



Alcatel-Lucent 1850

TRANSPORT SERVICE SWITCH (TSS-5) | RELEASE 4.1

COMMAND LINE INTERFACE GUIDE

365-372-405R4.1
CC109673467
MARCH 2008
ISSUE 1

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Appendix A: Addressable entities

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Appendix B: Commands

Command listing B-1

Introduction

Overview

A command line interface (CLI) is commonly used as the interface for elements in a Data Network. An operator or user can access the CLI from a direct serial connection (console) or a remote session, using Telnet or SSH. A CLI can also serve as a “back-end” interface for a GUI-based management system.

The CLI described in this document is used as a management interface for Alcatel-Lucent 1850 Transport Service Switch 5 (Alcatel-Lucent 1850 TSS-5).

Using the command line interface

Command syntax

A command is one or more words that might be followed by one or more parameters. Parameters are either required or optional.

Some commands, such as **shutdown** and **auto-negotiate** do not require parameters. Other commands, such as **network protocol**, require you to supply a value after the command. You must type the parameter values in a specific order, with optional parameters following required parameters.

In this document, detailed information about command syntax is displayed under the heading, “Format,” as follows. The **network parms** command syntax is displayed as an example.

Format

network parms <ipaddr> <netmask> [gateway]

network parms is the command name.

<ipaddr> and <netmask> represent required parameter values that you must enter after typing the command keywords.

[gateway] is an optional parameter. You are not required to enter a value for this parameter.

Command conventions

The commands and parameters are introduced in **bold Courier** font. Subsequently, commands and parameters are shown in Courier font, to approximate the spacing of their on-screen appearance. Commands appear at the beginning of the command line, parameters, if available, follow the commands. Additional parameter conventions are described below.

Table 1 Command conventions

Symbol	Example	Example
< > angle brackets	<value>	Indicates that you must enter a value in place of the brackets and text.
[] square brackets	[value]	Indicates an optional parameter that you can enter in place of the brackets and text.
{ } curly braces	{choice1 choice2}	Indicates that you must select a parameter from the list of choices.
Vertical bars	choice1 choice2	Separates mutually exclusive choices.
[{ }] Braces within square brackets	[{choice1 choice2}]	Indicates a choice within an optional element.

Using the no form of a command

In the CLI, the configuration result of a command can be negated by using the no-form of the command. Not all the CLI commands support a no-form.

For example, the command **shutdown**, disables an interface. However, **no shutdown** enables the interface.

Command modes

Overview

In the CLI, commands are grouped into modes according to function. Each mode supports specific software commands. With the exception of the User EXEC mode, commands in each mode are not available until you switch to that mode. User EXEC mode commands can also be executed in the Privileged EXEC mode.

The command modes that are available depend on the software modules that are installed. For example, a switch that does not support BGPv4 does not have a Router BGPv4 command mode.

CLI command modes

The command prompt changes in each mode to help you identify the current mode. The following table describes the command modes and the prompts visible in that mode.

Table 2 CLI command modes

Command Mode	Prompt	Mode Description
User EXEC	(ALU 1850TSS-5) >	Contains a limited set of commands for viewing basic system information.
Privileged EXEC	(ALU 1850TSS-5) #	Allows you to issue any EXEC command, enter the VLAN mode, or enter the Global Configuration mode.
Global Config	(ALU 1850TSS-5) (Config)#	Contains general setup commands and permits you to make modifications to the running configuration.
VLAN Config	(ALU 1850TSS-5) (VLAN)#	Contains all the VLAN commands.
Interface Config	(ALU 1850TSS-5) Interface <number>#	Manages the operation of an interface and provides access to the router interface configuration commands.
	(ALU 1850TSS-5) Interface Loopback <id>#	Use this mode to set up a physical port for a specific logical connection operation.
	(ALU 1850TSS-5) Interface Tunnel <id>#	
Line Config	(ALU 1850TSS-5) (line)#	Contains commands to configure outbound Telnet settings and console interface settings.
Policy Map Config	(ALU 1850TSS-5) (Config-policy-map)#	Contains the QoS policy map configuration commands.

Table 2 CLI command modes (Continued)

Command Mode	Prompt	Mode Description
Policy-Class-Map Config	(ALU 1850TSS-5) (Config-policy-class-map)#	Contains class creation, deletion, and matching commands. The class match commands specify Layer 2, Layer 3, and general match criteria.
Class Map Config	(ALU 1850TSS-5) (Config-class-map)#	Contains the QoS class map configuration commands.
Interface T1 Config	(ALU 1850TSS-5) (Interface <t1-number>)#	Contains the T1 interface configuration commands. (VLNC60 only)
Interface E1 Config	(ALU 1850TSS-5) (Interface <e1-number>)#	Contains the E1 interface configuration commands. (VLNC60 only)
Interface OC3 Config	(ALU 1850TSS-5) (Interface <OC3-number>)#	Contains the OC3 interface configuration commands. (VLNC64 only)
Interface STM1 Config	(ALU 1850TSS-5) (Interface <STM1-number>)#	Contains the STM1 interface configuration commands. (VLNC64 only)
Interface VTDS1 Config	(ALU 1850TSS-5) (Interface <VTDS1-number>)#	Contains the VT1.5 and DS1 parameters configuration commands. (VLNC64 only)
Interface VCE1 Config	(ALU 1850TSS-5) (Interface <VCE1-number>)#	Contains the VC12 and E1 parameters configuration commands. (VLNC64 only)
Interface STS1 Config	(ALU 1850TSS-5) (Interface <STS1-number>)#	Contains the STS1 parameters configuration commands. (VLNC64 only)
Interface VC4 Config	(ALU 1850TSS-5) (Interface <VC4-number>)#	Contains the VC4 parameters configuration commands. (VLNC64 only)
Pseudowire Config	(ALU 1850TSS-5) (Config <pwe-name>)#	Contains the Pseudowire configuration commands.
PSN Tunnel Config	(ALU 1850TSS-5) (Config <psn-tunnel-name>)#	Contains the PSN Tunnel configuration commands.
BITS LIU Config	(ALU 1850TSS-5) (Interface <BITS-LIU-number>)#	Contains the BITS Line Interface Unit configuration commands.
Multilink Config	(ALU 1850TSS-5) (Interface multilink-<number>)#	Contains the Multilink PPP configuration commands.
Fragment Map Profile Config	(ALU 1850TSS-5) (Config - fragmentmap)#	Contains the Fragment Map configuration commands.

In [Table 2](#), (*ALU 1850TSS-5*) represents the actual default prompt string in the system. In Release 4.1, the default prompt is either (*ALU 1850TSS-5-40*), (*ALU 1850TSS-5-60*) or (*ALU 1850TSS-5-64*), where “40”, “60” and “64” depends on the pack type, VLNC40, VLNC60, or VLNC64, respectively. Refer to [“set prompt” \(p. 3-115\)](#), to modify the default prompt.

CLI mode access

The following table explains how to enter or exit each CLI mode.

Table 3 CLI mode access and exit

Command Mode	Access Method	Exit or Access Previous Mode
User EXEC	This is the first level of access.	To exit, enter logout .
Privileged EXEC	From the User EXEC mode, enter enable .	To exit to the User EXEC mode, enter exit or press Ctrl-Z .
Global Config	From the Privileged EXEC mode, enter configure .	To exit to the Privileged EXEC mode, enter exit , or press Ctrl-Z .
VLAN Config	From the Privileged EXEC mode, enter vlan database .	To exit to the Privileged EXEC mode, enter exit , or press Ctrl-Z .
Interface Config	From the Global Config mode, enter interface <port> or interface loopback <id> or interface tunnel <id>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Line Config	From the Global Config mode, enter lineconfig .	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Policy-Map Config	From the Global Config mode, enter policy-map .	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Policy-Class-Map Config	From the Policy Map mode enter class .	To exit to the Policy Map mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Class-Map Config	From the Global Config mode, enter class-map .	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Interface T1 Config	From the Global Config mode, enter interface <t1-port>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Interface E1 Config	From the Global Config mode, enter interface <e1-port>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .

Table 3 CLI mode access and exit (Continued)

Command Mode	Access Method	Exit or Access Previous Mode
Interface OC3 Config	From the Global Config mode, enter interface <OC3-port>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Interface STM1 Config	From the Global Config mode, enter interface <STM1-port>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Interface VTDS1 Config	From the Global Config mode, enter interface <VTDS1-port>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Interface VCE1 Config	From the Global Config mode, enter interface <VCE1-port>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Interface STS1 Config	From the Global Config mode, enter interface <STS1-path>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Interface VC4 Config	From the Global Config mode, enter interface <VC4-path>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Pseudowire Config	From the Global Config mode, enter pseudowire <name>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
PSN Tunnel Config	From the Global Config mode, enter psntunnel <name>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
BITS LIU Config	From the Global Config mode, enter interface <BITS-LIU>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Multilink Config	From the Global Config mode, enter interface multilink <multilink-id>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .
Fragment Map Profile Config	From the Global Config mode, enter fragment-map-profile <fragment-map-name>	To exit to the Global Config mode, enter exit . To return to the Privileged EXEC mode, enter Ctrl-Z .

Command entry assistance

Introduction

Three mechanisms are available to help you enter CLI commands correctly.

- Command completion and abbreviation
- CLI error messages
- In-line CLI editing

Command completion

Command completion is an interface feature that finishes spelling the command when you have typed enough letters of a command to uniquely identify the command keyword. Once you have entered enough letters, press the SPACEBAR or TAB key to complete the word.

Command abbreviation is an interface feature that allows you to execute a command when you have entered enough letters to uniquely identify the command. you must specify all of the required keywords and parameters before completing the command.

CLI error messages

If you enter a command, and the system is unable to execute it, an error message is displayed. The following table describes the most common CLI error messages.

Table 4 CLI error messages

Message Text	Description
% Invalid input detected at '^' marker.	Indicates that you have entered an incorrect or unavailable command. The caret (^) shows where the invalid text is detected. This message also appears if any of the parameters or values are not recognized.
Command not found / Incomplete command. Use? to list commands.	Indicates that you did not enter the required keywords or values.
Ambiguous command	Indicates that you did not enter enough letters to uniquely identify the command.

CLI line-editing conventions

The following table describes the key combinations you can use to edit commands or increase the speed of command entry. You can access this list from the CLI by entering **help** from the User or Privileged EXEC modes.

Table 5 CLI editing conventions

Key Sequence	Description
DEL or Backspace	Delete previous character
Ctrl-A	Go to beginning of line
Ctrl-E	Go to end of line
Ctrl-F	Go forward one character
Ctrl-B	Go backward one character
Ctrl-D	Delete current character
Ctrl-U, X	Delete to beginning of line
Ctrl-K	Delete to end of line
Ctrl-W	Delete previous word
Ctrl-T	Transpose previous character
Ctrl-P	Go to previous line in history buffer
Ctrl-R	Rewrites or pastes the line
Ctrl-N	Go to next line in history buffer
Ctrl-Y	Prints last deleted character
Ctrl-Q	Enables serial flow
Ctrl-S	Disables serial flow
Ctrl-Z	Return to root command prompt
Tab, <SPACE>	Command line completion
Exit	Go to next lower command prompt
?	List available commands, keywords, or parameters

CLI help

Description

The CLI includes features to help you locate commands and identify the keywords or parameters associated with them.

Available commands

You can enter a question mark (?) at the command prompt to display the commands available in the current mode.

```
(ALU 1850TSS-5) > ?
enable          Enter into user privilege mode.
help            Display help for various special keys.
logout          Exit this session. Any unsaved changes are lost.
ping            Send ICMP echo packets to a specified IP address.
quit            Exit this session. Any unsaved changes are lost.
show            Display Switch Options and Settings.
telnet          Telnet to a remote host.
```

Available keywords and parameters

Enter a question mark (?) after each word you enter to display available command keywords or parameters.

```
(ALU 1850TSS-5) # network ?
javamode        Enable/Disable.
mgmt_vlan       Configure the Management VLAN ID of the switch.
parms           Configure Network Parameters of the router.
protocol        Select DHCP, BootP, or None as the network config
                protocol.
```

If the help output shows a parameter in angle brackets, you must replace the parameter with a value.

```
(ALU 1850TSS-5) # network parms ?
<ipaddr>        Enter the IP Address.
```

If there are no additional command keywords or parameters, or if additional parameters are optional, the following message appears in the output:

```
<cr>            Press Enter to execute the command
```

Partial similar keywords and parameters

You can also enter a question mark (?) after typing one or more characters of a word to list the available command or parameters that begin with the same letters, as shown in the following example:

```
(ALU 1850TSS-5) # show m?
mac-addr-table      mac-address-table      monitor
```

How to access the CLI

Introduction

You can access the CLI by using a direct console connection or by using a Telnet or SSH connection from a remote management host.

Initial connection

For the initial connection, you must use a direct connection to the console port. You cannot access the system remotely until the system has an IP address, subnet mask, and default gateway. You can set the network configuration information manually, or can configure the system to accept these settings from a BOOTP or DHCP server on the network.

Default serviceport IP address

The serviceport has a default IP address and mask, but no default gateway. See [“serviceport ip” \(p. 3-7\)](#) for additional details. Using this default address, it is possible to access the system through the serviceport, without first configuring a system IP address from a direct connection to the console port.

How to interpret the command template in this manual

Introduction

This section describes the template used in this document to display information for the various commands. The description of each command begins with the command name.

The following headings, from Syntax to Example, are an example of the format that is used in this document to present the specific information for each command.

Syntax

This field provides the complete listing of the command syntax, including all keywords and parameters, in the format shown below.

commandname {enum1 | enum2} <varname> keyword

Description

This field provides details of the command's functionality.

Mode

This field specifies the CLI Mode in which the command is to be executed.

Release and pack information

The applicable Release and pack information for the command.

Example: VLNC64, Starting Release 4.1

Parameters

<parameter-field> - This field describes the parameter and its values, as applicable.

Default: This field specifies the default value of a parameter. The circuit pack stores this value in its database when the operator does not explicitly specify this parameter. Also, when the operator resets a configured value on a parameter, using the no form of the command, the parameter is restored to this value.

Range: This field specifies the range for the parameter's values.

Support for no-form

no command <parameter> This field specifies the no-form of a CLI command.

User guidelines

This field specifies the user guidelines that the operator must follow when provisioning with the command.

Output

This field specifies the applicable output for the command.

Examples

This field provides examples for the use of the command.

1 Switching commands

Overview

This section describes the switching commands available on the Alcatel-Lucent 1850 Transport Service Switch 5 (Alcatel-Lucent 1850 TSS-5) CLI interface.

The commands in this chapter are in one of three functional groups:

- Configuration commands
These commands configure features and options of the switch. For every configuration command, there is a show command that displays the configuration setting.
- Show commands
These commands display switch settings, statistics, and other information.
- Clear commands
These commands clear some or all of the settings to factory defaults.

Contents

This chapter covers these topics.

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Port configuration commands

Overview

This section describes the commands that are used to view and configure port settings.

interface (for Ethernet)

Syntax

interface <port>

Description

This command gives you access to the Interface Config mode, which allows you to enable or modify the operation of an interface (port).

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, per [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The output prompt is changed to that of *Interface Config Mode*

Example

```
(ALU 1850TSS-5) (Config)# interface d2-1  
(ALU 1850TSS-5) (Interface d1-1)#
```

auto-negotiate

Syntax

auto-negotiate

Description

This command enables automatic negotiation on a port.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no auto-negotiate disables auto negotiation on the port. Automatic sensing is disabled when automatic negotiation is disabled.

User guidelines

By default auto-negotiation is disabled on a port.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# auto-negotiate
```

auto-negotiate all

Syntax

auto-negotiate all

Description

This command enables automatic negotiation on all ports.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no auto-negotiate all disables auto negotiation on all the ports.

User guidelines

By default auto-negotiation is disabled on all ports.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# auto-negotiate all
```

description (for Ethernet)

Syntax

description <description>

Description

This command creates an alpha-numeric description of a port.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

description - specifies a description of the interface

Default: *None*

Range: 1 to 32 alpha numeric character string

Support for no form

no description removes the description and sets it to Null.

User guidelines

Description is shown in the show port description command.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# description EIUInterface1
```

mtu

Syntax

mtu <mtu-size>

Description

This command sets the maximum transmission unit (MTU) size, in bytes, for frames that ingress or egress the interface. You can use the mtu command to configure jumbo frame support for physical and port-channel (LAG) interfaces. For the standard VLNC40 implementation, the MTU size is a valid integer between 1522 - 9216 for tagged packets, and a valid integer between 1518 - 9216 for untagged packets.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

mtu-size - specifies the MTU size

Default: 1518 (untagged)

Range: 1518-9216

Support for no form

no mtu sets the default MTU size (in bytes) for the interface.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# mtu 2000
```

shutdown

Syntax

shutdown

Description

This command disables a port. This command can be used on an Ethernet interface and port-channel (LAG) interfaces.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no shutdown enables the Ethernet interface

User guidelines

By default the interface is enabled.

Only exception is that, an SFP port is not enabled if there is no SFP in it.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# shutdown
```

shutdown all

Syntax

shutdown all

Description

This command disables all ports. The command can be used on Ethernet interfaces and port-channel (LAG) interfaces.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no shutdown all enables all the ports.

User guidelines

By default all interfaces are enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# shutdown all
```


speed

Syntax

speed {<speed> <duplex-mode>}

Description

This command specifies the speed and duplex setting on a port.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

speed - specifies the speed of the interface in Mbps.

Default: 100

Range: 10 | 100

duplex-mode - specifies the half or full duplex mode of the interface.

Default: full-duplex

Range: {full-duplex | half-duplex}

100 h 100BASE-T half duplex

100 f 100BASE-T full duplex

10 h 10BASE-T half duplex

10 f 10BASE-T full duplex

Support for no form

None

User guidelines

Speed cannot be configured on any of the SFP ports. The SFP itself determines speed and duplex-mode.

Speed and duplex mode can only be configured when auto-negotiate is disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# speed 100 full-duplex
```

speed all

Syntax

speed all {<speed> <duplex-mode>}

Description

This command specifies the speed and duplex setting for all the Ethernet interfaces.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

speed - specifies the speed of the interface in Mbps.

Default: 100

Range: 10 | 100

duplex-mode - specifies the half or full duplex mode of the interface

Default: full-duplex

Range: {full-duplex | half-duplex}

100 h 100BASE-T half duplex

100 f 100BASE-T full duplex

10 h 10BASE-T half duplex

10 f 10BASE-T full duplex

Support for no form

None

User guidelines

Speed cannot be configured on any of the SFP ports. The SFP itself determines speed and duplex-mode.

Speed and duplex mode can only be configured when auto-negotiate is disabled.

The **speed all** command will only affect ports for which speed can be configured, as described above.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# speed all 100 half-duplex
```

speed all (VLNC60 and VLNC64)

Syntax

```
speed all {100 | 1000}
```

Description

This command sets the speed of both the SFP Ethernet interfaces on the pack to either 100 Mbps or 1 Gbps. On the VLNC60 and VLNC64 packs, the speed of both the Ethernet ports must be the same.

If this command is not specified the default speed of the Ethernet interfaces is 1Gbps.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

Support for no form

None

User guidelines

If the backplane port is enabled, this command will fail if you specify 'speed 100', since the backplane port can operate only at 1 Gbps.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# speed all 100
```

sfp-unequip

Syntax

sfp-unequip

Description

This command unequips SFP ports. It applies to SFP ports only.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None.

User guidelines

Use this command after an SFP has been unplugged, to retire the SFP port from the system.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# sfp-unequip
```

show port

Syntax

```
show port {{<port-number>[{vt | ds1} | {vc12 | e1}]} | all} [nopage]
```

Description

This command displays port information. Specifying the **nopage** option causes the command output to be displayed continuously, without any prompting for user input.

The **nopage** option is available starting in Release 4.0.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

port-number - Specifies the Interface number

Default: *None*

Range: the ports applicable to different packs are specified below. The port values are as specified [Appendix A, “Addressable entities”](#).

VLNC40: Ethernet-Port

VLNC60: Ethernet-Port, T1-port, E1-Port, BITS-LIU. E1-Port is applicable beginning in Release 4.1

VLNC64: Ethernet-Port, OC3-Port, VTDS1-Port, STS1-Path, STM1-Port, VCE1-Port, VC4-Path, BITS-LIU

vt or **ds1** is mandatory in *Interface VTDS1 Config Mode*.

- **vt** refers to the VT signal on the OC3 interface.
- **ds1** refers to the DS1 signal on the OC3 interface.

vc12 or **e1** is mandatory in *Interface VCE1 Config Mode*.

- **vc12** refers to the VC12 signal on the STM1 interface.
- **e1** refers to the E1 signal on the STM1 interface.

all -

VLNC40 - Displays output for Ethernet-Port.

VLNC60 - Displays output for Ethernet-Port, T1-Port, E1-Port (beginning in Release 4.1), BITS-LIU, and also for the Multilink Group (if it is configured on the system).

VLNC64 - Displays output for Ethernet-Port, OC3-Port, STM1-Port, BITS-LIU.

Support for no form

None

User guidelines

None

Output

Intf - The port value as specified in [Appendix A, “Addressable entities”](#)

Type - If not blank, this field indicates that this is a special type of port. This field is applicable only on VLNC40. The possible values are:

- **Mirror** - this port is a monitoring port. For more information, see [“Port mirroring commands” \(p. 1-159\)](#).
- **PC Mbr** - this port is a member of a port-channel (LAG).
- **Probe** - this port is a probe port.

Name - This field applies to SFP ports only. Values are as shown in [Table 1-1, “SFP details” \(p. 1-23\)](#).

Qualifier - This field applies to SFP ports only. Values are as shown in [Table 1-1, “SFP details” \(p. 1-23\)](#).

Admin Mode - Selects the Port control administration state as enabled or disabled. The port must be enabled for it to be allowed into the network. The factory default is enabled.

Physical Mode - Selects the desired port speed and duplex mode. If auto-negotiation support is selected, then the duplex mode and speed is set from the auto-negotiation process. Note that the maximum capability of the port (full duplex -100M) is advertised. Otherwise, this object determines the port's duplex mode and transmission rate. The factory default is 100 full-duplex. For ports other than Ethernet, the system displays speed as specified in [Table 1-2, “Port speed” \(p. 1-25\)](#)

Physical Status - Indicates the port speed and duplex mode. This field is applicable only on Ethernet ports.

Link Status - Indicates whether the Link is up or down.

Link Trap - This object determines whether or not to send a trap when link status changes. The factory default is enabled.

LACP Mode - Displays whether LACP is enabled or disabled on this port. This field is applicable only on VLNC40.

Flow Mode - Displays whether flow-control is enabled or not. See [“storm-control flowcontrol” \(p. 1-139\)](#) for additional details. This field is applicable only on VLNC40.

