAMERA_AUTO_SMARTPORT

Trigger Id: CISCO_LAST_RESORT_EVENT
Trigger description: Last resortevent to apply port configuration
Trigger environment: Parameters that can be set in the shell - \$ACCESS_VLAN=(1)
The value in the parenthesis is a default value
Trigger mapping function: CISCO_LAST_RESORT_SMARTPORT

Trigger Id: CISCO_PHONE_EVENT
Trigger description: IP-phone device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - \$ACCESS_VLAN=(1)
and \$VOICE_VLAN=(2), The value in the parenthesis is a default value
Trigger mapping function: CISCO_PHONE_AUTO_SMARTPORT

Trigger Id: CISCO_ROUTER_EVENT
Trigger description: Router device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - \$NATIVE_VLAN=(1)
The value in the parenthesis is a default value
Trigger mapping function: CISCO_ROUTER_AUTO_SMARTPORT

Trigger Id: CISCO_SWITCH_ETHERCHANNEL_CONFIG
Trigger description: etherchannel parameter
Trigger environment: \$INTERFACE_LIST=(), \$PORT-CHANNEL_ID=(),
\$EC_MODE=(), \$EC_PROTOCOLTYPE=(),
PORT-CHANNEL_TYPE=()
Trigger mapping function: CISCO_ETHERCHANNEL_AUTOSMARTPORT

Trigger Id: CISCO_SWITCH_EVENT
Trigger description: Switch device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - \$NATIVE_VLAN=(1)
The value in the parenthesis is a default value
Trigger mapping function: CISCO_SWITCH_AUTO_SMARTPORT

Trigger Id: CISCO_WIRELESS_AP_EVENT
Trigger description: Autonomous ap device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - \$NATIVE_VLAN=(1)
The value in the parenthesis is a default value
Trigger mapping function: CISCO_AP_AUTO_SMARTPORT

Trigger Id: CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT
Trigger description: Lightweight-ap device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - \$ACCESS_VLAN=(1)
The value in the parenthesis is a default value
Trigger mapping function: CISCO_LWAP_AUTO_SMARTPORT

Trigger Id: word
Trigger description: word
Trigger environment:
Trigger mapping function:

This example shows how to use the **show shell functions** privileged EXEC command to view the built-in macros in the switch software:

```
Switch# show shell functions
#User defined functions:

#Built-in functions:
function CISCO_AP_AUTO_SMARTPORT () {
    if [[ $LINKUP -eq YES ]]; then
        conf t
            interface $INTERFACE
                macro description $TRIGGER
                switchport trunk encapsulation dot1q
                switchport trunk native vlan $NATIVE_VLAN
                switchport trunk allowed vlan ALL
                switchport mode trunk
                switchport nonegotiate
                auto qos voip trust
                mls qos trust cos
                if [[ $LIMIT -eq 0 ]]; then
                    default srr-queue bandwidth limit
                else
                    srr-queue bandwidth limit $LIMIT
                fi
                if [[ $SW_POE -eq YES ]]; then
                    if [[ $AP125X -eq AP125X ]]; then
                        macro description AP125X
                        macro auto port sticky
                        power inline port maximum 20000
                    fi
                fi
            exit
        end
    fi
    if [[ $LINKUP -eq NO ]]; then
        conf t
            interface $INTERFACE
                no macro description
                no switchport nonegotiate
                no switchport trunk native vlan $NATIVE_VLAN
                no switchport trunk allowed vlan ALL
                no auto qos voip trust
                no mls qos trust cos
                default srr-queue bandwidth limit
                if [[ $AUTH_ENABLED -eq NO ]]; then
                    no switchport mode
                    no switchport trunk encapsulation
                fi
                if [[ $STICKY -eq YES ]]; then
                    if [[ $SW_POE -eq YES ]]; then
                        if [[ $AP125X -eq AP125X ]]; then
                            no macro auto port sticky
                            no power inline port maximum
                        fi
                    fi
                fi
            exit
        end
    fi
}
<output truncated>
```

Related Commands	Command	Description
	macro auto device	Configures macro default parameter values.
	macro auto execute	Configures mapping from an event trigger to a built-in macro.
	macro auto global processing	Enables Auto Smartports on a switch.
	macro auto mac-address-group	Configures MAC address groups.
	macro auto sticky	Configures macro persistence.
	shell trigger	Creates event triggers.
	show macro auto	Displays information about macros.

■ show shell