Table 1-1 SFP details

	SFP type	EEPROM
name	multirate optics	if (EEPROM byte 6 & 0x37) then <i>OMIG//OMFE</i>
	Gigabit Ethernet optics	if (EEPROM byte 6 & 0x07) then <i>OMIG</i>
	Fast Ethernet optics	if (EEPROM byte 6 & 0x30) then <i>OMFE</i>
	Electrical (multirate)	if (EEPROM byte 6 & 0x08) then <i>EMIG//EMFE</i>
	CWDM Gigabit Ethernet optics (starting Release 4.1)	see Gigabit Ethernet optics above
	OC-3/STM-1 optics	If (EEPROM byte 5 & 0x0f) then <i>OMI55</i>
qual	multirate optics	<gigE value> + “/” + <fastE value> e.g. if (EEPROM byte 6 & 0x22) then <i>1000BASE-LX//100BASE-FX-MM</i>
		if (EEPROM byte 6 & 0x01) then <i>1000BASE-SX</i> if (EEPROM byte 6 & 0x04) then <i>1000BASE-CX</i> if (EEPROM byte 6 & 0x02) then if (EEPROM byte 14 >= 0x50) then <i>1000BASE-ZX</i> else <i>1000BASE-LX</i>
	Gigabit Ethernet optics	

Table 1-1 SFP details (Continued)

SFP type	EEPROM
Fast Ethernet optics	if (EEPROM byte 6 & 0x10) then <i>100BASE-LX-SM</i> if (EEPROM byte 6 & 0x20) then <i>100BASE-FX-MM</i>
Electrical (multirate)	if (EEPROM byte 6 & 0x08) then <i>1000BASE-T//100BASE-T</i>
CWDM Gigabit Ethernet optics (starting Release 4.1)	'waveln' = ((EEPROM byte 60 << 8) (EEPROM byte 61)) if (EEPROM byte 1 == 0x14) then if (EEPROM byte 14 >= 0x50) then <i>1000BASE-LCWDM ('waveln'nm)</i> else <i>1000BASE-SCWDM ('waveln'nm)</i>
OC-3/STM-1 optics (starting Release 4.1, VLNC64 only)	'waveln' = ((EEPROM byte 60 << 8) (EEPROM byte 61)) If (EEPROM (byte 4 & 0x01) (byte 5 & 0x11)) then <i>SR1(I-1)('waveln'.00)</i> If (EEPROM (((byte 4 & 0x02) (byte 5 & 0x22)) && ((byte 4 & 0x18) == 0x10))) then <i>IR1(S-1.1)('waveln'.00)</i> If (EEPROM (((byte 4 & 0x04) (byte 5 & 0x44)) && ((byte 4 & 0x18) == 0x10))) then <i>LR1(L-1.1)('waveln'.00)</i>

Table 1-2 Port speed

Port	SFP type
T1-Port	1.544Mbps
E1-Port	2.048Mbps
OC3-Port	155.52Mbps
STS1-Path	50.112Mbps
VTDS1-Port (for VTs)	1.728Mbps
VTDS1 (for DS1s)	1.544Mbps
STM1-Port	155.52Mbps
VC4-Path	150.336Mbps
VCE1-Port (for VC12)	2.240Mbps
VCE1-Port (for E1)	2.048Mbps
Multilink Group	empty field for this port

Example

```
(ALU 1850TSS-5) # show port a-17 (VLNC40)
```

Intf	Type	Name	Qualifier	Admin Mode	Physical Mode	Physical Status	Link Status	Link Trap	LACP Mode	Flow Mode
a-17				Enable	Auto	100 Full	Up	Enable	Enable	Disable

```
(ALU 1850TSS-5) # show port all (on VLNC60)
```

Intf	Name	Qualifier	Admin Mode	Physical Mode	Physical Status	Link Status	Link Trap
d1-1	OM1G	1000BASE-SX	Enable	1000 Full	1000 Full	Up	Enable
d1-2	OM1G	1000BASE-LCWDM (1471nm)	Enable	1000 Full	1000 Full	Up	Enable
a-1-1			Enable	1.544Mbps		Up	Enable
a-1-2			Enable	1.544Mbps		Up	Enable
a-1-3			Enable	1.544Mbps		Up	Enable
a-1-4			Enable	1.544Mbps		Up	Enable
a-2-1			Enable	1.544Mbps		Down	Enable
a-2-2			Enable	1.544Mbps		Down	Enable
a-2-3			Enable	1.544Mbps		Down	Enable
a-2-4			Enable	1.544Mbps		Down	Enable
ref-1			Enable			Down	Disable

show port (for all ports of same type)

Syntax

```
show port {{ds1_all | vt_all | sts1_all | oc3_all} | {e1_all | vc12_all | vc4_all |  
stm1_all}} [nopage]
```

Description

This command displays information for all ports of a specific type within a SONET/SDH hierarchy. Specifying the **nopage** option causes the command output to be displayed continuously, without any prompting for user input.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: *None*

ds1_all - displays the details of all DS1s on the system.

vt_all - displays the details of all VTs on the system.

sts1_all - displays the details of all STS1s on the system.

oc3_all - displays the details all OC3s on the system. Since VLNC64 has only one OC3 port, this command is equivalent to show port <OC3-Port>.

e1_all - displays the details of all E1s on the system.

vc12_all - displays the details of all VC12s on the system.

vc4_all - displays the details of all VC4s on the system. Since VLNC64 has only one VC12 port, this command is equivalent to show port <VC4-Path>.

stm1_all - displays the details of all STM1s on the system. Since VLNC64 has only one STM1 port, this command is equivalent to show port <STM1-Port>.

Support for no form

None

User guidelines

None

Output

The details for each port is as per the command [“show port”](#) (p. 1-21).

Example

```
(ALU 1850TSS-5) # show port description vt_all
```

show port description

Syntax

show port description {<value>}

Description

This command displays port description information.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

value - Ethernet Interface value

Default: *None*

Range: Ethernet Port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Interface - Ethernet Port, as specified in [Appendix A, “Addressable entities”](#)

ifIndex - (internal) port index

Description - as entered with the `description` command

MAC Address - MAC address associated with the port. VLNC40 does not make use of MAC addresses associated with ports. The MAC address shown is identical for all ports and is retrieved from the VLNC40 EEPROM.

Bit Offset Val - (internal) for debugging purposes only

Example

```
(ALU 1850TSS-5) # show port description a-17
```

```
Interface..... a-17
ifIndex..... 9
Description.....
MAC Address..... 00:60:1D:E8:08:52
Bit Offset Val.. 9
```

```
(ALU 1850TSS-5) #
```

show port protocol

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

backplane port

Syntax

backplane port

Description

VLNC40, VLNC60 and VLNC64 packs have a backplane Gigabit Ethernet port to connect to another pack on the system, instead of using SFPs. This command allows you to enable/disable this backplane port.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no backplane-port disables the backplane port on the pack.

User guidelines

By default, the backplane port is disabled.

The backplane port may be enabled regardless of SFP equipage.

On the VLNC40, the SFP Ethernet port (d2-4) cannot be used if this port is enabled.

On the VLNC60 or VLNC64, the first SFP Ethernet port (d{1-2}-1) cannot be used if this port is enabled.

If the backplane port is enabled, and the SFP is equipped, it is alarmed.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# backplane-port
```

show backplane port

Syntax

show backplane port

Description

This command displays the status of the backplane port.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Displays the status of the backplane.

Administrative status: Enable or Disable - Specifies whether the backplane port capability is enabled or not.

Operational status: Up or Down

Example

```
(ALU 1850TSS-5) (Config)# show backplane-port  
ADMIN STATUS..... disabled  
OPERATIONAL STATUS..... up
```

Spanning Tree Protocol (STP) commands

This section describes the commands used to configure Spanning Tree Protocol (STP). STP helps prevent network loops, duplicate messages, and network instability.

- STP is disabled by default. When you enable STP on the switch, STP is still disabled on each port.
- If STP is disabled, the system does not forward BPDU messages.

spanning-tree

Syntax

spanning-tree

Description

This command sets the spanning-tree operational mode to enabled.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no spanning-tree sets the spanning-tree operational mode to disabled. While disabled, the spanning-tree configuration is retained and can be changed, but has no effect.

User guidelines

By default, the spanning-tree operational mode is disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree
```

spanning-tree bpdumigrationcheck

Syntax

spanning-tree bpdumigrationcheck {<port> | **all**}

Description

This command forces transmission of rapid spanning tree (RSTP) and multiple spanning tree (MSTP) BPDUs. The <port> parameter is used to transmit a BPDU from a specified interface. The **all** keyword is used to transmit BPDUs from all interfaces. This command forces BPDU transmission when you execute it. The command does not change the system configuration.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree bpdumigrationcheck all
```

spanning-tree configuration name

Syntax

spanning-tree configuration name <name>

Description

This command sets the Configuration Identifier Name to identify the configuration that this switch is currently using.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

name

Default: Burned in MAC address on the pack, as read from the EEPROM.

Range: Alphanumeric string from 1 to 32 characters

Support for no form

no spanning-tree configuration name resets the Configuration Identifier Name to its default.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree configuration name STPConfig1
```


spanning-tree configuration revision

Syntax

spanning-tree configuration revision <value>

Description

This command sets the Configuration Identifier Revision Level to identify the configuration that this switch is currently using.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value

Default: 0

Range: 0-65535

Support for no form

no spanning-tree configuration revision sets the Configuration Identifier Revision Level to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree configuration revision 1
```

spanning-tree edgeport

Syntax

spanning-tree edgeport

Description

This command specifies that the port is an Edge Port within the common and internal spanning tree. This allows the port to transition to Forwarding State without delay.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no spanning-tree edgeport specifies that the port is not an Edge Port within the common and internal spanning tree.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# spanning-tree edgeport
```

spanning-tree forceversion

Syntax

spanning-tree forceversion <versionnumber>

Description

This command sets the Force Protocol Version parameter to a new value as specified below in the **Parameters** section. 802.1d is used to specify that the switch transmits ST BPDUs rather than MST BPDUs (IEEE 802.1d functionality supported). 802.1w is used to specify that the switch transmits RST BPDUs rather than MST BPDUs (IEEE 802.1w is functionality supported). 802.1s is used to specify that the switch transmits MST BPDUs (IEEE 802.1s is functionally supported).

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

versionnumber

Default: 802.1s

Range: {802.1d | 802.1s | 802.1w}

Support for no form

no spanning-tree forceversion sets the Force Protocol Version parameter to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree forceversion 802.1s
```

spanning-tree forward-time

Syntax

spanning-tree forward-time <value>

Description

This command sets the Bridge Forward Delay parameter to a new value for the common and internal spanning tree. The `forward-time` value is in seconds within a range of 4 to 30, with the value being greater than or equal to the result of: $(\text{Bridge Max Age} / 2) + 1$.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value

Default: 15

Range: 4-30

Support for no form

no spanning-tree forward-time sets the Bridge Forward Delay parameter for the common and internal tree to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree forward-time 20
```

spanning-tree hello-time

Syntax

spanning-tree hello-time <value>

Description

This command sets the Admin `hello-time` parameter to a new value for the common and internal spanning tree. The `hello-time <value>` is in whole seconds within a range of 1 to 10, with the value being less than or equal to the result of: (Bridge Max Age / 2) - 1.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value

Default: 2

Range: 1-10

Support for no form

no spanning-tree hello-time sets the admin `hello-time` parameter for the common and internal spanning tree to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# spanning-tree hello-time
```

spanning-tree max-age

Syntax

spanning-tree max-age <value>

Description

This command sets the bridge `max-age` parameter to a new value for the common and internal spanning tree. The `max-age <value>`, in seconds, has a range of 6 to 40, with the value being less than or equal to 2 x (Bridge Forward Delay - 1).

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value

Default: 20

Range: 6-40

Support for no form

no spanning-tree max-age sets the bridge `max-age` parameter for the common and internal spanning tree to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree max-age 10
```

spanning-tree max-hops

Syntax

spanning-tree max-hops <value>

Description

This command sets the MSTP `max-hops` parameter to a new value for the common and internal spanning tree.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value

Default: 20

Range: 1-127

Support for no form

no spanning-tree max-hops sets the bridge `max-hops` parameter for the common and internal spanning tree to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree max-hops 30
```

spanning-tree mst

Syntax

```
spanning-tree mst <mstid> {{cost <cost-value> | auto} | {external-cost <external-cost-value> | auto} | port-priority <port-priority-value>}
```

Description

This command sets the Path Cost or Port Priority for the port within the multiple spanning tree instance or common and internal spanning tree. If you specify an <mstid> parameter that corresponds to an existing multiple spanning tree instance, the configurations are set for that multiple spanning tree instance. If you specify 0 (defined as the default CIST ID) as the <mstid>, the configurations are done for the common and internal spanning tree instance.

If you specify the `cost` option, the command sets the path cost for this port within a multiple spanning tree instance or the common and internal spanning tree instance, depending on the <mstid> parameter. You can set the path cost to a number in the range of 1 to 200000000 or to `auto`. If you select `auto` the path cost value is set based on Link Speed. If you specify the `external-cost` option, the external-path cost is set for MST instance '0' i.e., CIST instance. You can set the external cost to a number in the range of 1 to 200000000 or to `auto`. If you specify `auto`, the external path cost value is set based on Link Speed.

If you specify the `port-priority` option, this command sets the priority for this port within a specific multiple spanning tree instance or the common and internal spanning tree instance, depending on the <mstid> parameter. The `port-priority` value is a number in the range of 0 to 240 in increments of 16.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

mstid - a number that corresponds to multiple spanning tree instance

Default: *None*

cost-value

Default: auto

Range: 1 - 200000000

external-cost-value -

Default: auto

Range: 1 - 200000000

port-priority-value -

Default: 128

Range: 1 - 200000000, in increments of 16

Support for no form

no spanning-tree mst <mstid> <cost> | external-cost | port-priority sets the Path Cost or Port Priority for this port within the multiple spanning tree instance, or common and internal spanning tree, to the respective default values. You configure an existing multiple spanning tree instance by specifying the <mstid> parameter that corresponds to it. If you specify 0 (defined as the default CIST ID) as the <mstid>, you are configuring the common and internal spanning tree instance.

If you specify **cost**, the command sets the path cost for this port within a multiple spanning tree instance or the common and internal spanning tree instance, depending on the <mstid> parameter, to the default value, i.e., a path cost value based on the Link Speed.

If you specify **external-cost**, this command sets the external path cost for this port for mst '0' instance, to the default value, i.e., a path cost value based on the Link Speed.

If you specify **port-priority**, this command sets the priority for this port within a specific multiple spanning tree instance or the common and internal spanning tree instance, depending on the <mstid> parameter, to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# spanning-tree mst 1 cost 100  
external-cost 200 port-priority 10
```

spanning-tree mst instance

Syntax

spanning-tree mst instance <mstid>

Description

This command adds a multiple spanning tree instance to the switch. The maximum number of multiple instances supported by the switch is 4.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

mstid - a number that corresponds to the ID of the new instance being added.

Default: *None*

Range: 1- 4094

Support for no form

no spanning-tree mst instance <mstid> instance from the switch and reallocates all VLANs allocated to the deleted instance to the common and internal spanning tree. The parameter, <mstid>, is a number that corresponds to the desired existing multiple spanning tree instance being removed.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree mst instance 1
```

spanning-tree mst priority

Syntax

spanning-tree mst priority <mstid> <value>

Description

This command sets the bridge priority for a specific multiple spanning tree instance. The priority value is a number within a range of 0 to 61440 in increments of 4096. If you specify 0 (defined as the default CIST ID) as the <mstid>, this command sets the Bridge Priority parameter to a new value for the common and internal spanning tree.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

mstid - a number that corresponds to the desired multiple spanning tree instance.

Default: *None*

Range: 0-4094

value - corresponds to priority value. The twelve least significant bits are masked according to the 802.1s specification. This causes the priority to be rounded down to the next lower valid priority.

Default: 32768

Range: 0-61440 in increments of 4096

Support for no form

no spanning-tree mst priority sets the bridge priority for a specific multiple spanning tree instance to the default value. The parameter <mstid> is a number that corresponds to the desired existing multiple spanning tree instance. If 0 (defined as the default CIST ID) is passed as the <mstid>, this command sets the Bridge Priority parameter for the common and internal spanning tree to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree mst priority 1 10
```

spanning-tree mst vlan

Syntax

spanning-tree mst vlan <mstid> <vlanid>

Description

This command adds an association between a multiple spanning tree instance and a VLAN, so that the VLAN is no longer associated with the common and internal spanning tree.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

mstid - a number that corresponds to the desired existing multiple spanning tree instance.

Default: *None*

Range: 1- 4094

vlanid - corresponds to existing VLAN ID.

Default: *None*

Range: 1-3965

Support for no form

no spanning-tree mst vlan <mstid> <vlanid> removes an association between a multiple spanning tree instance and a VLAN so that the VLAN is again be associated with the common and internal spanning tree. The parameter <mstid> is a number that corresponds to the desired existing multiple spanning tree instance. The <vlanid> corresponds to an existing VLAN ID.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree mst vlan 1 1
```

spanning-tree port mode

Syntax

spanning-tree port mode

Description

This command sets the Administrative Switch Port State for this port to enabled.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no spanning-tree port mode sets the Administrative Switch Port State for this port to disabled.

User guidelines

By default, the state is disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# spanning-tree port mode
```


spanning-tree port mode all

Syntax

spanning-tree port mode all

Description

This command sets the Administrative Switch Port State for all ports to enabled.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no spanning-tree port mode all sets the Administrative Switch Port State for all ports to disabled.

User guidelines

By default, the state is disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# spanning-tree port mode all
```

show spanning-tree

Syntax

show spanning-tree

Description

This command displays spanning tree settings for the common and internal spanning tree.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

Bridge Priority - Specifies the bridge priority for the Common and Internal Spanning tree (CST). The value is between 0 and 61440, in multiples of 4096.

Bridge Identifier - The bridge identifier for the CST. It uses the bridge priority and the base MAC address of the bridge.

Time Since Topology Change - Time in seconds.

Topology Change Count - Number of times changed.

Topology Change In Progress - The boolean value of the Topology Change parameter for the switch, indicating if a topology change is in progress on any port assigned to the common and internal spanning tree.

Designated Root - The bridge identifier of the root bridge. It is made up from the bridge priority and the base MAC address of the bridge.

Root Path Cost - The value of the Root Path Cost parameter for the common and internal spanning tree.

Root Port Identifier - The identifier of the port to access the Designated Root for the CST.

Root Port Max Age - A derived value.

Root Port Bridge Forward Delay - A derived value.

Hello Time - The configured value of the parameter for the CST.

Bridge Hold Time - The minimum time between transmission of Configuration Bridge Protocol Data Units (BPDUs).

Bridge Max Hops - The bridge max-hops count for the device.

CST Regional Root Bridge - The identifier of the CST Regional Root. It is made up using the bridge priority and the base MAC address of the bridge.

Regional Root Path - The Cost Path Cost to the CST Regional Root.

Associated FIDs - A list of forwarding database identifiers currently associated with this instance.

Associated VLANs - A list of VLAN IDs currently associated with this instance.

Support for no form

None

Example

```
(ALU 1850TSS-5) # show spanning-tree
```

```

Bridge Priority..... 32768
Bridge Identifier.....80:00:00:60:1D:E8:08:50
Time Since Topology Change.....0 day 0 hr 0 min 41 sec
Topology Change Count.....1
Topology Change in progress.....FALSE
Designated Root.....80:00:00:60:1D:E8:08:50
Root Path Cost.....0
Root Port Identifier.....00:00
Bridge Max Age.....20
Bridge Max Hops.....20
Bridge Forwarding Delay.....15
Hello Time.....2
Bridge Hold Time.....3
CST Regional Root.....80:00:00:60:1D:E8:08:50
Regional Root Path Cost.....0

```

Associated FIDs	Associated VLANs
-----	-----
1	1
101	101
102	102

```
(ALU 1850TSS-5) #
```

show spanning-tree brief

Syntax

show spanning-tree brief

Description

This command displays spanning tree settings for the bridge.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

Bridge Priority - The configured priority value.

Bridge Identifier - The bridge identifier for the selected MST instance. It is made up using the bridge priority and the base MAC address of the bridge.

Bridge Max Age - The configured max age value.

Bridge Max Hops - The bridge max-hops count for the device.

Bridge Hello Time - The configured hello time value.

Bridge Forward Delay - The configured forward delay value.

Bridge Hold Time - The minimum time between transmission of Configuration Bridge Protocol Data Units (BPDUs).

Support for no form

None

Example

```
(ALU 1850TSS-5) # show spanning-tree brief
```

```
Bridge Priority.....32768
Bridge Identifier.....80:00:00:60:1D:E8:08:50
Bridge Max Age.....20
Bridge Max Hops.....20
Bridge Hello Time.....2
Bridge Forward Delay.....15
Bridge Hold Time.....3
```

show spanning-tree interface

Syntax

show spanning-tree interface <port>

Description

This command displays the settings and parameters for a specific switch port within the common and internal spanning tree.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Hello Time - The admin hello time for this port.

Port Mode - Set to enabled or disabled.

Port Up Time Since Counters Last Cleared - The time since the port was reset, displayed in days, hours, minutes, and seconds.

STP BPDUs Transmitted - The number of Spanning Tree Protocol Bridge Protocol Data Units sent.

STP BPDUs Received - The number of Spanning Tree Protocol Bridge Protocol Data Units received.

RST BPDUs Transmitted - The number of Rapid Spanning Tree Protocol Bridge Protocol Data Units sent.

RST BPDUs Received - The number of Rapid Spanning Tree Protocol Bridge Protocol Data Units received.

MSTP BPDUs Transmitted - The number of Multiple Spanning Tree Protocol Bridge Protocol Data Units sent.

MSTP BPDUs Received - The number of Multiple Spanning Tree Protocol Bridge Protocol Data Units received.

Example

```
(ALU 1850TSS-5) #  
(ALU 1850TSS-5) # show spanning-tree interface a-17  
  
Hello Time.....Not Configured  
Port Mode.....Enabled  
Port Up Time Since Counters Last Cleared.....0 day 0 hr 6 min 6 sec  
STP BPDUs Transmitted.....0  
STP BPDUs Received.....0  
RSTP BPDUs Transmitted.....0  
RSTP BPDUs Received.....0  
MSTP BPDUs Transmitted.....185  
MSTP BPDUs Received.....0  
  
(ALU 1850TSS-5) #
```


show spanning-tree mst port detailed

Syntax

show spanning-tree mst port detailed <mstid> <port>

Description

This command displays the detailed settings and parameters for a specific switch port within a particular multiple spanning tree instance.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

mstid - a number that corresponds to the desired existing multiple spanning tree instance.

Default: *None*

Range: 1- 4094

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

MST Instance ID - The ID of the existing MST instance.

Port Identifier - The port identifier for the specified port within the selected MST instance. It is made up from the port priority and the interface number of the port.

Port Priority - The priority for a particular port within the selected MST instance. The port priority is displayed in multiples of 16.

Port Forwarding State - The current spanning tree state of this port.

Port Role - Each enabled MST Bridge Port receives a Port Role for each spanning tree. The port role is one of the following values: Root Port, Designated Port, Alternate Port, Backup Port, Master Port or Disabled Port.

Auto-Calculate Port Path Cost - This indicates whether auto calculation for port path cost is enabled.

Port Path Cost - The configured value of the Internal Port Path Cost parameter.

Auto-Calculate External Port Path Cost - This indicates whether auto calculation for external port path cost is enabled.

External Port Path Cost - The configured value of the external Port Path Cost parameter.

Designated Root - The Identifier of the designated root for this port.

Designated Port Cost - The Path Cost offered to the LAN by the Designated Port.

Designated Bridge - The Bridge Identifier of the bridge with the Designated Port.

Designated Port Identifier - The port on the Designated Bridge that offers the lowest cost to the LAN. If you specify 0 (defined as the default CIST ID) as the <mstid>, this command displays the settings and parameters for a specific switch port within the common and internal spanning tree. The <port> is the desired switch port.

If the default CIST ID (0) is specified as the <mstid>, this command displays the settings and parameters for the common and internal spanning tree. In this case, the following are displayed:

Port Identifier - The port identifier for this port within the CST.

Port Priority - The priority of the port within the CST.

Port Forwarding State - The forwarding state of the port within the CST.

Port Role - The role of the specified interface within the CST.

Port Path Cost - The configured path cost for the specified interface.

Designated Root - The identifier of the designated root for this port within the CST.

Designated Port Path Cost - The cost offered to the LAN by the Designated Port.

Designated Bridge - The bridge containing the designated port.

Designated Port Identifier - The port on the Designated Bridge that offers the lowest cost to the LAN.

Topology Change Acknowledgement - The value of flag in next Configuration Bridge Protocol Data Unit (BPDU) transmission indicating if a topology change is in progress for this port.

Hello Time - The hello time in use for this port.

Edge Port - The configured value indicating if this port is an edge port.

Edge Port Status - The derived value of the edge port status. True if operating as an edge port; false otherwise.

Point To Point MAC Status - the derived value indicating if this port is part of a point to point link.

CST Regional Root - The regional root identifier in use for this port.

CST Port Cost - The configured path cost for this port.

Example

```
(ALU 1850TSS-5) # show spanning-tree mst port detailed 0 a-17

Port Identifier.....80:09
Port Priority.....128
Port Forwarding State.....Manual forwarding
Port Role.....Disabled
Auto-calculate Port Path Cost.....Enabled
Port Path Cost.....0
Auto-Calculate External Port Path Cost.....Enabled
External Port Path Cost.....0
Designated Root.....80:00:00:60:1D:E8:08:50
Designated Port Cost.....0
Designated Bridge.....80:00:00:60:1D:E8:08:50
Designated Port Identifier.....00:00
Topology Change Acknowledge.....FALSE
Hello Time.....0
Edge Port.....FALSE
Edge Port Status.....FALSE
Point to Point MAC Status.....TRUE
CST Regional Root.....80:00:00:60:1D:E8:08:50
CST Path Cost.....0

(ALU 1850TSS-5) #
```

show spanning-tree mst port summary

Syntax

show spanning-tree mst port summary <mstid> {<port> | all}

Description

This command displays the settings of one or all ports within the specified multiple spanning tree instance.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

mstid - a number that corresponds to the existing multiple spanning tree instance.

Default: *None*

Range: 1-4094

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

MST Instance ID - The MST instance associated with this port.

Interface - Valid slot and port number.

Type - Currently not used.

STP State - The forwarding state of the port in the specified spanning tree instance.

Port Role - The role of the specified port within the spanning tree.

Link Status - The operational status of the link. Possible values are “Up” or “Down”.

Link Trap - The link trap configuration for the specified interface.

Example

```
(ALU 1850TSS-5) # show spanning-tree mst port summary 0 a-17
```

```
MST Instance ID..... CST
```

Interface	STP Mode	Type	STP State	Port Role
a-17	Disabled	Manual	forwarding	Disabled

show spanning-tree mst summary

Syntax

show spanning-tree mst summary

Description

This command displays summary information about all multiple spanning tree instances in the switch.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

MST Instance ID - A list of multiple spanning trees IDs currently configured for each MSTID:

Associated FIDs - A list of forwarding database identifiers associated with this instance.

Associated VLANs - A list of VLAN IDs associated with this instance.

Example

```
(ALU 1850TSS-5) # show spanning-tree mst summary
```

```
MST Instance ID..... 1
    Associated FIDs          Associated VLANs
    -----
    101                      101

MST Instance ID..... 2
    Associated FIDs          Associated VLANs
    -----
    102                      102
```

show spanning-tree summary

Syntax

show spanning-tree summary

Description

This command displays spanning tree settings and parameters for the switch.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

Spanning Tree Adminmode - Set to enabled or disabled.

Spanning Tree Version - The version of 802.1 currently supported (IEEE 802.1s, IEEE 802.1w, or IEEE 802.1d), based upon the Force Protocol Version parameter.

Configuration Name - The identifier for the configuration currently being used.

Configuration Revision Level - The identifier for the configuration currently being used.

Configuration Digest Key - The identifier for the configuration currently being used.

MST Instances - A list of all multiple spanning tree instances configured on the switch

Example

```
(ALU 1850TSS-5) # show spanning-tree summary
```

```
Spanning Tree Adminmode..... Disabled
Spanning Tree Version..... IEEE 802.1s
Configuration Name..... 00-60-1D-E8-08-50
Configuration Revision Level..... 0
Configuration Digest Key..... 0xa800302c1cc167ad3f897a9ed812bb03
Configuration Format Selector.... 0
MST Instances..... 1,2
```

show spanning-tree vlan

Syntax

show spanning-tree vlan <vlanid>

Description

This command displays the association between a VLAN and a multiple spanning tree instance.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

vlanid - corresponds to an existing VLAN ID.

Default: *None*

Range: 1-3965

Support for no form

None

User guidelines

None

Output

VLAN Identifier - The VLANs associated with the selected MST instance.

Associated MST Instance - The identifier for the associated multiple spanning tree instance or “CST” if associated with the common and internal spanning tree.

Example

```
(ALU 1850TSS-5) # show spanning-tree vlan 101
```

```
VLAN Identifier..... 101
Associated MST Instance..... 1
```

VLAN commands

vlan database

Syntax

vlan database

Description

This command gives you access to the VLAN Config mode, which allows configuration of VLAN characteristics.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # vlan database
```

network mgmt_vlan

Syntax

```
network mgmt_vlan <vlanid>
```

Description

This command configures the Management VLAN ID.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanid - VLAN identification number

Default: 1

Range: 1-3965

Support for no form

no network mgmt_vlan sets the Management VLAN ID to the default (1).

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # network mgmt_vlan 806
```

vlan

Syntax

vlan <vlanid>

Description

This command creates a new VLAN and assigns an ID. The ID is a valid VLAN identification number. ID 1 is reserved for the default VLAN.

Mode

VLAN Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanid - VLAN identification number

Default: *None*

Range: 2-3965

None

Support for no form

no vlan <vlanid> deletes an existing VLAN. ID (1 is reserved for the default VLAN and cannot be deleted.)

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (VLAN)# vlan 10
```

vlan acceptframe

Syntax

```
vlan acceptframe {vlanonly | all}
```

Description

This command sets the frame acceptance mode for an interface. For the VLAN Only mode, untagged frames or priority-tagged frames received on this interface are discarded. For the Admit All mode, untagged frames or priority-tagged frames received on this interface are accepted and assigned the value of the interface VLAN ID for this port. With either option, VLAN tagged frames are forwarded in accordance with the IEEE 802.1Q VLAN Specification.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanonly or **all**

Support for no form

no vlan acceptframe sets the frame acceptance mode for an interface to Admit All.

User guidelines

By default, the “admit all” mode is enabled

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# vlan acceptframe vlanonly
```

vlan ingressfilter

Syntax

vlan ingressfilter

Description

This command enables ingress filtering. If ingress filtering is disabled, frames received with VLAN IDs that do not match the VLAN membership of the receiving interface are admitted and forwarded to ports that are members of that VLAN. If ingress filtering is enabled, frames received with VLAN IDs that do not match the VLAN membership of the receiving interface are dropped.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no vlan ingressfilter disables ingress filtering.

User guidelines

By default, ingress filtering is disabled. On VLNC60 and VLNC64 ingress filtering is enabled and cannot be disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# vlan ingressfilter
```

vlan makestatic

Syntax

vlan makestatic <vlanid>

Description

This command changes a dynamic VLAN that was created by GVRP registration, to a static VLAN that is permanently configured and defined. The ID is a valid VLAN identification number.

Mode

VLAN Config Mode

Release and pack information

Not supported on the VLNC40.

Parameters

vlanid - VLAN identification number

Default: *None*

Range: 2-3965

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (VLAN)# vlan makestatic 2
```


vlan name

Syntax

vlan name <vlanid> <name>

Description

This command changes the name of a VLAN.

Mode

VLAN Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanid - VLAN identification number

Default: *None*

Range: 1-3965

name - specifies the corresponding VLAN name

Default: *None*

Range: Alphanumeric string from 1 to 32 characters

Support for no form

no vlan name <vlanid> sets the name of a VLAN to a blank string.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (VLAN)# vlan name 10 CellSite1
```

vlan participation

Syntax

vlan participation {exclude | include | auto} <vlanid>

Description

This command configures the degree of participation of a specific interface in a VLAN. The ID is a valid VLAN identification number.

Participation options are:

include - The interface is always a member of this VLAN. This is equivalent to registration fixed.

exclude - The interface is never a member of this VLAN. This is equivalent to registration forbidden.

auto - The interface is dynamically registered in this VLAN by GVRP. The interface will not participate in this VLAN unless a join request is received on this interface. This is equivalent to registration normal. This option is not supported on the VLNC40, VLNC60 or VLNC64.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanid - VLAN identification number

Default: *None*

Range: 1-3965

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# vlan participation include 10
```

vlan participation all

Syntax

vlan participation all {exclude | include | auto} <vlanid>

Description

This command configures the degree of participation for all interfaces in a VLAN. The ID is a valid VLAN identification number. You can use the following participation options:

include - The interface is always a member of this VLAN. This is equivalent to registration fixed.

exclude - The interface is never a member of this VLAN. This is equivalent to registration forbidden.

auto - The interface is dynamically registered in this VLAN by GVRP. The interface will not participate in this VLAN unless a join request is received on this interface. This is equivalent to registration normal. This option is not supported on the VLNC40, VLNC60 or VLNC64.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanid - VLAN identification number

Default: *None*

Range: 1-3965

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# vlan participation all include 10
```

vlan port acceptframe all

Syntax

vlan port acceptframe all {vlanonly | all}

Description

This command sets the frame acceptance mode for all interfaces. The modes defined as follows:

- VLAN Only mode - Untagged frames or priority frames received on this interface are discarded.
- Admit All mode - Untagged frames or priority frames received on this interface are accepted and assigned the value of the interface VLAN ID for this port.

With either option, VLAN tagged frames are forwarded in accordance with the IEEE 802.1Q VLAN Specification.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanonly or **all**

Support for no form

no vlan port acceptframe all sets the frame acceptance mode for all interfaces to Admit All.

User guidelines

By default, Admit All mode is enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# vlan port acceptframe all
```


vlan port ingressfilter all

Syntax

vlan port ingressfilter all

Description

This command enables ingress filtering for all ports. If ingress filtering is disabled, frames received with VLAN IDs that do not match the VLAN membership of the receiving interface are admitted and forwarded to ports that are members of that VLAN. If ingress filtering is enabled, frames received with VLAN IDs that do not match the VLAN membership of the receiving interface are dropped.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no vlan port ingressfilter all disables ingress filtering for all ports.

User guidelines

By default ingress filtering for all ports is disabled.

On the VLNC60 and VLNC64, ingress filtering is enabled by default and cannot be disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# vlan port ingressfilter all
```

vlan port pvid all

Syntax

vlan port pvid all <vlanid>

Description

This command changes the VLAN ID for all interfaces.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanid - VLAN identification number

Default: 1

Range: 1-3965

None

Support for no form

no vlan port pvid all sets the VLAN ID for all interfaces to 1.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# vlan port pvid all 10
```

vlan port tagging all

Syntax

```
vlan port tagging all <vlanid>
```

Description

This command configures the tagging behavior for all interfaces in a VLAN to enabled. When tagging is enabled, traffic is transmitted as tagged frames. When tagging is disabled, traffic is transmitted as untagged frames.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanid - VLAN identification number

Default: *None*

Range: 1-3965

Support for no form

no vlan port tagging all configures the tagging for all interfaces in a VLAN to disabled. When tagging is disabled, traffic is transmitted as untagged frames.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# vlan port tagging all 10
```

vlan protocol group

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

vlan protocol group add group

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

vlan protocol group remove

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

protocol group

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

protocol vlan group

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

protocol vlan group all

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

vlan pvid

Syntax

vlan pvid <vlanid>

Description

This command changes the default VLAN ID for an interface.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

vlanid - VLAN identification number

Default: 1

Range: 1-3965

Support for no form

no vlan pvid sets the VLAN ID for an interface to 1.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# vlan pvid 10
```

vlan tagging

Syntax

vlan tagging <vlanid>

Description

This command configures the tagging behavior for a specific interface in a VLAN to enabled. When tagging is enabled, traffic is transmitted as tagged frames. When tagging is disabled, traffic is transmitted as untagged frames.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

vlanid - VLAN identification number

Default: *None*

Range: 1-3965

Support for no form

no vlan tagging <vlanid> configures the tagging for a specific interface in a VLAN to disabled. When tagging is disabled, traffic is transmitted as untagged frames.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# vlan tagging 1010
```

vlan association subnet

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

vlan association mac

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

show vlan

Syntax

show vlan <vlanid>

Description

This command displays detailed information for a specific VLAN, including interface information.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanid - VLAN identification number

Default: *None*

Range: 1-3965

Support for no form

None

User guidelines

None

Output

VLAN ID - A VLAN Identifier (VID) is associated with each VLAN. The range of the VLAN ID is 1 to 3965.

VLAN Name - A string associated with this VLAN as a convenience. It can be up to 32 alphanumeric characters long, including blanks. The default is name blank. VLAN ID 1 always has a name of "Default." This field is optional.

VLAN Type of VLAN, which can be `Default` (VLAN ID = 1), `Static` (a configured VLAN that is permanently defined), or `Dynamic` (one that is created by GVRP registration).

Interface - Valid port number.

Current - Determines the degree of participation of this port in this VLAN. The permissible values are:

- `Include` - This port is always a member of this VLAN. This is equivalent to registration fixed in the IEEE 802.1Q standard.
- `Exclude` - This port is never a member of this VLAN. This is equivalent to registration forbidden in the IEEE 802.1Q standard.
- `Autodetect` - Specifies to allow the port to be dynamically registered in this VLAN via GVRP. The port will not participate in this VLAN unless a join request is received on this port. This is equivalent to registration normal in the IEEE 802.1Q standard.

Configured - Determines the configured degree of participation of this port in this VLAN. The permissible values are:

- `Include` - This port is always a member of this VLAN. This is equivalent to registration fixed in the IEEE 802.1Q standard.
- `Exclude` - This port is never a member of this VLAN. This is equivalent to registration forbidden in the IEEE 802.1Q standard.
- `Autodetect` - Specifies that the port is allowed to be dynamically registered in this VLAN via GVRP. The port will not participate in this VLAN unless a join request is received on this port. This is equivalent to registration normal in the IEEE 802.1Q standard.

Tagging - Selects the tagging behavior for this port in this VLAN.

- `Tagged` - Traffic for this VLAN is transmitted as tagged frames.
- `Untagged` - Traffic for this VLAN is transmitted as untagged frames.

Example

```
(ALU 1850TSS-5) # show vlan 102
```

```
VLAN ID: 102
```

```
VLAN Name:
```

```
VLAN Type: Static
```

Interface	Current	Configured	Tagging
a-9	Exclude	Autodetect	Untagged
a-10	Exclude	Autodetect	Untagged
a-11	Exclude	Autodetect	Untagged
a-12	Exclude	Autodetect	Untagged
a-13	Exclude	Autodetect	Untagged
a-14	Exclude	Autodetect	Untagged
a-15	Exclude	Autodetect	Untagged
a-16	Exclude	Autodetect	Untagged
a-17	Exclude	Autodetect	Untagged
a-18	Include	Include	Untagged
a-19	Include	Include	Untagged
a-20	Exclude	Autodetect	Untagged
a-21	Exclude	Autodetect	Untagged
a-22	Exclude	Autodetect	Untagged
a-23	Exclude	Autodetect	Untagged
a-24	Exclude	Autodetect	Untagged
a-25	Exclude	Autodetect	Untagged
a-26	Exclude	Autodetect	Untagged

```
--More-- or (q)uit
```

Interface	Current	Configured	Tagging
a-27	Exclude	Autodetect	Untagged
a-28	Exclude	Autodetect	Untagged
d2-1	Exclude	Autodetect	Untagged
d2-2	Exclude	Autodetect	Untagged
d2-3	Exclude	Autodetect	Untagged
d2-4	Exclude	Autodetect	Untagged

```
(ALU 1850TSS-5) #
```


show vlan brief

Syntax

show vlan brief

Description

This command displays a list of all configured VLANs.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

VLAN ID - A VLAN Identifier (vlanid) is associated with each VLAN. The range of the VLAN ID is 1 to 3965.

VLAN Name - A string associated with this VLAN as a convenience. It can be up to 32 alphanumeric characters long, including blanks. The default is name blank. VLAN ID 1 always has a name of "Default." This field is optional.

VLAN Type - The type of the VLAN, which can be `Default` (VLAN ID = 1), `Static` (a VLAN that is configured and permanently defined), or `Dynamic` (one that is created by GVRP registration).

Example

```
(ALU 1850TSS-5) # show vlan brief
```

VLAN ID	VLAN Name	VLAN Type
1	Default	Default
101		Static
102		Static

show vlan port

Syntax

show vlan port {<port> | all}

Description

This command displays VLAN port information.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Interface - A valid port number.

Port VLAN ID - The VLAN ID that this port will assign to untagged frames or priority tagged frames received on this port. The value must be for an existing VLAN. The factory default is 1.

Acceptable Frame Types - Specifies the types of frames that may be received on this port. The options are `VLAN only` and `Admit All`. When set to `VLAN only`, untagged frames or priority tagged frames received on this port are discarded. When set to `Admit All`, untagged frames or priority tagged frames received on this port are accepted and assigned the value of the Port VLAN ID for this port. With either option, VLAN tagged frames are forwarded in accordance to the 802.1Q VLAN specification.

Ingress Filtering - May be enabled or disabled. When enabled, the frame is discarded if this port is not a member of the VLAN with which this frame is associated. In a tagged frame, the VLAN is identified by the VLAN ID in the tag. In an untagged frame, the VLAN is the Port VLAN ID specified for the port that received this frame. When disabled, all frames are forwarded in accordance with the 802.1Q VLAN bridge specification. The factory default is disabled.

GVRP - May be enabled or disabled.

Default Priority - The 802.1p priority assigned to tagged packets arriving on the port.

Example

```
(ALU 1850TSS-5) # show vlan port a-17
```

Interface	Port VLAN ID	Acceptable Frame Types	Ingress Filtering	GVRP	Default Priority
a-17	1	Admit All	Disable	Disable	0

Protected Port False

show vlan association subnet

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

show vlan association mac

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

Double VLAN commands

This section describes the commands used to configure double VLAN (DVLAN). Double VLAN tagging is a way to pass VLAN traffic from one customer domain to another through a Metro Core in a simple and cost effective manner. The additional tag on the traffic helps differentiate between customers in the MAN while preserving the VLAN identification of the individual customers when they enter their own 802.1Q domain.

dvlan-tunnel ethertype

Syntax

```
dvlan-tunnel ethertype {802.1Q | vman | custom} [<value>]
```

Description

This command configures the ether-type for all interfaces. The ether-type may have the values of 802.1Q, vMAN, or custom. If the ether-type has a value of custom, the optional value of the custom ether type must be set to a value from 0 to 65535.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value - ether-type value; applicable only for ether-type **custom**

Default: *None*

Range: 0 - 65535

Support for no form

no dvlan-tunnel ethertype configures the ether-type for all interfaces to the default value (802.1Q).

User guidelines

By default, the ether-type is 802.1Q (0x8100)

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# dvlan-tunnel ether-type custom 10
```


mode dot1q-tunnel

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

mode dvlan-tunnel

Syntax

mode dvlan-tunnel

Description

This command enables Double VLAN Tunneling on a specified interface. When you apply this command on an interface, it becomes a service provider port. Ports that do not have double VLAN tunneling enabled are customer ports.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no mode dvlan-tunnel disables Double VLAN Tunneling on the specified interface.

User guidelines

By default, the Double VLAN Tunneling is disabled on an interface.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# mode dvlan-tunnel
```

show dot1q-tunnel

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

show dvlan-tunnel

Syntax

show dvlan-tunnel [interface {<port> | all}]

Description

This command without the optional parameters displays all interfaces enabled for Double VLAN Tunneling. If you specify the optional parameters it displays detailed information about Double VLAN Tunneling for the specified interface or all interfaces.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Interface - A valid port number

Mode - This field specifies the administrative mode through which Double VLAN Tunneling can be enabled or disabled. The default value for this field is disabled.

EtherType - This field represents a 2-byte hexadecimal EtherType to be used as the first 16 bits of the DVLAN tunnel. There are three different **EtherType** tags. The first is

802.1Q, which represents the commonly used value of 0x8100. The second is vMAN, which represents the commonly used value of 0x88A8. If `EtherType` is not one of these two values, it is a custom tunnel value representing any value in the range of 0 to 65535.

Example

```
(ALU 1850TSS-5) # show dvlan-tunnel

Interfaces Enabled for DVLAN Tunneling..... a-18

(ALU 1850TSS-5) # show dvlan-tunnel interface all
```

Interface	Mode	EtherType
-----	-----	-----
a-9	Disable	802.1Q
a-10	Disable	802.1Q
a-11	Disable	802.1Q
a-12	Disable	802.1Q
a-13	Disable	802.1Q
a-14	Disable	802.1Q
a-15	Disable	802.1Q
a-16	Disable	802.1Q
a-17	Disable	802.1Q
a-18	Enable	802.1Q
a-19	Disable	802.1Q
a-20	Disable	802.1Q
a-21	Disable	802.1Q
a-22	Disable	802.1Q
a-23	Disable	802.1Q
a-24	Disable	802.1Q
a-25	Disable	802.1Q
a-26	Disable	802.1Q
a-27	Disable	802.1Q
a-28	Disable	802.1Q
d2-1	Disable	802.1Q
d2-2	Disable	802.1Q
d2-3	Disable	802.1Q
d2-4	Disable	802.1Q

Provisioning commands (IEEE 802.1p)

This section describes the commands used to configure provisioning, which allows you to prioritize ports.

vlan port priority all

Syntax

vlan port priority all <priority>

Description

This command configures the port priority assigned for untagged packets for all ports presently plugged into the device. The range for the priority is 0-7. Any subsequent per port configuration will override this setting.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

priority - specifies the 802.1p priority value

Default: *None*

Range: 0-7

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# vlan port priority all 1
```

vlan priority

Syntax

vlan priority <priority>

Description

This command configures the default 802.1p port priority assigned for untagged packets for a specific interface.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

priority - specifies the 802.1p priority value

Default: 0

Range: 0-7

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# vlan priority 7
```


Protected port commands

This section describes commands used to configure and view protected ports on a switch. Protected ports do not forward traffic to each other, even if they are on the same VLAN. However, protected ports can forward traffic to all unprotected ports in their group. Unprotected ports can forward traffic to both protected and unprotected ports. Ports are unprotected by default.

If an interface is configured as a protected port, and you add that interface to a Port Channel or Link Aggregation Group (LAG), the protected port status becomes operationally disabled on the interface, and the interface follows the configuration of the LAG port. However, the protected port configuration for the interface remains unchanged. Once the interface is no longer a member of a LAG, the current configuration for that interface becomes effective.

switchport protected (global level)

Syntax

```
switchport protected <groupid> [name <name>]
```

Description

This command creates a protected port group. The <groupid> parameter identifies the set of protected ports. Use the name <name> pair to assign a name to the protected port group.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

groupid - number that identifies the protected port of the group

Default: *None*

Range: 0-2

name - specifies the name of the protected group

Default: blank

Range: Alphanumeric string from 1 to 32 characters long, including blanks.

Support for no form

no switchport protected <groupid> removes a protected port group.

User guidelines

Port protection occurs within a single VLNC40. Protected port configuration does not affect traffic between ports on two different VLNC40s. No traffic forwarding is possible between two protected ports.

By default, there is no protected port group

Output

None

Example

```
(ALU 1850TSS-5) (Config)# switchport protected 1
```

switchport protected (interface level)

Syntax

switchport protected <groupid>

Description

This command adds an interface to a protected port group. The <groupid> parameter identifies the set of protected ports to which this interface is assigned. You can only configure an interface as protected in one group.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

groupid - number that identifies the protected port of the group

Default: *None*

Range: 0-2

Support for no form

no switchport protected <groupid> configures a port as unprotected. The groupid parameter identifies the set of protected ports to which this interface is assigned.

User guidelines

Port protection occurs within a single VLNC40. Protected port configuration does not affect traffic between ports on two different VLNC40s. No traffic forwarding is possible between two protected ports.

By default, a port is unprotected

Output

None

Example

```
(ALU 1850TSS-5) (Interface dl-1)# switchport protected 1
```

show switchport protected

Syntax

show switchport protected <groupid>

Description

This command displays the status of all the interfaces, including protected and unprotected interfaces.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

groupid - number that identifies the protected port of the group

Default: *None*

Range: 0-2

Support for no form

None

User guidelines

None

Output

Group ID - The number that identifies the protected port group.

Name - An optional name for the protected port group. The name can be up to 32 alphanumeric characters long, including blanks. The default name is blank.

List of Physical Ports - A list of ports, which are configured as protected for the group identified by <groupid>. If no port is configured as protected for this group, this field is blank.

Example

```
(ALU 1850TSS-5) # show switchport protected 1
Name..... myname
Member Ports :
a-19
(ALU 1850TSS-5) #
```

show interfaces switchport

Syntax

show interfaces switchport <port> <groupid>

Description

This command displays the status of the interface (protected or unprotected) under the groupid.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

groupid - number that identifies the protected port for the group

Default: *None*

Range: 0-2

Support for no form

None

User guidelines

None

Output

Name - A string associated with this group as a convenience. It can be up to 32 alphanumeric characters long, including blanks. The default name is blank. This field is optional.

Protected - Indicates whether the interface is protected or not. It shows TRUE or FALSE. If the port is part of a group then it shows TRUE in Group <groupid>.

Example

```
(ALU 1850TSS-5) # show interfaces switchport a-19 1
Name..... myname
Protected Port ..... True in Group    1
(ALU 1850TSS-5) #
```

Storm control commands

This section describes commands used to configure storm control, and view storm-control configuration information. The Storm Control feature allows you to limit the rate of specific types of packets passing through the switch on a per-port, per-type, basis. The Storm Control feature can help maintain network performance.

storm-control broadcast

Syntax

storm-control broadcast

Description

This command enables broadcast storm recovery mode for a specific interface. When the mode is enabled, broadcast storm recovery is active, and if the rate of layer2 broadcast traffic entering an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of broadcast traffic will be limited to the configured threshold.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

`no storm-control broadcast` disables broadcast storm recovery mode for a specific interface.

User guidelines

By default, storm-control for broadcast traffic is disabled on an interface.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# storm-control broadcast
```

storm-control broadcast level

Syntax

storm-control broadcast level <level>

Description

This command configures the broadcast storm recovery threshold for an interface. When you issue this command, broadcast storm recovery mode is enabled on the interface and broadcast storm recovery is active. If the rate of layer2 broadcast traffic entering on an interface increases beyond the configured threshold, the traffic is dropped. Therefore, the rate of broadcast traffic is limited to the configured threshold.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

level - specifies the threshold value for broadcast storm as a percentage of bandwidth

Default: 5

Range: 0 - 100

Support for no form

no storm-control broadcast level sets the broadcast storm recovery threshold to the default value for an interface and disables broadcast storm recovery.

User guidelines

The accuracy of the threshold may vary with packet size. The threshold setting assumes an average packet size of 512 octets.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# storm-control broadcast level 10
```

storm-control broadcast all

Syntax

storm-control broadcast all

Description

This command enables broadcast storm recovery mode for all interfaces. When the mode is enabled, broadcast storm recovery is active and, if the rate of layer2 broadcast traffic entering on an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of broadcast traffic will be limited to the configured threshold.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no storm-control broadcast all disables broadcast storm recovery mode for all interfaces.

User guidelines

By default broadcast storm-control is disabled for all interfaces.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# storm-control broadcast all
```

storm-control broadcast all level

Syntax

storm-control broadcast all level <level>

Description

This command configures the broadcast storm recovery threshold for all interfaces. When the mode is enabled, broadcast storm recovery is active and, if the rate of layer2 broadcast traffic entering an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of broadcast traffic will be limited to the configured threshold. This command also enables broadcast storm recovery mode for all interfaces.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

level - specifies the threshold value of the broadcast traffic as a percentage of bandwidth

Default: 5

Range: 0 - 100

Support for no form

no storm-control broadcast all level sets the broadcast storm recovery threshold to the default value for all interfaces and disables broadcast storm recovery.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# storm-control broadcast all level 20
```

storm-control multicast

Syntax

storm-control multicast

Description

This command enables multicast storm recovery mode for an interface. When the mode is enabled, multicast storm recovery is active and, if the rate of layer2 multicast traffic entering an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of multicast traffic will be limited to the configured threshold.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no storm-control multicast disables multicast storm recovery mode for an interface.

User guidelines

By default, storm-control for multicast traffic is disabled on an interface.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# storm-control multicast all
```

storm-control multicast level

Syntax

storm-control multicast level <level>

Description

This command configures the multicast storm recovery threshold for an interface and enables multicast storm recovery mode. When the mode is enabled, multicast storm recovery is active and, if the rate of layer2 multicast traffic entering an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of multicast traffic will be limited to the configured threshold.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

level1 - specifies the threshold value of the multicast traffic as a percentage of bandwidth

Default: 5

Range: 0 - 100

Support for no form

no storm-control multicast level sets the multicast storm recovery threshold to the default value for an interface and disables multicast storm recovery.

User guidelines

The accuracy of the threshold may vary with packet size. The threshold setting assumes an average packet size of 512 octets.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# storm-control multicast level 15
```

storm-control multicast all

Syntax

storm-control multicast all

Description

This command enables multicast storm recovery mode for all interfaces. When the mode is enabled, multicast storm recovery is active and, if the rate of layer2 multicast traffic entering an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of multicast traffic will be limited to the configured threshold.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no storm-control multicast all disables multicast storm recovery mode for all interfaces.

User guidelines

By default the multicast storm-control is disabled for all interfaces.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# storm-control multicast all
```

storm-control multicast all level

Syntax

storm-control multicast all level <level>

Description

This command configures the multicast storm recovery threshold for all interfaces and enables multicast storm recovery mode. When the mode is enabled, multicast storm recovery is active and, if the rate of layer2 multicast traffic entering an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of multicast traffic will be limited to the configured threshold.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

level1 - specifies the threshold value of the multicast traffic as a percentage of bandwidth

Default: 5

Range: 0 - 100

Support for no form

no storm-control multicast all level sets the multicast storm recovery threshold to the default value for all interfaces and disables multicast storm recovery.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# storm-control multicast all level 30
```


storm-control unicast

Syntax

storm-control unicast

Description

This command enables unicast storm recovery mode for an interface. When the mode is enabled, unicast storm recovery is active and, if the rate of unknown layer2 unicast (destination lookup failure) traffic entering an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of unknown unicast traffic will be limited to the configured threshold.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no storm-control unicast disables unicast storm recovery mode for an interface.

User guidelines

By default, storm-control for unicast traffic is disabled on an interface.

Output

None

Example

```
(ALU 1850TSS-5) (Interface dl-1)# storm-control unicast
```

storm-control unicast level

Syntax

storm-control unicast level <level>

Description

This command configures the unicast storm recovery threshold for an interface and enables unicast storm recovery. When the mode is enabled, unicast storm recovery is active and, if the rate of unknown layer2 unicast (destination lookup failure) traffic that is incoming on an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of unknown unicast traffic will be limited to the configured threshold. This command also enables unicast storm recovery mode for an interface.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

level1 - specifies the threshold value of the unicast traffic as a percentage of bandwidth.

Default: 5

Range: 0 - 100

Support for no form

no storm-control unicast level sets the unicast storm recovery threshold to the default value for an interface and disables unicast storm recovery.

User guidelines

The accuracy of the threshold may vary with packet size. The threshold setting assumes an average packet size of 512 octets.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# storm-control unicast level 12
```

storm-control unicast all

Syntax

storm-control unicast all

Description

This command enables unicast storm recovery mode for all interfaces. When the mode is enabled, unicast storm recovery is active and, if the rate of unknown layer2 unicast (destination lookup failure) traffic entering an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of unknown unicast traffic will be limited to the configured threshold.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no storm-control unicast all disables unicast storm recovery mode for all interfaces.

User guidelines

By default the unicast storm-control is disabled for all interfaces.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# storm-control unicast all
```

storm-control unicast all level

Syntax

storm-control unicast all level <level>

Description

This command configures the unicast storm recovery threshold and enables unicast storm recovery for all interfaces. When the mode is enabled, unicast storm recovery is active and, if the rate of unknown layer2 unicast (destination lookup failure) traffic entering an interface increases beyond the configured threshold, the traffic will be dropped. Therefore, the rate of unknown unicast traffic will be limited to the configured threshold.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

level1 - specifies the threshold value of the unicast traffic as a percentage of bandwidth

Default: 5

Range: 0 - 100

Support for no form

no storm-control unicast all level returns the unicast storm recovery threshold to the default value and disables unicast storm recovery for all interfaces.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# storm-control unicast all level 12
```

storm-control flowcontrol

Syntax

storm-control flowcontrol

Description

This command enables 802.3x flow control for the switch or the port and only applies to full-duplex mode ports. The port-specific setting overrides the global switch setting.

Important! 802.3x flow control works by pausing a port when the port becomes oversubscribed and dropping all traffic for small periods of time during the congested condition. This can lead to high-priority and network control traffic being lost.

Mode

Global Config Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no storm-control flowcontrol disables 802.3x flow control for the switch or the port. This command only applies to full-duplex mode ports.

User guidelines

By default, storm-control for flowcontrol traffic is disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# storm-control flowcontrol
```

show storm-control

Syntax

show storm-control [**all** | **<port>**]

Description

This command displays storm control configuration parameters, either for the switch or for a specific port.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Bcast Mode - Shows whether the broadcast storm control mode is enabled or disabled.

Bcast Level - Shows the broadcast storm control level.

Mcast Mode - Shows whether the multicast storm control mode is enabled or disabled.

Mcast Level - Shows the multicast storm control level.

Ucast Mode - Shows whether the Unknown Unicast or DLF (Destination Lookup Failure) storm control mode is enabled or disabled.

Ucast Level - Shows the Unknown Unicast or DLF (Destination Lookup Failure) storm fscontrol level

Flow Mode - Shows whether flow control is enabled or disabled.

Example

```
(ALU 1850TSS-5) # show storm-control all
```

Intf	Bcast Mode	Bcast Level	Mcast Mode	Mcast Level	Ucast Mode	Ucast Level	Flow Mode
a-9	Enable	5	Disable	5	Disable	5	Disable
a-10	Enable	5	Disable	5	Disable	5	Disable
a-11	Enable	5	Disable	5	Disable	5	Disable
a-12	Enable	5	Disable	5	Disable	5	Disable
a-13	Enable	5	Disable	5	Disable	5	Disable
a-14	Enable	5	Disable	5	Disable	5	Disable
a-15	Enable	5	Disable	5	Disable	5	Disable
a-16	Enable	5	Disable	5	Disable	5	Disable
a-17	Enable	5	Disable	5	Disable	5	Disable
a-18	Enable	5	Disable	5	Disable	5	Disable
a-19	Enable	5	Disable	5	Disable	5	Enable
a-20	Enable	5	Disable	5	Disable	5	Disable
a-21	Enable	5	Disable	5	Disable	5	Disable
a-22	Enable	5	Disable	5	Disable	5	Disable
a-23	Enable	5	Disable	5	Disable	5	Disable
a-24	Enable	5	Disable	5	Disable	5	Disable
a-25	Enable	5	Disable	5	Disable	5	Disable
a-26	Enable	5	Disable	5	Disable	5	Disable

```
--More-- or (q)uit
```

Intf	Bcast Mode	Bcast Level	Mcast Mode	Mcast Level	Ucast Mode	Ucast Level	Flow Mode
a-27	Enable	5	Disable	5	Disable	5	Disable
a-28	Enable	5	Disable	5	Disable	5	Disable
d2-1	Enable	5	Disable	5	Disable	5	Disable
d2-2	Enable	5	Disable	5	Disable	5	Disable
d2-3	Enable	5	Disable	5	Disable	5	Disable
d2-4	Enable	5	Disable	5	Disable	5	Disable

```
(ALU 1850TSS-5) #
```

Port-Channel/LAG 802.3ad commands

This section describes the commands used to configure port-channels, which are also known as link aggregation groups (LAGs). Link aggregation allows you to combine multiple full-duplex Ethernet links into a single logical link. Network devices treat the aggregation as if it were a single link, which increases fault tolerance and provides load sharing.

The LAG feature initially load-shares traffic based upon the source and destination MAC address. You must assign port-channel (LAG) VLAN membership after creating a port-channel. If you do not assign VLAN membership, the port-channel might become a member of the management VLAN which can result in learning and switching issues. A port-channel (LAG) interface can be either static or dynamic, but not both. All members of a port channel must participate in the same protocols. A static port-channel interface does not require a partner system to be able to aggregate its member ports.

Important! If you configure the maximum number of dynamic port-channels (LAGs) that the platform supports, additional port-channels that you configure are automatically static.

port-channel

Syntax

```
port-channel <name>
```

Description

This command configures a new port-channel (LAG) and generates a logical port number for the port-channel. The `show port-channel` command displays the port number for the logical interface.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

name - specifies the name of the port-channel

Default: *None*

Range: a string which allows the dash "-" character, as well as alphanumeric characters.

Support for no form

no port-channel { [<logical port> | **all**] deletes a port-channel (LAG).

User guidelines

Before you can include a port in a port-channel, you must set the physical mode of the port. For more information, see [“speed” \(p. 1-15\)](#).

The system automatically generates the logical LAG port numbers as "lag1", "lag2", etc.

A maximum of 32 LAG groups can be created.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# port-channel mylag
```

addport

Syntax

addport <logical-port>

Description

This command adds one port to the port-channel (LAG). The parameter is the logical port number of a configured port-channel.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

logical-port - this specifies the logical port number of the port-channel (LAG)

Default: *None*

Range: As specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

Before you include a port in a port-channel, you must set the physical mode of the port. LAG only applies to full-duplex ports. All ports in a LAG must have the same rate. For more information, see [“speed” \(p. 1-15\)](#).

A maximum of 8 ports can be added to a LAG group.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# addport lag1
```

deleteport (interface level)

Syntax

deleteport <logical-port>

Description

This command deletes the port from the port-channel (LAG). The parameter is the logical port number of a configured port-channel.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

logical-port - this specifies the logical port number of the port-channel (LAG)

Default: *None*

Range: As specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# deleteport lag1
```

deleteport (global level)

Syntax

deleteport <logical-port>

Description

This command deletes all configured ports from the port-channel (LAG). The parameter is the logical port number of a configured port-channel. To clear the port channels, you must use the `clear port-channel` command.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

logical-port - specifies the logical port number of the port-channel (LAG)

Default: *None*

Range: As specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# deleteport lag1
```

port-channel static

Syntax

port-channel static

Description

This command enables the static mode on a port-channel (LAG) interface. By default the static mode for a new port-channel is disabled, which means the new port-channel is dynamic. However, if the maximum number of allowable dynamic port-channels are already present in the system, the static mode for a new port-channel is enabled, and the port-channel is static. you can only use this command on port-channel interfaces.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no port-channel static sets the static mode on a particular port-channel (LAG) interface to the default value. This command will be executed only for interfaces of type port-channel (LAG).

User guidelines

By default the static mode on a port-channel (LAG) is disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Interface lag1)# port-channel static
```

port lacpmode

Syntax

port lacpmode

Description

This command enables Link Aggregation Control Protocol (LACP) on a port.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no port lacpmode disables Link Aggregation Control Protocol (LACP) on a port.

User guidelines

By default, the LACP is enabled on a port.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# no port lacpmode
```

port lacpmode all

Syntax

port lacpmode all

Description

This command enables Link Aggregation Control Protocol (LACP) on all ports.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no port lacpmode all disables Link Aggregation Control Protocol (LACP) on all ports.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# no port lacpmode all
```

port lacptimeout (interface level)

Syntax

```
port lacptimeout {actor|partner} {long|short}
```

Description

This command sets the timeout on a physical interface of a particular device type (`actor` or `partner`) to either `long` (90 secs) or `short` (3 secs).

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

`actor` or `partner`

`long` (90 secs) or `short` (3 secs)

Support for no form

`no port lacptimeout {actor|partner}` resets the timeout to its default value (`short`) on a port.

User guidelines

By default, timeout value is `short` (3 secs)

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# port lacptimeout actor long
```


port lacptimeout (global level)

Syntax

```
port lacptimeout {actor|partner} {long|short}
```

Description

This command sets the timeout on all physical interfaces of a particular device type (`actor` or `partner`) to either `long` (90 seconds) or `short` (3 seconds).

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

`actor` or `partner`

`long` (90 secs) or `short` (3 secs)

Support for no form

`no port lacptimeout {actor|partner}` resets the timeout to its default value (`short`) on a port.

User guidelines

By default, timeout value is `short` (3 secs)

Output

None

Example

```
(ALU 1850TSS-5) (Config)# port lacptimeout actor long
```

port-channel adminmode all

Syntax

port-channel adminmode all

Description

This command enables all port-channels (LAG). This command sets every configured port-channel with the same administrative mode setting.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no port-channel adminmode all disables all port-channels (LAG).

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# port-channel adminmode all
```

port-channel linktrap

Syntax

```
port-channel linktrap {<logical-port> | all}
```

Description

This command enables link trap notifications for the port-channel (LAG). The interface is a logical port for a configured port-channel. The option `all` enables link trap notifications for every configured port-channel.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

logical-port - this specifies the logical port number of the port-channel (LAG)

Default: *None*

Range: As specified in [Appendix A, “Addressable entities”](#)

Support for no form

no port-channel linktrap {<logical port>|all} disables link trap notifications for the port-channel (LAG). The interface is a logical slot and port for a configured port-channel. The option `all` disables link trap notifications for every configured port-channel.

User guidelines

By default, linktraps are enabled for the port-channel (LAG).

Output

None

Example

```
(ALU 1850TSS-5) (Config)# port-channel linktrap all
```

port-channel name

Syntax

port-channel name {<logical-port> | all} <name>

Description

This command defines a name for the port-channel (LAG) or for all port-channels.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

logical-port - this specifies the logical port number of the port-channel (LAG)

Default: *None*

Range: As specified in [Appendix A, “Addressable entities”](#)

name - specifies the name of the port-channel (LAG)

Default: *None*

Range: Alphanumeric string from 1 to 15 characters.

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# port-channel name lag1 thisIsMyLag
```

show port-channel brief

Syntax

show port-channel brief

Description

This command displays a summary of individual port-channel (LAG) interfaces.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

Logical Interface - Shows the port for the logical interface.

Port-channel Name - Shows the name of the port-channel (LAG) interface.

Link-State - Shows whether the link is up or down.

Type - Shows whether the port-channel is maintained statically or dynamically.

Mbr Ports - Shows the members of this port-channel.

Active Ports - Shows ports that are actively participating in the port-channel

Example

```
(ALU 1850TSS-5) # show port-channel brief
Logical Interface Port-Channel Name Link State Type Mbr Ports Active Ports
-----
lag1              testlag              Down      Static  a-9,a-10,
                                     a-11,
                                     a-12,
                                     a-13,
                                     a-14,
                                     a-15,a-16

(ALU 1850TSS-5) #
```

show port-channel

Syntax

show port-channel {<logical-port> | all}

Description

This command displays an overview of a port-channel or all port-channels on the switch.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

logical-port - specifies the logical port number of the port-channel (LAG)

Default: *None*

Range: As specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Logical Interface - A valid port number.

Port-Channel Name - The name of this port-channel (LAG). You may enter any string of up to 15 alphanumeric characters.

Link State - Indicates whether the Link is up or down.

Admin Mode - May be enabled or disabled. The default is enabled.

Mbr Ports - A listing of the ports that are members of this port-channel (LAG). There can be a maximum of eight ports assigned to a given port-channel (LAG).

Port Speed - The speed of the port-channel port.

Type - This field displays the status designating whether a particular port-channel (LAG) is maintained statically or dynamically.

- **Static** - The port-channel is maintained statically.
- **Dynamic** - The port-channel is maintained dynamically.

Active Ports - This field lists ports that are actively participating in the port-channel (LAG).

Example

```
(ALU 1850TSS-5) # show port-channel lag1
```

Log. Intf	Port- Channel Name	Link	Adm. Mode	Type	Mbr Ports	Device/ Timeout	Port Speed	Port Active
lag1	testlag	Down	En.	Stat	a-9	actor/short	100 Half	False
						partner/short		
					a-10	actor/short	100 Half	False
						partner/short		
					a-11	actor/short	100 Half	False
						partner/short		
					a-12	actor/short	100 Half	False
						partner/short		
					a-13	actor/short	100 Half	False
						partner/short		
					a-14	actor/short	100 Half	False
						partner/short		
					a-15	actor/short	100 Half	False
						partner/short		
					a-16	actor/short	100 Half	False
						partner/short		

```
(ALU 1850TSS-5) #
```


Port mirroring commands

Port mirroring, which is also known as port monitoring, selects network traffic that you can analyze with a network analyzer, such as a SwitchProbe device or other Remote Monitoring (RMON) probe.

monitor session

Syntax

```
monitor session <session-id> {source interface <srcport> | destination interface <dstport> | mode}
```

Description

This command configures a probe port and a monitored port for a monitor session (port monitoring). The destination port monitors both ingress and egress packets. The mode parameter enables the administrative mode of the session. When enabled, the probe port monitors all the traffic received and transmitted on the monitored physical port.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

session-id - identifies the monitoring session

Default: 1

Range: 1

srcport - specifies the Ethernet port of the interface to monitor the traffic

Default: *None*

Range: Ethernet port As specified in [Appendix A, “Addressable entities”](#)

dstport - specifies the Ethernet port of the interface to receive the monitored traffic

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

no monitor session <session-id> [{source interface <port> | destination interface <port> | mode}] without optional parameters removes the monitor session (port monitoring) designation from the source probe port, the monitored destination port, and all VLANs. Once the port is removed from the VLAN, you must manually add the port to any desired VLANs. You must specify the source interface <port> parameter or destination interface <port> to remove the specified interface from the port monitoring session. You must specify the mode parameter to disable the administrative mode of the session.

Important! Since the current version of VLNC40 only supports one session, if you do not supply optional parameters, the behavior of this command is similar to the behavior of the no monitor command.

User guidelines

Only one session can be created.

Only one destination port can be defined.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# monitor session 1 source interface a-1
```

no monitor

Syntax

no monitor

Description

This command removes all source ports and a destination port for the monitoring sessions, and restores the default value for the mirroring session mode for all configured sessions.

Important! This is a stand-alone “no” command. This command does not have a “normal” form.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

Since only one session is possible on the VLNC40, this command is equivalent to the `no monitor session` command.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# no monitor
```

show monitor session

Syntax

show monitor session <session-id>

Description

This command displays the Port monitoring information for a particular mirroring session.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

session-id - identifies the monitoring session

Default: 1

Range: 1

Support for no form

None

User guidelines

None

Output

Session ID - An integer value used to identify the session. Its value can be anything between 1 and the maximum number of mirroring sessions allowed on the platform.

Monitor Session Mode - Indicates whether the Port Mirroring feature is enabled or disabled for the session identified with <session-id>. The possible values are Enabled and Disabled.

Probe Port - The probe port (destination port) for the session is identified with <session-id>. If the probe port is not set then this field is blank.

Source Port - The port configured as the mirrored port (source port) for the session is identified with <session-id>. If no source port is configured for the session then this field is blank.

Example

```
(ALU 1850TSS-5) # show monitor session 1
Session ID Admin Mode Probe Port Mirrored Port
-----
1          Disable   a-18      a-17
(ALU 1850TSS-5) #
```

Static MAC filtering commands

macfilter

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

macfilter addsrc

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

macfilter addsrc all

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

show mac-address-table static

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

show mac-address-table staticfiltering

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

Port security commands

This section describes the command used to configure Port Security on the switch. Port security, also known as port MAC locking, allows you to secure the network by locking allowable MAC addresses on a given port. Packets with a matching source MAC address are forwarded normally, and all other packets are discarded.

To enable the SNMP trap specific to port security, see [“SNMP commands”](#) (p. 5-72).

port-security

Syntax

port-security

Description

This command enables port locking at the system (Global Config) level or port (Interface Config) level.

Mode

Global Config Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no port-security disables port locking at the system level (Global Config) or port level.

(Interface Config).

User guidelines

By default, port locking is disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# port-security
```

port-security max-dynamic

Syntax

port-security max-dynamic <maxvalue>

Description

This command sets the maximum number of dynamically locked MAC addresses allowed on a specific port.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

maxvalue -

Default: 600

Range: 0-600

Support for no form

no port-security max-dynamic resets the maximum number of dynamically locked MAC addresses allowed on a specific port to its default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface dl-1)# port-security max-dynamic 100
```

port-security max-static

Syntax

port-security max-static <maxvalue>

Description

This command sets the maximum number of statically locked MAC addresses allowed on a specific port.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

maxvalue -

Default: 20

Range: 0-20

Support for no form

no port-security max-static resets the maximum number of statically locked MAC addresses allowed on a specific port to its default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# port-security max-static 10
```

port-security mac-address

Syntax

port-security mac-address <mac-address> <vid>

Description

This command adds a MAC address to the list of statically locked MAC addresses. The <vid> is the VLAN ID.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

mac-address - specifies layer 2 MAC address

Default: None

Range: six, two-digit hexadecimal numbers separated by colons

vid -

Default: *None*

Range: 1-3965

Support for no form

no port-security mac-address <mac-address> <vid> removes a MAC address from the list of statically locked MAC addresses.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# port-security mac-address  
00:60:1D:E8:08:50 806
```


port-security mac-address move

Syntax

port-security mac-address move

Description

This command converts dynamically locked MAC addresses to statically locked addresses.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface dl-1) # port-security mac-address move
```

show port-security

Syntax

show port-security [**<port>** | **all**]

Description

This command displays the port-security settings. If you do not use a parameter, the command displays the settings for the entire system. The optional parameters can be used to display the settings on a specific interface or on all interfaces.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

`Admin Mode` - Port Locking mode for the entire system. This field is displayed if you do not supply any parameters.

For each interface, or for the interface specified, the following information appears:

`Admin Mode` - The Port Locking mode for the Interface.

`Dynamic Limit` - The maximum number of dynamically allocated MAC Addresses.

`Static Limit` - The maximum number of statically allocated MAC Addresses.

Violation Trap Mode - Whether violation traps are enabled.

Example

```
(ALU 1850TSS-5) # show port-security a-17
      Admin      Dynamic      Static      Violation
      Mode      Limit      Limit      Trap Mode
-----
a-17      Disabled 600          20          Disabled

(ALU 1850TSS-5) #
```

show port-security dynamic

Syntax

show port-security dynamic <port>

Description

This command displays the dynamically locked MAC addresses for the port.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

MAC Address - MAC Address of dynamically locked MAC.

Example

```
(ALU 1850TSS-5) # show port-security dynamic a-17
Number of Dynamic MAC addresses learned: 1
Dynamically learned MAC Address      VLAN ID
-----
00:60:1D:E8:11:22                    1
```

show port-security static

Syntax

show port-security static <port>

Description

This command displays the statically locked MAC addresses for port.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

MAC Address - MAC Address of statically locked MAC.

Example

```
(ALU 1850TSS-5) # show port-security static a-17
Number of static MAC addresses configured: 1

Statically configured MAC Address   VLAN ID
-----
00:60:1D:E8:00:01                  1
```

show port-security violation

Syntax

show port-security violation <port>

Description

This command displays the source MAC address of the last packet discarded on a locked port.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port, as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

MAC Address - MAC Address of discarded packet on locked port.

Example

```
(ALU 1850TSS-5) # show port-security violation a-17
```

Last Violation MAC Address	VLAN ID
-----	-----
00:60:1D:E8:11:22	1

Denial of service commands

dos-control <*>

All the commands under dos-control are not supported on the VLNC40, VLNC60, or the VLNC64.

show dos-control

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

MAC database commands

This section describes the commands you specify to configure and view information about the MAC databases.

bridge aging-time

Syntax

bridge aging-time <seconds>

Description

This command configures the forwarding database address aging timeout in seconds.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

seconds

Default: 300

Range: 10 - 1000000

Support for no form

no bridge aging-time sets the forwarding database address aging timeout to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# bridge aging-time 100
```

show forwardingdb agetime

Syntax

show forwardingdb agetime

Description

This command displays the timeout limit for address aging.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

Agetime — This parameter displays the address aging timeout for the associated forwarding database.

Example

```
(ALU 1850TSS-5) # show forwardingdb agetime
Address Aging Timeout:300
(ALU 1850TSS-5) #
```

show mac-address-table multicast <mac-address>

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

show mac-address-table stats

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

2 Routing commands

Overview

This chapter describes the routing commands available on the Alcatel-Lucent 1850 Transport Service Switch 5 (Alcatel-Lucent 1850 TSS-5) CLI.

The commands in this chapter are in one of three functional groups:

- Configuration commands
These commands configure features and options of the switch. For every configuration command, there is a show command that displays the configuration setting.
- Show commands
These commands display switch settings, statistics, and other information.
- Clear commands
These commands clear some or all of the settings to factory defaults.

Contents

This chapter covers these topics

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Address Resolution Protocol (ARP) commands

Overview

This section describes the commands you use to configure ARP and to view ARP information on the switch. ARP associates IP addresses with MAC addresses and stores the information as ARP entries in the ARP cache.

arp

Syntax

arp <ipaddress> <macaddress>

Description

This command creates an ARP entry.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddress - specifies the IP address of a device on a subnet attached to an existing routing interface.

Default: *None*

Range: IPv4 address

macaddress - specifies a unicast MAC address for the device.

Default: *None*

Range: 6 two-digit hexadecimal numbers that are separated by colons.

Support for no form

no arp <ipaddress> <macaddress> deletes an ARP entry.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# arp 152.148.1.1 00:06:29:32:81:40
```

arp cachesize

Syntax

arp cachesize <cache-size>

Description

This command configures the ARP cache size.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

cache-size - specifies the number of entries in the cache.

Default: 1920

Range: 256-1920

Support for no form

no arp cachesize configures the default ARP cache size.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# arp cachesize 512
```

arp dynamicrenew

Syntax

arp dynamicrenew

Description

This command enables the ARP component to automatically renew dynamic ARP entries when they age out. By default this is enabled.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no arp dynamicrenew prevents dynamic ARP entries from renewing when they age out.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # arp dynamicrenew
```

arp purge

Syntax

arp purge <ipaddr>

Description

This command causes the specified IP address to be removed from the ARP cache. Only entries of type `dynamic` or `gateway` are affected by this command.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddr -

Default: *None*

Range: IPv4 address

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # arp purge 152.148.1.1
```

arp resptime

Syntax

arp resptime <seconds>

Description

This command configures the ARP request response timeout.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

seconds - this specifies an ARP entry response timeout time in seconds.

Default: 1

Range: 1-10

Support for no form

no arp resptime resets the ARP request response timeout to default.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# arp resptime 5
```

arp retries

Syntax

arp retries <count>

Description

This command configures the ARP count of maximum request for retries.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

count - this specifies the maximum number of request for retries.

Default: 4

Range: 0 -10

Support for no form

no arp retries configures the default ARP count of maximum request for retries.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# arp retries 5
```

arp timeout

Syntax

arp timeout <seconds>

Description

This command configures the ARP entry ageout time.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

seconds - this specifies the IP ARP entry ageout time in seconds.

Default: 1200

Range: 15 -21600

Support for no form

no arp timeout configures the default ARP entry ageout time.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# arp timeout 100
```


clear arp-cache

Syntax

clear arp-cache [gateway]

Description

This command causes all ARP entries of type dynamic to be removed from the ARP cache. If you specify the gateway keyword, the dynamic entries of type gateway are purged as well.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # clear arp-cache
```

show arp-cache

Syntax

show arp-cache

Description

This command displays the Address Resolution Protocol (ARP) cache. The displayed results are not the total ARP entries. To view the total ARP entries, the operator should view the show arp results in conjunction with the show arp switch results.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Age Time (seconds) - Is the time it takes for an ARP entry to age out. This value was configured into the unit. Age time is measured in seconds.

Response Time (seconds) - Is the time it takes for an ARP request timeout. This value was configured into the unit. Response time is measured in seconds.

Retries - Is the maximum number of times an ARP request is retried. This value was configured into the unit.

Cache Size - Is the maximum number of entries in the ARP table. This value was configured into the unit.

Dynamic Renew Mode - Displays whether the ARP component automatically attempts to renew dynamic ARP entries when they age out.

Total Entry Count - Current / Peak Field listing the total entries in the ARP table and the peak entry count in the ARP table.

Static Entry Count - Current / Max Field listing the static entry count in the ARP table and maximum static entry count in the ARP table.

The following are displayed for each ARP entry.

IP Address - Is the IP address of a device on a subnet attached to an existing routing interface.

MAC Address - Is the hardware MAC address of that device.

Interface - Is the routing slot/port associated with the device ARP entry.

Type - Is the type that was configured into the unit. The possible values are Local, Gateway, Dynamic and Static.

Age - This field displays the current age of the ARP entry since last refresh (in hh:mm:ss format)

Example

```
(ALU 1850TSS-5) # show arp-cache
```

show arp brief

Syntax

show arp brief

Description

This command displays the brief Address Resolution Protocol (ARP) table information.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Age Time (seconds) - Is the time it takes for an ARP entry to age out. This value was configured into the unit. Age time is measured in seconds.

Response Time (seconds) - Is the time it takes for an ARP request timeout. This value was configured into the unit. Response time is measured in seconds.

Retries - Is the maximum number of times an ARP request is retried. This value was configured into the unit.

Cache Size - Is the maximum number of entries in the ARP table. This value was configured into the unit.

`Dynamic Renew Mode` - Displays whether the ARP component automatically attempts to renew dynamic ARP entries when they age out.

`Total Entry Count - Current / Peak` Field listing the total entries in the ARP table and the peak entry count in the ARP table.

`Static Entry Count - Current / Max` Field listing the static entry count in the ARP table and maximum static entry count in the ARP table.

Example

```
(ALU 1850TSS-5) # show arp brief
```

show arp switch

Syntax

show arp switch

Description

This command displays the contents of the switch's Address Resolution Protocol (ARP) table.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

IP Address - Is the IP address of a device on a subnet attached to the switch.

MAC Address - Is the hardware MAC address of that device.

Interface - Is the routing slot/port associated with the device's ARP entry.

Example

```
(ALU 1850TSS-5) # show arp switch
```

IP Routing commands

Overview

This section describes the commands you use to enable and configure IP routing on the switch.

routing

Syntax

routing

Description

This command enables IPv4 routing for an interface. You can view the current value for this function with the `show ip brief` command. The value is labeled as “Routing Mode.” By default it is disabled.

Mode

Interface Config Mode

Multilink Config Mode (applicable only on VLNC60)

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no routing disables routing for an interface. You can view the current value for this function with the `show ip brief` command. The value is labeled as “Routing Mode.”

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# routing  
(ALU 1850TSS-5) (Interface multilink-1)# routing
```


ip routing

Syntax

ip routing

Description

This command enables the IP Router Admin Mode for the master switch.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no ip routing disables the IP Router Admin Mode for the master switch.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ip routing
```

ip address

Syntax

ip address <ipaddr> <subnetmask> [secondary]

Description

This command configures an IP address on an interface. You can also use this command to configure one or more secondary IP addresses on the interface. This command changes the label IP address in show ip interface.

Mode

Interface Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddr - specifies the IP Address of the interface.

Default: *None*

Range: IPv4 address

subnetmask - The value for <subnetmask> is a 4-digit dotted-decimal number which represents the subnet mask of the interface. The subnet mask must have contiguous ones and be no longer than 30 bits, for example 255.255.255.0.

Support for no form

no ip address This command deletes an IP address from an interface.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# ip address 152.148.1.1  
255.255.255.0
```

ip route

Syntax

ip route <ipaddr> <subnetmask> <nexthopip> [<preference>]

Description

This command configures a static route.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddr - specifies an IP Address of the route

Default: *None*

Range: IPv4 address

subnetmask - The value for <subnetmask> is a 4-digit dotted-decimal number which represents the subnet mask of the interface. The subnet mask must have contiguous ones and be no longer than 30 bits, for example 255.255.255.0.

nexthopip - specifies the IP Address of the nexthop router.

Default: *None*

Range: IPv4 address

preference - allows you to specify the preference value (sometimes called “administrative distance”) of an individual static route. Among routes to the same destination, the route with the lowest preference value is the route entered into the forwarding database. By specifying the preference of a static route, you control whether a static route is more or less preferred than routes from dynamic routing protocols. The preference also controls whether a static route is more or less preferred than other static routes to the same destination. A route with a preference of 255 cannot be used to forward traffic.

Default: 1

Range: 1-255

Support for no form

no ip route This command deletes all next hops to a destination static route. If you use the **<nexthopip>** parameter, the next hop is deleted. If you use the **<preference>** value, the preference value of the static route is reset to its default.

User guidelines

For the static routes to be visible, you must perform the following steps:

- Enable ip routing globally.
- Enable ip routing for the interface.
- Confirm that the associated link is also up.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ip route 152.148.1.1 255.255.255.0  
20.20.20.1
```

ip route default

Syntax

ip route default <nexthopip> [<preference>]

Description

This command configures the default route. The value for **<nexthopip>** is a valid IP address of the next hop router. The **<preference>** is an integer value from 1 to 255. A route with a preference of 255 cannot be used to forward traffic.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

nexthopip - specifies the IP Address of the nexthop router

Default: *None*

Range: IPv4 address

preference - as specified in ip route command

Default: 1

Range: 1-255

Support for no form

no ip route default [{<nexthopip> | <preference>}] This command deletes all configured default routes. If the optional **<nexthopip>** parameter is designated, the specific next hop is deleted from the configured default route and if the optional preference value is designated, the preference of the configured default route is reset to its default.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ip route default 20.20.20.1
```

ip route distance

Syntax

ip route distance <distance-value>

Description

This command sets the default distance (preference) for static routes. Lower route distance values are preferred when determining the best route. The ip route and ip route default commands allow you to optionally set the distance (preference) of an individual static route. The default distance is used when no distance is specified in these commands. Changing the default distance does not update the distance of existing static routes, even if they were assigned the original default distance. The new default distance will only be applied to static routes created after invoking the ip route distance command.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

distance-value -

Default: 1

Range: 1-255

Support for no form

no ip route distance This command sets the default static route preference value in the router. Lower route preference values are preferred when determining the best route.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ip route distance 10
```

ip mtu

Syntax

ip mtu <mtu-size>

Description

This command sets the IP Maximum Transmission Unit (MTU) on a routing interface. The IP MTU is the size of the largest IP packet that can be transmitted on the interface without fragmentation. Alcatel-Lucent 1850 TSS-5 software currently does not fragment IP packets. Packets forwarded are dropped if they exceed the IP MTU of the outgoing interface.

Mode

Interface Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

mtu-size -

Default: 1500

Range: 68-1500

Support for no form

no ip mtu resets the IP MTU to the default value.

User guidelines

The IP MTU size refers to the maximum size of the IP packet (IP Header + IP payload). It does not include any extra bytes that may be required for Layer-2 headers. To receive and process packets, the Ethernet MTU must take into account the size of the Ethernet header.

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# ip mtu 512
```

encapsulation (for Ethernet)

Syntax

encapsulation {ethernet | snap}

Description

This command configures the link layer encapsulation type for the packet. The encapsulation type can be ethernet or snap.

Mode

Interface Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: ethernet

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1) # encapsulation snap
```

show ip brief

Syntax

show ip brief

Description

This command displays all the summary information of the IP.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Default Time to Live - The computed TTL (Time to Live) of forwarding a packet from the local router to the final destination.

Routing Mode - Shows whether the routing mode is enabled or disabled.

IP Forwarding Mode - Shows whether forwarding of IP frames is enabled or disabled. This is a configured value.

Maximum Next Hops - Shows the maximum number of next hops the packet can travel.

Example

```
(ALU 1850TSS-5) # show ip brief
```

show ip interface

Syntax

show ip interface <interface-number>

Description

This command displays all pertinent information about the IP interface.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-number - specifies the interface Ethernet port as specified in [Appendix A](#), “Addressable entities”

Support for no form

None

User guidelines

None

Output

Primary IP Address - Displays the primary IP address and subnet masks for the interface. This value appears only if you configure it.

Secondary IP Address - Displays one or more secondary IP addresses and subnet masks for the interface. This value appears only if you configure it.

Routing Mode - Is the administrative mode of router interface participation. The possible values are enable or disable. This value was configured into the unit.

Administrative Mode - Is the administrative mode of the specified interface. The possible values of this field are enable or disable. This value was configured into the unit.

Forward Net Directed Broadcasts - Displays whether forwarding of network-directed broadcasts is enabled or disabled. This value was configured into the unit.

Proxy ARP - Displays whether Proxy ARP is enabled or disabled on the system.

Active State - Displays whether the interface is active or inactive. An interface is considered active if its link is up and it is in forwarding state.

Link Speed Data Rate - Is an integer representing the physical link data rate of the specified interface. This is measured in Megabits per second (Mbps).

MAC Address - Is the burned in physical address of the specified interface. The format is 6 two-digit hexadecimal numbers that are separated by colons.

Encapsulation Type - Is the encapsulation type for the specified interface. The types are: Ethernet or SNAP.

IP MTU - Displays the maximum transmission unit (MTU) size of a frame, in bytes.

Example

```
(ALU 1850TSS-5) # show ip interface d2-1
```

show ip interface brief

Syntax

show ip interface brief

Description

This command displays summary information about IP configuration settings for all ports in the router.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-number - specifies the interface Ethernet port as specified in [Appendix A](#), “Addressable entities”

Support for no form

None

User guidelines

None

Output

Interface - Valid slot and port number separated by forward slashes.

IP Address - The IP address of the routing interface in 32-bit dotted decimal format.

IP Mask - The IP mask of the routing interface in 32-bit dotted decimal format.

Netdir Bcast - Indicates if IP forwards net-directed broadcasts on this interface. Possible values are Enable or Disable. Disabled on VLNC60.

MultiCast Fwd - Indicates the multicast forwarding administrative mode on the interface. Possible values are Enable or Disable. Disabled on VLNC60.

Example

```
(ALU 1850TSS-5) # show ip interface brief
```


show ip route

Syntax

```
show ip route [{<ip-address> | {<ip-address> <mask> [longer-prefixes]} [all] | all}]
```

Description

This command displays the routing table. The **<ip-address>** specifies the network for which the route is to be displayed and displays the best matching best-route for the address. The **<mask>** specifies the subnet mask for the given **<ip-address>**. When you use the longer-prefixes keyword, the **<ip-address>** and **<mask>** pair becomes the prefix, and the command displays the routes to the addresses that match that prefix. Use the all parameter to display all routes including best and non-best routes. If you do not use the all parameter, the command only displays the best route.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ip-address -

Default: *None*

Range - IPv4 address

mask -

Default - *None*

Range - 4-digit dotted-decimal number which represents the subnet mask of the interface. The subnet mask must have contiguous ones and be no longer than 30 bits, for example 255.255.255.0.

Support for no form

None

User guidelines

None

Output

The show ip route command displays the routing tables in the following format:

Code IP-Address/Mask [Preference/Metric] via Next-Hop, Interface

The columns for the routing table display the following information:

Code - The codes for the routing protocols that created the routes.

IP-Address/Mask - The IP-Address and mask of the destination network corresponding to this route.

Preference - The administrative distance associated with this route. Routes with low values are preferred over routes with higher values.

Metric - The cost associated with this route.

via Next-Hop - The outgoing router IP address to use when forwarding traffic to the next router (if any) in the path toward the destination

Interface - The outgoing router interface to use when forwarding traffic to the next destination

Example

```
(ALU 1850TSS-5) # show ip route 20.20.20.2 255.255.255.0
```

show ip route summary

Syntax

show ip route summary [all]

Description

Use this command to display the routing table summary. Use the optional all parameter to show the number of all routes, including best and non-best routes. To include only the number of best routes, do not use the optional parameter.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Connected Routes - The total number of connected routes in the routing table.

Static Routes - Total number of static routes in the routing table.

Total Routes - Total number of routes in the routing table.

Example

```
(ALU 1850TSS-5) # show ip route summary all
```

show ip stats

Syntax

show ip stats

Description

This command displays IP statistical information. Refer to RFC 1213 for more information about the fields that are displayed.

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

DHCP commands

Overview

This section describes the commands you use to configure DHCP settings on the system.

VLNC60 does not support complete DHCP server functionality. The subset of commands in this section are used to provide DNS server addresses for the remote endpoint of an MLPPP interface.

ip dhcp pool

Syntax

ip dhcp pool <name>

Description

This command configures a DHCP address pool name on a DHCP server and enters *DHCP Pool Configuration Mode*.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the name of the DHCP pool.

Default: *None*

Range: Alphanumeric string of 1-31 characters.

Support for no form

`no ip dhcp pool <name>` removes the DHCP address pool. The name should be previously configured pool name.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ip dhcp pool localpool
```

dns-server

Syntax

dns-server <addr1> [<addr2>..**addr8**>]

Description

This command specifies the IP servers available to a DHCP client.

Mode

DHCP Pool Configuration Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

addr1 - IPv4 address.

Default: *None*

Range: 4 decimal values ranging from 0 to 255. (IP address 0.0.0.0 is invalid.)

Support for no form

no dns-server removes the DNS Server list.

User guidelines

In MLPPP application, this command is used to provide DNS server addresses for the remote system connected to the MLG interface. The address is provided through IPCP message.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# dns-server 152.148.100.100
```

show ip dhcp pool configuration

Syntax

show ip dhcp pool configuration {<name> | all}

Description

This command displays pool configuration. specifies the IP servers available to a DHCP client. If all is specified, configuration for all the pools is displayed.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - name of the pool created using *ip dhcp pool*.

Default: *None*

Range: alphanumeric string

Support for no form

None

User guidelines

None

Output

The relevant parameters applicable are:

Pool Name - Name of the configured pool

DNS Servers - The list of DNS servers available to the DHCP client

Example

```
(ALU 1850TSS-5) (Config)# show ip dhcp pool configuration localpool
```


3 QoS commands

Overview

This chapter describes the Quality of Service (QoS) commands available in the VLNC40 CLI.

The commands in this chapter are in one of two functional groups:

- **Configuration Commands**
These commands are used to configure features and options of the switch. For every configuration command there is a show command that will display the configuration setting.
- **Show commands**
These commands are used to display device settings, statistics and other information.

Contents

This chapter covers these topics.

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Class of Service (CoS) commands

Overview

This section describes the commands used to configure and view Class of Service (CoS) settings for the switch. The commands in this section allow you to control the priority and transmission rate of traffic.

Important! Commands you issue in the Interface Config mode only affect a single interface. Commands you issue in the Global Config mode affect all interfaces.

classofservice dot1p-mapping

Syntax

```
classofservice dot1p-mapping <userpriority> <trafficclass>
```

Description

This command maps an 802.1p priority to an internal traffic class.

Mode

Interface Config Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

userpriority - specifies the user priority values

Default: *None*

Range: 0-7

trafficclass - specifies the traffic class

Default: *None*

Range: 0-7

Support for no form

no classofservice dot1p-mapping maps each 802.1p priority to its default internal traffic class value:

User Priority	Traffic Class
-----	-----
0	1
1	0
2	0
3	1
4	2
5	2
6	3
7	3

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# classofservice dot1p-mapping 1 1
```

classofservice ip-precedence-mapping

Syntax

classofservice ip-precedence-mapping <ip-precedence> <trafficclass>

Description

This command maps an IP precedence value to an internal traffic class.

Mode

Interface Config Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

ip-precedence - specifies the IP precedence value

Default: *None*

Range: 0-7

trafficclass - specifies the traffic class

Default: *None*

Range: 0-7

Support for no form

no classofservice ip-precedence-mapping maps each IP precedence value to its default internal traffic class value:

IP Precedence	Traffic Class
-----	-----
0	1
1	0
2	0
3	1
4	2
5	2
6	3
7	3

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# classofservice ip-precedence-mapping 1 1
```

classofservice ip-dscp-mapping

Syntax

classofservice ip-dscp-mapping <ipdscp> <trafficclass>

Description

This command maps an IP DSCP value to an internal traffic class.

Mode

Global Config Mode

Release and pack information

Not supported on VLNC40.

Parameters

ipdscp - specifies the DSCP value

Default: *None*

Range: 0-63 or {af11| af12| af13| af21| af22| af23| af31| af32| af33| af41| af42| af43| be| cs0| cs1| cs2| cs3| cs4| cs5| cs6| cs7| ef}

trafficclass - specifies the traffic class

Default: *None*

Range: 0-7

Support for no form

no classofservice ip-dscp-mapping maps each IP DSCP value to its default internal traffic class value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# classofservice ip-dscp-mapping af11 1
```

classofservice trust

Syntax

```
classofservice trust {dot1p | ip-dscp | ip-precedence | untrusted}
```

Description

This command sets the class of service trust mode for an interface. You can set the mode to trust one of the Dot1p (802.1p), IP DSCP, or IP Precedence packet markings. You can also set the interface mode to `untrusted`. If you configure an interface to use `dot1p`, the mode does not appear in the output of the `show running config` command because `dot1p` is the default.

Mode

Global Config Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

`dot1p`, `ip-dscp`, `ip-precedence`, or `untrusted`

Support for no form

`no classofservice trust` sets the interface mode to the default value.

User guidelines

The `classofservice trust dot1p` command will not be supported in future releases because `dot1p` is the default value. You must use the `no classofservice trust` command to set the mode to the default value.

Important! `ip-dscp` trust mode is not supported on VLNC40

Output

None

Example

```
(ALU 1850TSS-5) (Config)# classofservice trust ip-precedence
```

cos-queue min-bandwidth

Syntax

cos-queue min-bandwidth <bw-0> <bw-1>..**<bw-n>**

Description

This command specifies the minimum percentage of transmission bandwidth guaranteed for each interface queue. A total of 8 queues is supported for each interface. A value from 0-100 (percentage of link rate) must be specified for each supported queue, with 0 indicating no guaranteed minimum bandwidth. The sum of all values entered must not exceed 100.

Mode

Global Config Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

bw-0 - bw-n - specifies the bandwidth value in percentage for each queue.

Default: 0

Range: 0-100

Support for no form

no cos-queue min-bandwidth restores the default for each queue's minimum bandwidth value (=0).

User guidelines

When the default minimum bandwidths (0, meaning no guaranteed bandwidth) are used, the queues are internally weighed relative to each other as follows:

```
queue-id-1 : 1
queue-id-2 : 3
queue-id-3 : 5
queue-id-4 : 7
queue-id-5 : 8
```

```
queue-id-6 : 10  
queue-id-7 : 12  
queue-id-8 : 15
```

Output

None

Example

```
(ALU 1850TSS-5) (Config)# cos-queue min-bandwidth 5 5 5 5 10 10 10 10
```

cos-queue strict

Syntax

```
cos-queue strict <queue-id-1> [<queue-id-2> ... <queue-id-n>]
```

Description

This command activates the strict priority scheduler mode for each specified queue.

Mode

Global Config Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

queue-id-1 - queue-id-n - specifies the queues for which strict priority scheduler is enabled.

Default: *None*

Range: 0-7

Support for no form

no cos-queue strict <queue-id> [<queue-id-2> ... <queue-id-n>]
restores the default weighted scheduler mode for each specified queue.

User guidelines

The strict priority queues will be serviced before any other (weighted) queues.

The priority order between the strict priority queues is fixed. Higher numbered queues have priority over lower numbered queues.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# cos-queue strict 1 2 3 4
```

traffic-shape

Syntax

traffic-shape <bw>

Description

This command specifies the maximum transmission bandwidth limit for the interface. Traffic shaping, also known as rate shaping, has the effect of smoothing temporary traffic bursts over time so that the transmitted traffic rate is bounded.

Mode

Global Config Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

bw - specifies the percentage of interface bandwidth that is the maximum limit for the interface

Default: None

Range: 0-100 in increments of 1 (0 means "no shaping")

Support for no form

no traffic-shape restores the interface shaping rate to the default value (0).

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# traffic-shape 80
```

show classofservice dot1p-mapping

Syntax

show classofservice dot1p-mapping [<port>]

Description

This command displays the current Dot1p (802.1p) priority mapping for internal traffic classes on a specific interface. The <port> parameter is optional. If specified, the 802.1p mapping table for the interface is displayed. If omitted, the most recent global configuration settings are displayed.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port as per [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The following information is repeated for each user priority.

User Priority - The 802.1p user priority value

Traffic Class - The traffic class internal queue identifier to which the user priority value is mapped

Example

```
(ALU 1850TSS-5) # show classofservice dot1p-mapping a-17
```

User Priority	Traffic Class
-----	-----
0	1
1	0
2	0
3	1
4	2
5	2
6	3
7	3

show classofservice ip-precedence-mapping

Syntax

show classofservice ip-precedence-mapping <port>

Description

This command displays the current IP Precedence mapping to internal traffic classes for a specific interface. If specified, the port parameter displays the IP Precedence mapping table of the interface. If omitted, the most recent global configuration settings are displayed.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port as per [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The following information is repeated for each user priority.

IP Precedence - The IP Precedence value

Traffic Class - The traffic class internal queue identifier to which the IP Precedence value is mapped

Example

```
(ALU 1850TSS-5) # show classofservice ip-precedence-mapping a-17
```

IP Precedence	Traffic Class
-----	-----
0	1
1	0
2	0
3	1
4	2
5	2
6	3
7	3

show classofservice ip-dscp-mapping

Syntax

show classofservice ip-dscp-mapping

Description

This command displays the current IP DSCP mapping to internal traffic classes for the global configuration settings.

Mode

Privileged EXEC Mode

Release and pack information

NOT supported on VLNC40.

Parameters

None

Support for no form

None

User guidelines

None

Output

The following information is repeated for each user priority.

IP DSCP - The IP DSCP value

Traffic Class - The traffic class internal queue identifier to which the IP DSCP value is mapped

Example

```
(ALU 1850TSS-5) # show classofservice ip-dscp-mapping
```

show classofservice trust

Syntax

show classofservice trust [<port>]

Description

This command displays the current trust mode setting for a specific interface. The port parameter is optional. If you specify an interface, the command displays the port trust mode of the interface. If you do not specify an interface, the command displays the most recent global configuration settings.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port as per [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Non-IP Traffic Class - The traffic class used for non-IP traffic

This is only displayed when the COS trust mode is set to trust IP Precedence or IP DSCP (on platforms that support IP DSCP).

Class of Service Trust Mode - Shows the trust mode {dot1p | ip-dscp | ip-precedence | untrusted}

Untrusted Traffic Class - The traffic class used for all untrusted traffic
This is only displayed when the COS trust mode is set to untrusted.

Example

```
(ALU 1850TSS-5) # show classofservice trust a-18  
Class of Service Trust Mode: IP Precedence  
Non-IP Traffic Class: 1  
(ALU 1850TSS-5) #
```

show interfaces cos-queue

Syntax

show interfaces cos-queue [<port>]

Description

This command displays the class-of-service queue configuration for the specified interface. The port parameter is optional and is only valid on platforms that support independent per-port class of service mappings. If the port parameter is specified, the class-of-service queue configuration of the interface is displayed. If it is omitted, the most recent global configuration settings are displayed.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port of the interface

Default: *None*

Range: Ethernet port as per [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Queue Id - An interface supports 8 queues numbered 0 to 7

Minimum Bandwidth - The minimum transmission bandwidth guarantee for the queue, expressed as a percentage

A value of 0 means bandwidth is not guaranteed and the queue operates using best-effort. (This is a configured value.)

Scheduler Type - Indicates whether this queue is scheduled for transmission using a strict priority or a weighted scheme (This is a configured value.)

Queue Management Type - The queue depth management technique used for this queue (tail drop).

If you specify the interface, the command also displays the following information.

Interface - This displays the slot/port of the interface. If displaying the global configuration, this output line is replaced with a Global Config indication.

Interface Shaping Rate - This is the maximum transmission bandwidth limit for the interface as a whole. It is independent of any per-queue maximum bandwidth value(s) in effect for the interface. (This is a configured value.)

Example

```
(ALU 1850TSS-5) # show interfaces cos-queue a-19
```

```
Interface..... a-19
Interface Shaping Rate..... 80
```

Queue Id	Min. Bandwidth	Scheduler Type	Queue Management Type
-----	-----	-----	-----
0	5	Strict	Tail Drop
1	5	Weighted	Tail Drop
2	5	Weighted	Tail Drop
3	5	Weighted	Tail Drop
4	10	Weighted	Tail Drop
5	10	Strict	Tail Drop
6	10	Strict	Tail Drop
7	10	Strict	Tail Drop

```
(ALU 1850TSS-5) #
```


Differentiated services (Diffserv) commands

Overview

This section describes the commands used to configure QoS Differentiated Services (DiffServ).

You must configure DiffServ in several stages by specifying three DiffServ components:

1. Class
 - Creating and deleting classes.
 - Defining match criteria for a class.
2. Policy
 - Creating and deleting policies
 - Associating classes with a policy
 - Defining policy statements for a policy/class combination
3. Service
 - Adding and removing a policy to/from an inbound interface

The DiffServ class defines the packet filtering criteria. The attributes of a DiffServ policy define the way the switch processes packets. You can define policy attributes on a per-class instance basis. The switch applies these attributes when a match occurs.

Packet processing begins when the switch tests the match criteria for a packet. The switch applies a policy to a packet when it finds a class match within that policy.

The following rules apply when you create a DiffServ class:

- Each class can contain a maximum of one referenced (nested) class
- Class definitions do not support hierarchical service policies

A class definition can contain a maximum of one reference to another class. You can combine the reference with other match criteria. The referenced class is truly a reference and not a copy since additions to a referenced class affect all classes that refer to it. Changes to any class definition currently referenced by any other class must result in valid class definitions for all derived classes, otherwise the switch rejects the change. You can remove a class reference from a class definition.

The only way to remove an individual match criterion from an existing class definition is to delete the class and re-create it.

Important! The mark possibilities for policing include CoS, IP DSCP, and IP Precedence. While the last two are only meaningful for IP packets, CoS marking is allowed for both IP and non-IP packets, because it updates the 802.1p user priority field contained in the VLAN tag of the layer 2 packet header.

Important! Traffic to be processed by the DiffServ feature requires an IP header.

diffserv

Syntax

diffserv

Description

This command sets the DiffServ operational mode to active. While disabled, the DiffServ configuration is retained and can be changed, but it is not activated. When enabled, Diffserv services are activated.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no diffserv sets the DiffServ operational mode to inactive. While disabled, the DiffServ configuration is retained and can be changed, but it is not active. When enabled, Diffserv services become active.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# diffserv
```

DiffServ class commands

Overview

The DiffServ class commands are used to define traffic classification. To classify traffic, you must specify the Behavior Aggregate (BA), based on DSCP and Multi-Field (MF) classes of traffic (name, match criteria).

This set of commands consists of class creation, deletion, and matching. The class match commands specify Layer 3, Layer 2, and general match criteria. The class match criteria are also known as class rules, with a class definition consisting of one or more rules to identify the traffic that belongs to the class.

Important! Once you create a class match criterion for a class, you cannot change or delete the criterion. To change or delete a class match criterion, you must delete and re-create the entire class.

The CLI command root is **class-map**.

class-map

Syntax

```
class-map {match-all} <class-map-name>
```

Description

This command creates a DiffServ class of type match-all when match-all is specified. This command allows updating an existing DiffServ class when used without match-all. After completion, this command enters the config class-map mode. The class-map-name `default` is reserved and must not be used. The class type `match-all` indicates all of the individual match conditions must be true for a packet to be considered a member of the class. This is the only supported class type.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

class-map-name - specifies a class map name that uniquely identifies a DiffServ class

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters that uniquely identify a DiffServ class

Support for no form

no class-map <class-map-name> eliminates an existing DiffServ class. The <class-map-name> is the name of an existing DiffServ class. The class name `default` is reserved and is not allowed here. This command may be issued at any time. If the class is currently referenced by one or more policies or by any other class, the delete fails.

User guidelines

None

Output

The CLI mode is changed to Class-Map Config when this command is successfully executed.

Example

```
(ALU 1850TSS-5) (Config)# class-map match-all ClassMap1
(ALU 1850TSS-5) (Config-class-map) #
```

class-map rename

Syntax

class-map rename <class-map-name> <new-class-map-name>

Description

This command changes the name of a DiffServ class.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

class-map-name - Specifies a class map name that uniquely identifies an existing DiffServ class.

The <**class-mapname**> default is reserved and must not be used here.

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters that uniquely identify a DiffServ class

new-class-map-name - Specifies a new class map name.

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters that uniquely identify a DiffServ class

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# class-map rename ClassMapOld ClassMapNew
```

match ethertype

Syntax

```
match ethertype {<keyword> | <0x600 - 0xFFFF>}
```

Description

This command adds to the specified class definition a match condition based on the value of the ethertype.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

keyword - specifies ethertype value

Default: *None*

Range: {appletalk| arp| ibmsna| ipv4| ipv6| ipx| mplsmlcast| mplsucast| netbios| novell| pppoe| rarp} or {0x0600-0xFFFF}

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match ethertype 0x8848
```


match any

Syntax

match any

Description

This command adds to the specified class definition a match condition for which all packets are considered to belong.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match any
```

match class-map

Syntax

match class-map <refclassname>

Description

This command adds a set of match conditions defined for another class to the specified class definition.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

refclassname - specifies the name of an existing DiffServ class whose match conditions are being referenced by the specified class definition

Default: None

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

no match class-map <refclassname> removes from the specified class definition the set of match conditions defined for another class.

User guidelines

The parameters <refclassname> and <class-map-name> can not be the same.

Only one other class may be referenced by a class.

Any attempts to delete the <refclassname> class while the class is still referenced by any <class-map-name> fails.

The combined match criteria of <class-map-name> and <refclassname> must be an allowed combination based on the class type.

Any subsequent changes to the <refclassname> class match criteria must maintain this validity, or the change attempt fails.

The total number of class rules formed by the complete reference class chain (including both predecessor and successor classes) must not exceed a platform-specific maximum. In some cases, each removal of a reclass rule reduces the maximum number of available rules in the class definition by one.

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match class-map ClassMap1
```

match cos

Syntax

match cos <value>

Description

This command adds to the specified class definition a match condition for the Class of Service value, which is the only tag in a single tagged packet or the first or outer 802.1Q tag of a double VLAN tagged packet.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value - specifies the cos value

Default: *None*

Range: 0-7

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match cos 4
```

match secondary-cos

Syntax

match secondary-cos <value>

Description

This command adds to the specified class definition a match condition for the secondary Class of Service value, which is the inner 802.1Q tag of a double VLAN tagged packet.

Mode

ClassMap Config Mode

Release and pack information

Not supported on VLNC40.

Parameters

value - specifies the cos value

Default: *None*

Range: 0-7

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match secondary-cos 3
```

match destination-address mac

Syntax

match destination-address mac <macaddr> <macmask>

Description

This command adds to the specified class definition a match condition based on the destination MAC address of a packet.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

macaddr - specifies layer 2 MAC address

Default: *None*

Range: six, two-digit hexadecimal numbers separated by colons

macmask - specifies layer 2 MAC address bit mask

Default: *None*

Range: six two-digit hexadecimal numbers separated by colons, which need not be contiguous (Only the bits set in the mask will contribute to the match condition.)

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match destination-address mac  
00:11:22:dd:ee:ff ff:07:23:ff:fe:dc
```

match dstip

Syntax

match dstip <ipaddr> <ipmask>

Description

This command adds to the specified class definition a match condition based on the destination IP address of a packet. The **<ipaddr>** parameter specifies an IP address. The **<ipmask>** parameter specifies an IP address bit mask and must consist of a contiguous set of leading 1 bits. Only the bits set in the mask will contribute to the match condition.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

ipaddr - specifies an IP address

Default: *None*

Range: IPv4 address

ipmask - specifies the IP mask

Default: *None*

Range: contiguous set of leading '1' bits

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match dstip 192.168.0.2  
255.255.255.0
```

match dsl4port

Syntax

```
match dsl4port {<portkey> | <portno>}
```

Description

This command adds to the specified class definition a match condition based on the destination layer 4 port of a packet using a single keyword or numeric notation.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

portkey - specifies the port name keyword. This keyword translates to a portkey number

Default: *None*

Range: {domain| echo| ftp| ftpdata| http| smtp| snmp| telnet| tftp| www}

portno - specifies layer 4 port number

Default: *None*

Range: 0 - 65535

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match dsl4port domain
```

match ip dscp

Syntax

```
match ip dscp <dscpval>
```

Description

This command adds to the specified class definition a match condition based on the value of the IP DiffServ Code Point (DSCP) field in a packet, which is defined as the high-order six bits of the Service Type octet in the IP header. The low-order two bits are not checked.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

dscpval -

Default: *None*

Range: 0-63 or {af11| af12| af13| af21| af22| af23| af31| af32| af33| af41| af42| af43| be| cs0| cs1| cs2| cs3| cs4| cs5| cs6| cs7| ef}

Support for no form

None

User guidelines

The IP DSCP, IP Precedence, and IP ToS match conditions are alternative ways to specify a match criterion for the same Service Type field in the IP header, but with a slightly different user notation.

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match ip dscp af11
```

match ip precedence

Syntax

match ip precedence <value>

Description

This command adds to the specified class definition a match condition based on the value of the IP Precedence field in a packet, which is defined as the high-order three bits of the Service Type octet in the IP header. The low-order five bits are not checked.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value - specifies the IP precedence value

Default: *None*

Range: 0-7

Support for no form

None

User guidelines

The IP DSCP, IP Precedence, and IP ToS match conditions are alternative ways to specify a match criterion for the same Service Type field in the IP header, but with a slightly different user notation.

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match ip precedence 2
```

match ip tos

Syntax

```
match ip tos <tosbits> <tosmask>
```

Description

This command adds to the specified class definition a match condition based on the value of the IP TOS field in a packet, which is defined as all eight bits of the Service Type octet in the IP header.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

tosbits - specifies the IP TOS bits to match

Default: *None*

Range: 00 - ff

tosmask - denotes the bit positions in **<tosbits>** that are used for comparison against the IP TOS field in a packet. For example, to check for an IP TOS value having bits 7 and 5 set and bit 1 clear, where bit 7 is most significant, use a **<tosbits>** value of a0 (hex) and a **<tosmask>** of a2 (hex).

Default: *None*

Range: 00 - ff

Support for no form

None

User guidelines

The IP DSCP, IP Precedence, and IP ToS match conditions are alternative ways to specify a match criterion for the same Service Type field in the IP header, but with a slightly different user notation.

This “free form” version of the IP DSCP/Precedence/TOS match specification gives you complete control when specifying which bits of the IP Service Type field are checked.

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match ip tos 11 ff
```

match protocol

Syntax

```
match protocol {<protocol-name> | <protocol-value>}
```

Description

This command adds to the specified class definition a match condition based on the value of the IP Protocol field in a packet using a single keyword notation or a numeric value notation.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

protocol-name - specifies the protocol name. value `ip` matches all protocol names

Default: *None*

Range: {icmp, igmp, ip, tcp, udp}

protocol-value - specifies the numeric value notation, the protocol number is a standard value assigned by IANA and is interpreted as an integer

Default: *None*

Range: 0 - 255

Support for no form

None

User guidelines

This command does not validate the protocol number value against the current list defined by IANA.

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match protocol 17
```


match source-address mac

Syntax

match source-address mac <address> <macmask>

Description

This command adds to the specified class definition a match condition based on the source MAC address of a packet.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

address - specifies layer 2 MAC address

Default: *None*

Range: six two-digit hexadecimal numbers separated by colons

macmask - specifies layer 2 MAC address bit mask

Default: *None*

Range: six two-digit hexadecimal numbers separated by colons, which need not be contiguous

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match source-address mac  
00:11:22:dd:ee:ff ff:07:23:ff:fe:dc
```

match srcip

Syntax

match srcip <ipaddr> <ipmask>

Description

This command adds to the specified class definition a match condition based on the source IP address of a packet. Only the bits set in the mask will contribute to the match condition.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

ipaddr - specifies an IP address

Default: *None*

Range: IPv4 address

ipmask - specifies the IP mask

Default: *None*

Range: contiguous set of leading '1' bits

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match srcip 152.148.126.47  
255.255.255.0
```

match srcl4port

Syntax

```
match srcl4port {<portkey> | <portno>}
```

Description

This command adds to the specified class definition a match condition based on the source layer 4 port of a packet using a single keyword or numeric notation.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

portkey - specifies the port name keyword. This keyword translates to a portkey number

Default: *None*

Range: {domain| echo| ftp| ftpdata| http| smtp| snmp| telnet|
tftp| www}

portno - specifies layer 4 port number

Default: *None*

Range: 0 - 65535

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match srcl4port ftpdata
```

match vlan

Syntax

match vlan <vlanid>

Description

This command adds to the specified class definition a match condition based on the value of the layer 2 VLAN Identifier field. This is the only tag in a single tagged packet or the first or outer tag of a double VLAN tagged packet.

Mode

ClassMap Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

vlanid - specifies the vlanid to match

Default: *None*

Range: 1 - 4095

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match vlan 10
```

match secondary-vlan

Syntax

match secondary-vlan <vlanid>

Description

This command adds to the specified class definition a match condition based on the value of the layer 2 secondary VLAN Identifier field, which is the inner 802.1Q tag of a double VLAN tagged packet.

Mode

ClassMap Config Mode

Release and pack information

NOT supported on VLNC40.

Parameters

vlanid - specifies the secondary vlan id

Default: *None*

Range: 1 - 4095

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-class-map) # match secondary-vlan 20
```

DiffServ policy commands

Overview

The DiffServ policy commands are used to specify traffic conditioning actions, such as policing and marking, to apply to traffic classes. The policy commands are used to associate a traffic class that you define by using the class command set with one or more QoS policy attributes. The class/policy association is assigned to an interface to form a service. The policy name is specified when you create the policy.

Each traffic class defines a particular treatment for packets that match the class definition. You can associate multiple traffic classes with a single policy. When a packet satisfies the conditions of more than one class and the actions specified are conflicting, preference is based on the order in which you added the classes to the policy. The first class that you add has the highest precedence.

This set of commands consists of policy creation and deletion, class addition and removal, and individual policy attributes.

Important! The only way to remove an individual policy attribute from a class instance within a policy is to remove the class instance and re-add it to the policy. The values associated with an existing policy attribute can be changed without removing the class instance.

Important! Removing a class instance from a policy must be done in the inverse order of their addition. That is, only the last added class instance can be successfully removed.

The CLI command root is policy-map.

assign-queue

Syntax

assign-queue <queueid>

Description

This command modifies the `queueid` to which the associated traffic stream is assigned. The `queueid` is an integer from 0 to 7.

Mode

Policy-Class-Map Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

queueid - specifies the queue id to which the traffic stream is assigned

Default: *None*

Range: 0 - 7

Support for no form

None

User guidelines

The command is incompatible with the **drop** command.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-class-map) # assign-queue 1
```


drop

Syntax

drop

Description

This command specifies that all packets for the associated traffic stream are to be dropped at ingress.

Mode

Policy-Class-Map Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

This command is incompatible with the **assign-queue**, **mark** (all forms), **police**, and **redirect** commands.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-class-map) # drop
```

mirror

Syntax

mirror <port>

Description

This command specifies that all incoming packets for the associated traffic stream are copied to a specific egress interface (physical port or LAG).

Mode

Policy-Class-Map Config Mode

Release and pack information

NOT supported by VLNC40.

Parameters

port -

Default: *None*

Range: Ethernet port as per [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

This command is incompatible with the **drop** or **redirect** commands.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-class-map) # mirror d2-1
```

redirect

Syntax

redirect <port>

Description

This command specifies that all incoming packets for the associated traffic stream are redirected to a specific egress interface (physical port or port-channel).

Mode

Policy-Class-Map Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port -

Default: *None*

Range: Ethernet address as per [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

This command is incompatible with the **drop** and **mirror** commands.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-class-map) # redirect d2-2
```

conform-color

Syntax

conform-color <class-map-name>

Description

This command is used to enable color-aware traffic policing and define the conform-color class map. Used in conjunction with the police command where the fields for the conform level are specified.

Mode

Policy-Class-Map Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

class-map-name - specifies the name of an existing Diffserv Class Map

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

None

User guidelines

This command may only be used after specifying a police command for the policy-class instance.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-class-map) # conform-color ClassMap1
```

class

Syntax

class <classname>

Description

This command creates an instance of a class definition within the specified policy for the purpose of defining treatment of the traffic class through subsequent policy attribute statements.

Mode

Policy-Map Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

classname - specifies the name of an existing Diffserv class

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

no class <classname> deletes the instance of a particular class and its defined treatment from the specified policy. This command fails unless the class is the class last added to the policy.

User guidelines

This command causes the specified policy to create a reference to the class definition.

The CLI mode is changed to Policy-Class-Map Config when this command is successfully executed.

The no form of the command removes the reference to the class definition for the specified policy.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-map) # class Class1
```

mark cos

Syntax

mark cos <value>

Description

This command marks all packets for the associated traffic stream with the specified class of service value in the priority field of the 802.1p header. This is either the only tag in a single tagged packet or the first or outer 802.1Q tag of a double VLAN tagged packet. If the packet does not already contain this header, one is inserted.

Mode

Policy-Class-Map Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value - specifies the COS value

Default: *None*

Range: 0 - 7

Support for no form

None

User guidelines

This command is incompatible with the **drop**, **Mark IP DSCP**, **IP precedence**, and **police** commands.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-class-map) # mark cos 1
```

mark ip-dscp

Syntax

mark ip-dscp <dscpval>

Description

This command marks all packets for the associated traffic stream with the specified IP DSCP value.

Mode

Policy-Class-Map Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

dscpval -

Default: *None*

Range: 0-63 or {af11| af12| af13| af21| af22| af23| af31| af32| af33| af41| af42| af43| be| cs0| cs1| cs2| cs3| cs4| cs5| cs6| cs7| ef}

Support for no form

None

User guidelines

This command is incompatible with the **drop**, **mark CoS**, **mark IP precedence**, and **police** commands.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-class-map) # mark ip-dscp af11
```


mark ip-precedence

Syntax

mark ip-precedence <value>

Description

This command marks all packets for the associated traffic stream with the specified IP Precedence value.

Mode

Policy-Class-Map Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

value - specifies the IP precedence value

Default: *None*

Range: 0 - 7

Support for no form

None

User guidelines

This command is incompatible with the **drop**, **mark CoS**, **mark IP DSCP**, and **police** commands.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-class-map) # mark ip-precedence 4
```

police-simple

Syntax

```
police-simple {<data rate> <burst size> conform-action {drop | set-prec-transmit
<0-7> | set-dscp-transmit <0-63> | set-costransmit <0-7> | transmit} [violate-action
{drop | set-prec-transmit <0-7> | set-dscp-transmit <0-63> | set-cos-transmit <0-7> |
transmit}}}
```

Description

This command is used to establish the traffic policing style for the specified class. The simple form of the command uses a single data rate and burst size, resulting in two outcomes, conform and violate. The conforming data rate is specified in kilobits-per-second (Kbps) and is an integer from 1 to 4294967295. The conforming burst size is specified in kilobytes (KB) and is an integer from 1 to 128. For each outcome, the only possible actions are drop, set-cos-transmit, set-dscp transmit, setprec-transmit, or transmit. In this simple form of the command, the conform action defaults to transmit and the violate action defaults to drop.

For set-dscp-transmit, a <dscpval> value is required and is specified as either an integer from 0 to 63, or symbolically through one of the following keywords: af11, af12, af13, af21, af22, af23, af31, af32, af33, af41, af42, af43, be, cs0, cs1, cs2, cs3, cs4, cs5, cs6, cs7, ef.

For set-prec-transmit, an IP Precedence value is required and is specified as an integer from 0-7.

For set-cos-transmit, an 802.1p priority value is required and is specified as an integer from 0-7.

Mode

Policy-Class-Map Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

As specified in the Format section.

Support for no form

None

User guidelines

This command is incompatible with the **drop** and **mark** (all forms) commands.

Output

None

Example

```
(ALU 1850TSS-5) (Config-policy-class-map) # police-simple 1 1  
conform-action drop
```

policy-map

Syntax

policy-map <polycyname> {in}

Description

This command establishes a new DiffServ policy. The type of policy is specific to the inbound traffic direction as indicated by the `in` parameter. Without the `in` parameter, this command allows configuration of an existing DiffServ policy.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

polycyname - specifies the name of a diffserv policy

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

no policy-map <polycyname> deletes an existing DiffServ policy. This command may be issued at any time. If the policy is currently referenced by one or more interface service attachments, it cannot be deleted.

User guidelines

None

Output

The CLI mode is changed to `Config-policy-map` when this command is successfully executed.

Example

```
(ALU 1850TSS-5) (Config)# policy-map PolicyMap1 in
(ALU 1850TSS-5) (Config-policy-map) #
```

policy-map rename

Syntax

policy-map rename <polycyname> <newpolycyname>

Description

This command changes the name of a DiffServ policy.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

polycyname - specifies name of an existing Diffserv policy

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

newpolycyname - new name uniquely identifies the Diffserv policy

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# policy-map rename PolicyNameOld  
PolicyNameNew
```

DiffServ service commands

Overview

The DiffServ service commands are used to assign a DiffServ traffic conditioning policy, which you have specified previously, using the policy commands, to an interface in the incoming direction.

The service commands attach a defined policy to a directional interface. You can assign only one policy at any one time to an interface in the inbound direction. DiffServ is not used in the outbound direction.

This set of commands consists of service addition or removal.

The CLI command root is service-policy.

service-policy in

Syntax

service-policy in <polycymapname>

Description

This command attaches a policy to an interface in the inbound direction. This command causes a service to create a reference to the policy.

Mode

Global Config Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

polycymapname - specifies the name of an existing Diffserv policy

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

no service-policy in <polycymapname> detaches a policy from an interface in the inbound direction.

User guidelines

This command effectively enables DiffServ on an interface in the inbound direction. There is no separate interface administrative mode command for DiffServ.

This command fails if any attributes within the policy definition exceed the capabilities of the interface. Once a policy is successfully attached to an interface, any attempt to change the policy definition, that would result in a violation of the interface capabilities, will fail.

Each interface can have one policy attached.

The no form of the command causes a service to remove its reference to the policy. It effectively disables DiffServ on an interface in the inbound direction. There is no separate interface administrative mode command for DiffServ.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# service-policy in PolicyMap1
```

DiffServ show commands

show class-map

Syntax

show class-map <class-name>

Description

This command displays all configuration information for the specified class.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

class-name - specifies the name of an existing Diffserv class

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

None

User guidelines

None

Output

If the `class-name` is specified the following fields are displayed:

Class Name - The name of this class.

Class Type - A class type of `all` means every match criterion defined for the class is evaluated simultaneously and must all be true to indicate a class match.

Match Criteria - The Match Criteria fields are only displayed if they have been configured. Not all platforms support all match criteria values. They are displayed in the order entered. The fields are evaluated in accordance with the class type. The possible Match Criteria fields are: Destination IP Address, Destination Layer 4 Port, Destination MAC Address, Ethertype, Source MAC Address, VLAN, Class of Service, Every, IP DSCP, IP Precedence, IP TOS, Protocol Keyword, Reference Class, Source IP Address, **and** Source Layer 4 Port.

Values - This field displays the values of the Match Criteria.

If you do not specify the Class Name, this command displays a list of all defined DiffServ classes. The following fields are displayed:

Class Name - The name of this class. (Note that the order in which classes are displayed is not necessarily the same order in which they were created.)

Class Type - A class type of `all` means every match criterion defined for the class is evaluated simultaneously and must all be true to indicate a class match.

Ref Class Name - The name of an existing DiffServ class whose match conditions are being referenced by the specified class definition.

Example

```
(ALU 1850TSS-5) # show class-map myclass1

Class Name..... myclass1
Class Type..... All

      Match Criteria              Values
-----
Ethertype              0x3000
VLAN                   0

(ALU 1850TSS-5) # show class-map

      Class Name              Class
      -----              -
      Type Reference Class Name
-----
myclass1              All
myclass2              All
confclass              All

(ALU 1850TSS-5) #
```

show diffserv

Syntax

show differv

Description

This command displays the DiffServ General Status Group information, which includes the current administrative mode setting as well as the current and maximum number of rows in each of the main DiffServ private MIB tables. This command has no options.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

DiffServ Admin mode - The current value of the DiffServ administrative mode.

Class Table Size - The current number of entries (rows) in the Class Table.

Class Table Max - The maximum allowed entries (rows) for the Class Table.

Class Rule Table Size - The current number of entries (rows) in the Class Rule Table.

Class Rule Table Max - The maximum allowed entries (rows) for the Class Rule Table.

Policy Table Size - The current number of entries (rows) in the Policy Table.

Policy Table Max - The maximum allowed entries (rows) for the Policy Table.

Policy Instance Table Size - Current number of entries (rows) in the Policy Instance Table.

Policy Instance Table Max - Maximum allowed entries (rows) for the Policy Instance Table.

Policy Attribute Table Size - Current number of entries (rows) in the Policy Attribute Table.

Policy Attribute Table Max - Maximum allowed entries (rows) for the Policy Attribute Table.

Service Table Size - The current number of entries (rows) in the Service Table.

Service Table Max - The maximum allowed entries (rows) for the Service Table.

Example

```
(ALU 1850TSS-5) # show diffserv
```

```
DiffServ Admin Mode..... Enable
Class Table Size Current/Max..... 3 / 25
Class Rule Table Size Current/Max..... 4 / 150
Policy Table Size Current/Max..... 1 / 64
Policy Instance Table Size Current/Max..... 1 / 640
Policy Attribute Table Size Current/Max..... 2 / 1920
Service Table Size Current/Max..... 24 / 84
```

```
(ALU 1850TSS-5) #
```

show policy-map

Syntax

show policy-map [policyname]

Description

This command displays all configuration information for the specified policy.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

policyname - specifies the name of an existing Diffserv policy

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

None

User guidelines

None

Output

If the Policy Name is specified the following fields are displayed:

Policy Name - The name of this policy.

Type - The policy type (Only inbound policy definitions are supported for this platform.)

The following information is repeated for each class associated with this policy (only those policy attributes actually configured are displayed):

Assign Queue - Directs traffic stream to the specified QoS queue. This allows a traffic classifier to specify which one of the supported hardware queues are used for handling packets belonging to the class.

Class Name - The name of this class.

Committed Burst Size (KB) - This field displays the committed burst size, used in simple policing.

Committed Rate (Kbps) - This field displays the committed rate, used in simple policing,

Conform Action - The current setting for the action taken on a packet considered to conform to the policing parameters. This is not displayed if policing is not in use for the class under this policy.

Conform COS - This field shows the CoS mark value if the conform action is set-cos-transmit.

Conform DSCP - Value This field shows the DSCP mark value if the conform action is set-dscp-transmit.

Conform IP Precedence Value - This field shows the IP Precedence mark value if the conform action is set-prec-transmit.

Drop - Drop a packet upon arrival. This is useful for emulating access control list operation using DiffServ, especially when DiffServ and ACL cannot co-exist on the same interface.

Mark CoS - Denotes the class of service value that is set in the 802.1p header of inbound packets. This is not displayed if the mark cos was not specified.

Mark IP DSCP - Denotes the mark/re-mark value used as the DSCP for traffic matching this class. This is not displayed if mark ip description is not specified.

Mark IP Precedence - Denotes the mark/re-mark value used as the IP Precedence for traffic matching this class. This is not displayed if mark ip precedence is not specified.

Non-Conform Action - The current setting for the action taken on a packet considered to not conform to the policing parameters. This is not displayed if policing not in use for the class under this policy.

Non-Conform COS - This field displays the CoS mark value if the non-conform action is set-cos-transmit.

Non-Conform DSCP Value - This field displays the DSCP mark value if the non-conform action is set-dscp-transmit.

Non-Conform IP Precedence Value - This field displays the IP Precedence mark value if the non-conform action is set-prec-transmit.

Policing Style - This field denotes the style of policing, if any, used (simple).

Redirect - Forces a classified traffic stream to a specified egress port (physical port or LAG). This can occur in addition to any marking or policing action. It may also be specified along with a QoS queue assignment.

If the Policy Name is not specified this command displays a list of all defined DiffServ policies. The following fields are displayed:

Policy Name - The name of this policy. (The order in which the policies are displayed is not necessarily the same order in which they were created.)

Policy Type - The policy type (Only inbound is supported).

Class Members - List of all class names associated with this policy.

Example

```
(ALU 1850TSS-5) # show policy-map interpol

Policy Name..... interpol
Policy Type..... In

Class Name..... myclass1
Assign Queue..... 7
Policing Style..... Police Simple
Committed Rate..... 1000
Committed Burst Size..... 10
Conform Action..... Send
Non-Conform Action..... Drop
Conform Color Class..... confclass
Conform Color Mode..... Aware COS
Conform Color COS Value..... 6

(ALU 1850TSS-5) # show policy-map
```

Policy Name	Policy Type	Class Members
interpol	In	myclass1

```
(ALU 1850TSS-5) #
```

show diffserv service

Syntax

show diffserv service <port> in

Description

This command displays policy service information for the specified interface and direction. The port parameter specifies a valid slot/port number for the system.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port

Default: *None*

Range: Ethernet port as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

DiffServ Admin Mode - The current setting of the DiffServ administrative mode. An attached policy is only in effect on an interface while DiffServ is in an enabled mode.

Interface - Ethernet port as specified in [Appendix A, “Addressable entities”](#)

Direction - The traffic direction of this interface service.

Operational Status - The current operational status of this DiffServ service interface.

Policy Name - The name of the policy attached to the interface in the indicated direction.

Policy Details - Attached policy details, whose content is identical to that described for the `show policy-map [polycyname]` command. See [“show policy-map” \(p. 3-74\)](#) for more information.

Example

```
(ALU 1850TSS-5) # show diffserv service a-17 in

DiffServ Admin Mode..... Enable
Interface..... a-17
Direction..... In
Operational Status..... Up
Policy Name..... interpol

Class Name..... myclass1
Assign Queue..... 7
Policing Style..... Police Simple
Committed Rate..... 1000
Committed Burst Size..... 10
Conform Action..... Send
Non-Conform Action..... Drop
Conform Color Class..... confclass
Conform Color Mode..... Aware COS
Conform Color COS Value..... 6

(ALU 1850TSS-5) #
```


show diffserv service brief

Syntax

show diffserv service brief [in]

Description

This command displays all interfaces in the system to which a DiffServ policy has been attached. The inbound direction parameter is optional.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

DiffServ Mode - The current setting of the DiffServ administrative mode. An attached policy is only active on an interface while the DiffServ administrative mode is enabled.

The following information is repeated for interface and direction. Only those interfaces configured with an attached policy are shown.

Interface - Ethernet port as specified in [Appendix A, “Addressable entities”](#)

Direction - The traffic direction of this interface service.

OperStatus - The current operational status of this DiffServ service interface.

Policy Name - The name of the policy attached to the interface in the indicated direction.

Example

```
(ALU 1850TSS-5) # show diffserv service brief in

DiffServ Admin Mode..... Enable
Interface  Direction    OperStatus      Policy Name
-----
a-17      In                Up              interpol

(ALU 1850TSS-5) #
```

show policy-map interface

Syntax

show policy-map interface <port> [in]

Description

This command displays policy-oriented statistics for the specified interface and direction.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port

Default: *None*

Range: Ethernet port as per [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Interface - Ethernet port as specified in [Appendix A, “Addressable entities”](#)

Direction - The direction of traffic for this interface service.

Operational Status - The current operational status of this DiffServ service interface.

Policy Name - The name of the policy attached to the interface in the indicated direction.

The following information is repeated for each class instance within this policy:

Class Name - The name of this class instance.

In Discarded Packets - A count of the packets discarded for this class instance for any reason due to DiffServ treatment of the traffic class. (Not supported on the VLNC40.)

Example

```
(ALU 1850TSS-5) # show policy-map interface d2-1
```

show service-policy in

Syntax

show service-policy in

Description

This command displays a summary of policy-oriented statistics for all interfaces in the specified direction.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

The following information is repeated for each interface and direction. Only those interfaces configured with an attached policy are shown.

Interface - Ethernet port as specified in [Appendix A, “Addressable entities”](#)

Operational Status - The current operational status of this DiffServ service interface.

Policy Name - The name of the policy attached to the interface.

Example

```
(ALU 1850TSS-5) # show service-policy
```

MAC Access Control List (ACL) commands

Overview

This section describes the commands used to configure MAC ACL settings. MAC ACLs ensure that only authorized users have access to specific resources and block any unwarranted attempts to reach network resources.

The following rules apply to MAC ACLs:

- The maximum number of ACLs that can be created is 100, regardless of type.
- The system supports only Ethernet II frame types.
- The maximum number of rules per MAC ACL is hardware dependent.

mac access-list extended

Syntax

```
mac access-list extended <name>
```

Description

This command creates a MAC Access Control List (ACL) identified by <name>, consisting of classification fields defined for the Layer 2 header of an Ethernet frame.

If a MAC ACL by this name already exists, this command enters the Mac-Access-List config mode to allow updating of the existing MAC ACL.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

name - uniquely identifies the MAC access list.

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

no mac access-list extended <name> deletes a MAC ACL identified by <name> from the system.

User guidelines

None

Output

The CLI mode changes to the Mac-Access-List Config mode when you successfully execute this command.

Example

```
(ALU 1850TSS-5) (Config)# mac access-list extended MACACL1
(ALU 1850TSS-5) (Config-mac-access-list)#
```

mac access-list extended rename

Syntax

mac access-list extended rename <name> <newname>

Description

This command changes the name of a MAC Access Control List (ACL). This command fails if a MAC ACL by the name <newname> already exists.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

name - specifies the name of an existing MAC ACL.

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

newname - uniquely identifies the MAC access list

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# access-list extended rename MACListOld  
MACListNew
```


deny | permit

Syntax

```
{deny|permit} {<srcmac> | any} {<dstmac> | any} [<ethertypekey> | <0x0600-0xFFFF>] [vlan {eq <0-4095>}] [cos <0-7>] [[log] [assign-queue <queue-id>]] [{mirror | redirect} <port>]
```

Description

This command creates a new rule for the current MAC access list. Each rule is appended to the list of configured rules for the list.

- The `no` form of this command is not supported, since the rules within a MAC ACL cannot be deleted individually. The entire MAC ACL must be deleted and re-specified.
- An implicit `deny all` rule always terminates the MAC access control list.
- For BCM5630x and BCM5650x based systems, `assign-queue`, `redirect`, and `mirror` attributes can be configured for a deny rule, but they have no operational effect.

A rule may either deny or permit traffic according to the specified classification fields. At a minimum, the source and destination MAC value must be specified, each of which may be substituted using the keyword `any` to indicate a match on any value in that field. The remaining command parameters are all optional, but the most frequently used parameters appear in the same relative order as shown in the command format.

The Ethertype may be specified as either a keyword or a four-digit hexadecimal value from 0x0600-0xFFFF. The currently supported `<ethertypekey>` values are: `appletalk`, `arp`, `ibmsna`, `ipv4`, `ipv6`, `ipx`, `mplsmcast`, `mplsucast`, `netbios`, `novell`, `pppoe`, `rarp`. Each of these translates into its equivalent Ethertype value(s).

Table 3-1 Ethertype Keyword and 4-digit Hexadecimal Value (cont 1 of 2)

Ethertype Keyword	Corresponding Value
appletalk	0x809B
arp	0x0806
ibmsna	0x80D5
ipv4	0x0800
ipv6	0x86DD
ipx	0x8037
mplsmcast	0x8848
mplsucast	0x8847
netbios	0x8191
novell	0x8137, 0x8138

Table 3-1 Ethertype Keyword and 4-digit Hexadecimal Value (cont 2 of 2)

Ethertype Keyword	Corresponding Value
pppoe	0x8863, 0x8864
rarp	0x8035

The vlan and cos parameters refer to the VLAN identifier and 802.1p user priority fields of the VLAN tag, respectively. For packets containing a double VLAN tag, this is the first, or outer, tag.

The assign-queue parameter allows specification of a particular hardware queue for handling traffic that matches this rule. The allowed `<queue-id>` value is 0-(n-1), where n is the number of user configurable queues available for the hardware platform. The assign-queue parameter is only valid for a permit rule.

For the Broadcom 5650x platform, the mirror parameter allows traffic matching this rule to be copied to the specified `<port>`, while the redirect parameter allows the traffic matching this rule to be forwarded to the specified `<port>`. The assign-queue and redirect parameters are only valid for a permit rule.

Important! The mirror parameter is not available on the VLNC40.

Important! The special command form `{deny | permit} any` is used to match all Ethernet layer 2 packets, and is the equivalent of the IP access list “match every” rule.

Mode

MAC Access List Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

As specified in description

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-mac-access-list)# deny any any 0x8848 vlan 10
```

mac access-group

Syntax

mac access-group <name> in [sequence <seqno>]

Description

This command attaches a specific MAC Access Control List (ACL) identified by <name> to an interface in a given direction. The <name> parameter must be the name of an existing MAC ACL.

When this command is specified in the Interface Config mode it only affects a single interface. When used in the Global Config mode it is applied to all interfaces. The command is only available in the Interface Config mode on platforms that support independent per-port class of service queue configuration.

Mode

Global Config Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

name - specifies the name of an existing MAC ACL.

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

seqno - indicates the order of this mac access list, relative to other mac access lists already assigned to this interface and direction. A lower number indicates higher precedence order. If a sequence number is already in use for this interface and direction, the specified mac access list replaces the currently attached mac access list with that sequence number. If the sequence number is not specified, the highest sequence number currently in use for this interface and direction is increased by one and used for this command.

Default: *None*

Range: 1-4294967295

Support for no form

no mac access-group <name> in removes a MAC ACL identified by <name> from the interface in a given direction.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# mac access-group ACL1 in
```

show mac access-lists

Syntax

show mac access-lists [<name>]

Description

This command displays a MAC access list and all of the rules that are defined for a specified MAC ACL. If no MAC ACL is specified, a list of all currently defined MAC ACLs is produced.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

name - specifies the MAC ACL to display

Default: *None*

Range: alphanumeric string of 1 to 31 case-sensitive characters

Support for no form

None

User guidelines

None

Output

Rule Number - The ordered rule number identifier defined within the MAC ACL.

Action - Displays the action associated with each rule. The possible values are Permit or Deny.

Source MAC Address - Displays the source MAC address for this rule.

Destination MAC Address - Displays the destination MAC address for this rule.

Ethertype - Displays the Ethertype keyword or custom value for this rule.

VLAN ID - Displays the VLAN identifier value or range for this rule.

COS - Displays the COS (802.1p) value for this rule.

Log - Displays when logging is enabled for the rule.

Assign Queue - Displays the queue identifier to which packets matching this rule are assigned.

Mirror Interface - On Broadcom 5650x platforms, displays the unit, slot, or port to which packets matching this rule are copied. (This is not supported on VLNC40.)

Redirect Interface - On Broadcom 5650x platforms, displays the slot or port to which packets matching this rule are forwarded.

Example

```
(ALU 1850TSS-5) # show mac access-lists
Current number of all ACLs: 3   Maximum number of all ACLs: 100

  MAC ACL Name      Rules  Direction  Interface(s)
  -----
mymacl              1      inbound    a-18
mymacl2             0
(ALU 1850TSS-5) # show mac access-lists mymac1
MAC ACL Name: mymac1
Interface:a-18
Rule Number: 1
Action..... permit
Source MAC Address..... 00:60:91:FE:11:33
Destination MAC Address..... FF:FF:FF:FF:FF:FF
(ALU 1850TSS-5) #
```

IP Access Control List (ACL) commands

Overview

This section describes the commands used to configure IP ACL settings. IP ACLs ensure that only authorized users have access to specific resources and block any unwarranted attempts to reach network resources.

The following rules apply to IP ACLs:

- Alcatel-Lucent 1850 TSS-5 does not support IP ACL configuration for IP packet fragments.
- A maximum of 100 ACLs can be created, regardless of type.
- The maximum number of rules per IP ACL is hardware dependent.
- Wildcard masking for ACLs operates differently from a subnet masking. A wildcard mask is in essence the inverse of a subnet mask. With a subnet mask, the mask has ones (1's) in the bit positions that are used for the network address, and zeros (0's) for bit positions that are not used. In a wildcard mask zeros (0's) are in bit positions that must be checked, and ones (1's) are in bit positions of the ACL mask that can be ignored.

access-list

Syntax

```
access-list <1-99> {deny | permit} {every | <srcip> <srcmask>} [log] [assign-queue <queue-id>] [{mirror | redirect} <port>]
```

```
access-list <100-199> {deny | permit} {every | {{icmp | igmp | ip | tcp | udp | <number>} <srcip> <srcmask>[{eq {<portkey> | <0-65535>} <dstip> <dstmask> [{eq {<portkey> | <0-65535>}] [precedence <precedence> | tos <tos> <tosmask> | dscp <dscp>}] [log] [assign-queue <queue-id>] [{mirror | redirect} <port>]}
```

Description

This command creates an IP Access Control List (ACL) that is identified by the access list number. The range for this number is 1-99 for standard ACLs or 100-199 for extended ACLs. The following table describes the parameters for the access-list command.

Mode*Global Config Mode***Release and pack information**

VLNC40, starting Release 3.0

Parameters**Table 3-2 ACL Command Parameters**

Parameter	Description
<1-99> or <100-199>	A range 1 to 99 identifies the access list number for an IP standard ACL. A range 100 to 199 identifies the access list number for an IP extended ACL.
{deny permit}	Specifies whether the IP ACL rule permits or denies an action. Note: For 5630x and 5650x-based systems, assign-queue, redirect, and mirror attributes can be configured for a deny rule, but they have no operational effect.
every	Requires a match for every packet.
{icmp igmp ip tcp udp <number>}	Specifies the protocol to filter for an extended IP ACL rule.
<srcip> <srcmask>	Specifies a source IP address and source netmask for a match condition in an IP ACL rule.
[{eq {<portkey> <0-65535>}}]	Specifies the source layer 4 port match condition for an IP ACL rule. You can use the port number, which ranges from 0-65535, or you specify the <portkey>, which can be one of the following keywords: domain, echo, ftp, ftpdata, http, smtp, snmp, telnet, tftp, and www. Each of these keywords translates into its equivalent port number, which is used as both the start and end of a port range.-The <startport> and <endport> parameters identify the first and last ports that are part of the port range. They have values from 0 to 65535. The ending port must have a value equal or greater than the starting port. The starting port, ending port, and all ports in between will be part of the destination port range.
<dstip> <dstmask>	Specifies a destination IP address and netmask for match condition of the IP ACL rule.

Table 3-2 ACL Command Parameters (Continued)

Parameter	Description
[precedence <precedence> tos <tos> <tosmask> dscp <dscp>]	Specifies the TOS for an IP ACL rule depending on a match of precedence or DSCP values using the parameters dscp, precedence, tos/tosmask.
[log]	Specifies that this rule is to be logged.
[assign-queue <queue-id>]	Specifies the assign-queue, which is the queue identifier to which packets matching this rule are assigned.
[{mirror redirect} <slot/port>]	For Broadcom 5650x platforms, specifies the mirror or redirect interface which is the slot/port to which packets matching this rule are copied or forwarded, respectively. The mirror and redirect parameters are not available on the Broadcom 5630x platform.

Support for no form

no access-list <accesslistnumber> deletes an IP ACL that is identified by the parameter <accesslistnumber> from the system. The range for <accesslistnumber> is 1-99 for standard access lists and 100-199 for extended access lists.

User guidelines

mirror is not supported on the VLNC40.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# access-list 1 deny tcp 192.148.117.23
255.255.255.0 192.148.128.47 255.255.255.0
```

ip access-group

Syntax

ip access-group <accesslistnumber> in [sequence<seqno>]

Description

This command attaches a specified IP ACL to a single interface or to all interfaces.

Mode

Global Config Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

accesslistnumber - specifies the ACL number.

Default: *None*

Range: 1-99 for IP Standard ACL and 100 - 199 for extended ACL

seqno - indicates the order of this IP access list relative to other IP access lists already assigned to this interface and direction. A lower number indicates a higher precedence order. If a sequence number is already in use for this interface and direction, the specified access list replaces the current IP access list using that sequence number. If a sequence number is not specified for this command, the highest sequence number currently in use for this interface and direction is increased by one and used.

Default: *None*

Range: 1 - 4294967295

Support for no form

no ip access-group <accesslistnumber> in removes a specified IP ACL from an interface. This is applicable only in *Interface Config Mode*.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ip access-group ACL1 in
```

acl-trapflags

Syntax

acl-trapflags

Description

This command enables the ACL trap mode.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no acl-trapflags disables the ACL trap mode.

User guidelines

By default, the ACL traps are disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# acl-trapflags
```

show ip access-lists

Syntax

show ip access-lists <accesslistnumber>

Description

This command displays an IP ACL identified by **<accesslistnumber>**.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

accesslistnumber - specifies the ACL number.

Default: *None*

Range: 1-99 for IP Standard ACL and 100 - 199 for extended ACL

Support for no form

None

User guidelines

None

Output

Only the access list fields that are configured are displayed.

Rule Number - This displays the number identifier for each rule that is defined for the IP ACL.

Action - This displays the action associated with each rule. The possible values are Permit or Deny.

Match All - Indicates whether this access list applies to every packet. Possible values are True or False.

Protocol - This displays the protocol filtered by this rule.

Source IP Address - This displays the source IP address for this rule.

Source IP Mask - This field displays the source IP Mask for this rule.

Source L4 Port Keyword - This field displays the source port for this rule.

Destination IP Address - This displays the destination IP address for this rule.

Destination IP Mask - This field displays the destination IP Mask for this rule.

Destination L4 Port Keyword - This field displays the destination port for this rule.

IP DSCP - This field indicates the value specified for IP DSCP.

IP Precedence - This field indicates the specified IP Precedence value.

IP TOS - This field indicates the value specified for IP TOS.

Log - Displays when you enable logging for the rule.

Assign Queue - Displays the queue identifier to which packets matching this rule are assigned.

Mirror Interface - Displays the slot or port to which packets matching this rule are copied. (Not supported on VLNC40.)

Redirect Interface - Displays the unit, slot, or port to which packets matching this rule are forwarded.

Example

```
(ALU 1850TSS-5) # show ip access-lists
Current number of ACLs: 4 Maximum number of ACLs: 100
ACL ID    Rules    Direction    Interface(s)
-----
1         1         inbound     a-18
3         1
(ALU 1850TSS-5) # show ip access-lists 1
ACL ID: 1
Interface :a-18
Rule Number: 1
Action..... permit
Match All..... FALSE
Source IP Address..... 152.148.128.47
Source IP Mask..... 255.255.255.0
(ALU 1850TSS-5) #
```

show access-lists interface

Syntax

show access-lists interface <port> in

Description

This command displays information for IP ACLs and MAC access control lists for a designated interface and direction.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

port - specifies the Ethernet port

Default: *None*

Range: Ethernet port as per [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

ACL Type - The type of access list (IP or MAC).

ACL ID - The Access List name for a MAC access list or the numeric identifier for an IP access list.

Sequence Number - An optional sequence number may be specified to indicate the order of this access list relative to other access lists already assigned to this interface and direction. A lower number indicates higher precedence order.

Example

```
(ALU 1850TSS-5) # show access-lists interface a-18 in
```

ACL Type	ACL ID	Sequence Number
MAC	mymacl	12
IP	1	13

```
(ALU 1850TSS-5) #
```


4 Utility commands

Overview

This section contains descriptions of various utility commands.

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This chapter covers these topics.

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Dual image commands

Overview

VLNC40 software supports a dual image feature that allows the switch to have two VLNC40 images in permanent storage. You can specify which image is the active image to be loaded in subsequent reboots. This feature allows reduced down-time when you upgrade or downgrade the VLNC40 software.

delete

Syntax

```
delete {image1 | image2}
```

Description

This command deletes the identified image file from the permanent storage. The image to be deleted must be a backup image. If the image is active or activated, an error is displayed.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Name of the image

Default: *None*

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # delete image1
```

boot system

Syntax

```
boot system {image1 | image2}
```

Description

This command activates the specified image. It will be loaded by the boot loader and will be the active-image for subsequent reboots. The current active-image is marked as the backup-image for subsequent reboots. If the specified image doesn't exist on the system, this command returns error.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Name of the image

Default: *None*

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # boot system image1
```


show bootvar

Syntax

show bootvar

Description

This command displays information for the version and the activation status of the current active and backup images. The command also displays any description text associated with an image. This command also displays the switch activation status.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

The list of Image Descriptions and status associated with each image.

Example

(ALU 1850TSS-5) # show bootvar

Image Descriptions

image1 : default image
image2 :

Images currently available on Flash

unit	image1	image2	current-active	next-active
1	28.0.6.0	<none>	image1	image1

(ALU 1850TSS-5) #

filedescr

Syntax

```
filedescr {image1 | image2} <text-description>
```

Description

This command associates a text description with an image. Any existing description will be replaced.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Name of the image

Default: *None*

text-description - description of the image

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # filedescr image1 Version1File
```

update bootcode

Syntax

update bootcode

Description

This command updates the bootcode (boot loader) on the switch. The bootcode is read from the active-image for subsequent reboots.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # update bootcode
```

System information and statistics commands

Overview

This section describes the commands used to view information about system features, components, and configurations.

show arp switch

Syntax

show arp switch

Description

This command displays the contents of the IP stack Address Resolution Protocol (ARP) table. The IP stack only learns ARP entries associated with the management interfaces (network or service ports). ARP entries associated with routing interfaces are not listed.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

IP Address - The IP address of the management interface or another device on the management network.

MAC Address - The hardware MAC address associated with IP address the interface or device.

Interface - For a service port the output is, Management. For a network port, the output is the slot or port of the physical interface.

Example

```
(ALU 1850TSS-5) # show arp switch
```

MAC Address	IP Address	Interface
00:E0:63:99:96:FD	152.148.116.1	Management

```
(ALU 1850TSS-5) #
```

show eventlog

Syntax

show eventlog

Description

This command displays the event log, which contains system error messages. The event log is not cleared by a system reset.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

Event log information is retained during a switch reset.

Output

Output is displayed as ASCII text (see Example), containing the following information for each event:

File - The file in which the event originated.

Line - The line number of the event

Task Id - The task ID of the event.

Code - The event code.

Time - The time this event occurred.

Example

```
(ALU 1850TSS-5) # show eventlog
```

	File	Line	TaskID	Code	d	h	m	s
EVENT>	bootos.c	234	0FFFFFFE00	AAAAAAAA	0	0	0	14
EVENT>	bootos.c	234	0FFFFFFE00	AAAAAAAA	0	0	0	19
ERROR>	usmdb_sim.c	1540	0FFFFFFE00	00000000	0	0	0	14
EVENT>	bootos.c	234	0FFFFFFE00	AAAAAAAA	0	0	0	19

show hardware

Syntax

show hardware

Description

This command displays inventory information for the switch.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

The **show version** command and the **show hardware** command display the same information. In future releases of the software, the **show hardware** command will not be available. For a description of the command output, see [“show version” \(p. 4-17\)](#).

Output

See [“show version” \(p. 4-17\)](#).

Example

```
(ALU 1850TSS-5) # show hardware

Switch: 1

System Description..... ALU 1850TSS-5 28.1.0.0
Machine Type..... Alcatel-Lucent Aggregator Pack Module
                      for VLNC40
Machine Model..... Alcatel-Lucent VLNC40
CLEI Info..... SOUIAVWFAA
ECI Info..... 149611
Apparatus Code..... VLNC40
Series..... S1:1
Serial Number..... 06J308012189
FRU Number.....
Part Number..... BCM95650
Maintenance Level..... A
Manufacturer..... 0xbc00
Burned In MAC Address..... 00:60:1D:E8:08:50
Software Version..... 28.1.0.0
Operating System..... VxWorks5.5.1
Network Processing Device... BCM5650 REV 33

Additional Packages..... FASTPATH QOS
```

show version

Syntax

show version

Description

This command displays inventory information for the switch.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

The **show version** command will replace the **show hardware** command in future releases of the software.

Output

System Description - Text used to identify the switch product name.

Beginning in R4.0, the format of this field shall be the following:

Alcatel-Lucent 1850TSS-5 <shelf>-<appcode>-<series>-<sw ver>

where:

<shelf> = {IS-RM | HC-RM1} for ShelfID bits = {0101 | 0011} respectively

<appcode> = {VLNC40 | VLNC60 | VLNC64}, either compiled-in or read from inventory EEPROM.

<series> - read from inventory EEPROM

<sw ver> - compiled-in, of the form ##.##.##.##

`Machine Type` - Specifies the machine type as defined by the Vital Product Data.

The content of this field is:

<VLNC40> “Alcatel-Lucent 1850TSS-5 20FE/4GE Aggregator”

<VLNC60> “Alcatel-Lucent 1850TSS-5 8T1E1/2GE PWE/MLPPP”

<VLNC64> “Alcatel-Lucent 1850TSS-5 OC-3STM-1/2GbE PWE”

`Machine Model` - Specifies the machine model as defined by the Vital Product Data.

Beginning in R4.0, the format of this field shall be the following:

Alcatel-Lucent <appcode>

`CLEI Info` - Specifies the Common Language Equipment Number, as read from EEPROM.

`ECI Info` - Specifies the Equipment Catalog Item, as read from EEPROM.

`Apparatus Code` - Specifies the Circuit Pack Name, as read from EEPROM : VLNC40.

`Series` - Specifies the Circuit Pack Series, as read from EEPROM: S1:1.

`Serial Number` - The unique box serial number for this switch, as read from EEPROM.

`FRU Number` - The field replaceable unit number.

`Part Number` - Manufacturing part number.

`Maintenance Level` - Indicates hardware changes that are significant to software.

`Manufacturer` - Manufacturer descriptor field.

`Burned in MAC Address` - Universally assigned network address, as read from EEPROM.

`Software Version` - The release.version.revision number of the code currently running on the switch.

`Operating System` - The operating system currently running on the switch.

`Network Processing Device` - The type of the processor microcode.

`Additional Packages` - This displays the additional packages incorporated into this system.

Example

Note: This example describes command behavior starting in Release 4.0.

```
(ALU 1850TSS-5) # show version

Switch: 1

System Description..... ALU 1850TSS-5 HC-RM1-VLNC40-S1:1-28.1.0.1
Machine Type..... Alcatel-Lucent 1850TSS-5 20FE/4GE Aggregator
Machine Model..... Alcatel-Lucent VLNC40
CLEI Info..... SOUIAVWFAA
ECI Info..... 149611
Apparatus Code..... VLNC40
Series..... S1:1
Serial Number..... 06J308012189
FRU Number.....
Part Number..... BCM95650
Maintenance Level..... A
Manufacturer..... 0xbc00
Burned In MAC Address..... 00:60:1D:E8:08:50
Software Version..... 28.1.0.1
Operating System..... VxWorks PNE 2.0
Network Processing Device... BCM5650 REV 33

Additional Packages..... FASTPATH QOS

(ALU 1850TSS-5) #
```

show interface

Syntax

show interface {<ethernetport> | **switchport**}

Description

This command displays a summary of statistics for a specific interface or a count of all CPU traffic, based upon the argument that is specified.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

switchport - specifies that CPU statistics are requested

ethernetport - specifies the Ethernet port parameter

Default: *None*

Range: Ethernet port address as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Output corresponding to VLNC40:

Output displayed when you specify the `ethernetport` parameter:

`Packets Received Without Error` - The total number of packets, including broadcast packets and multicast packets, received by the processor.

`Packets Received With Error` - The number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.

`Broadcast Packets Received` - The total number of packets received that were directed to the broadcast address. Note that this does not include multicast packets.

`Packets Transmitted Without Error` - The total number of packets transmitted out of the interface.

`Transmit Packets Errors` - The number of outbound packets that could not be transmitted because of errors.

`Collisions Frames` - The best estimate of the total number of collisions on this Ethernet segment.

`Time Since Counters Last Cleared` - The elapsed time, in days, hours, minutes, and seconds since the statistics for this port were last cleared.

Output displayed when the argument is `switchport`:

`Broadcast Packets Received` - The total number of packets received that were directed to the broadcast address. Note that this does not include multicast packets.

`Packets Received With Error` - The number of inbound packets that containing errors that prevent their delivery to a higher-layer protocol.

`Packets Transmitted Without Error` - The total number of packets transmitted out of the interface.

`Broadcast Packets Transmitted` - The total number of packets that higher-level protocols requested to be transmitted to the Broadcast address, including those that were discarded or not sent.

`Transmit Packet Errors` - The number of outbound packets that could not be transmitted because of errors.

`Address Entries Currently In Use` - The total number of Forwarding Database Address Table entries now active on the switch, including learned and static entries.

VLAN Entries Currently In Use - The number of VLAN entries presently occupying the VLAN table.

Time Since Counters Last Cleared - The elapsed time, in days, hours, minutes, and seconds since the statistics for this switch were last cleared.

On the VLNC60, the output has the same fields as *show interface ethernet*.

Example

```
(ALU 1850TSS-5) # show interface a-17

Packets Received Without Error..... 637748
Packets Received With Error..... 0
Broadcast Packets Received..... 637748
Packets Transmitted Without Errors..... 0
Transmit Packet Errors..... 0
Collision Frames..... 0
Time Since Counters Last Cleared..... 0 day 5 hr 8 min 56 sec
```


show interface ethernet

Syntax

show interface ethernet {<ethernetport> | **switchport**}

Description

This command displays detailed statistics for a specific interface or a count of all CPU traffic based upon the argument specified.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

switchport - specifies that CPU statistics are requested

ethernetport - specifies the Ethernet port parameter

Default: *None*

Range: Ethernet port address as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Output corresponding to VLNC40:

Output displayed when you specify the `ethernetport` parameter:

Packets received

- `Total Packets Received (Octets)` – The total number of data octets, including those in bad packets, received on the network. Framing bits are excluded from this count but Frame Check Sequence (FCS) octets are included. This object can be used as a reasonable estimate of Ethernet utilization. If greater precision is desired, the `etherStatsPkts` and `etherStatsOctets` objects should be sampled before and after a common interval. The result of this equation is the value `Utilization`, which is the percent utilization of the Ethernet segment on a scale of 0 to 100 percent.
- `Packets Received > 1522 Octets` – The total number of packets received, including bad packets, that were at least 1522 octets in length. Framing bits are excluded but FCS octets are included in length determination.
- `Packets RX and TX 64 Octets` – The total number of packets received and transmitted, including bad packets, that were 64 octets in length. Framing bits are excluded but FCS octets are included in length determination.
- `Packets RX and TX 65-127 Octets` – The total number of packets received and transmitted, including bad packets, that were between 65 and 127 octets in length inclusive. Framing bits are excluded but FCS octets are included in length determination.
- `Packets RX and TX 128-255 Octets` – The total number of packets received and transmitted, including bad packets, that were between 128 and 255 octets in length inclusive. Framing bits are excluded but FCS octets are included in length determination.
- `Packets RX and TX 256-511 Octets` – The total number of packets received and transmitted, including bad packets, that were between 256 and 511 octets in length inclusive. Framing bits are excluded but FCS octets are included in length determination.
- `Packets RX and TX 512-1023 Octets` – The total number of packets received and transmitted, including bad packets, that were between 512 and 1023 octets in length inclusive. Framing bits are excluded but FCS octets are included in length determination.
- `Packets RX and TX 1024-1518 Octets` – The total number of packets received and transmitted, including bad packets, that were between 1024 and 1518 octets in length inclusive. Framing bits are excluded but FCS octets are included in length determination.
- `Packets RX and TX 1519-1522 Octets` – The total number of packets received and transmitted, including bad packets, that were between 1519 and 1522 octets in length inclusive. Framing bits are excluded but FCS octets are included in length determination.

- `Packets RX and TX 1523-2047 Octets` – The total number of packets received and transmitted that were between 1523 and 2047 octets in length inclusive, and were otherwise well formed. Framing bits are excluded but FCS octets are included in length determination.
- `Packets RX and TX 2048-4095 Octets` – The total number of packets received that were between 2048 and 4095 octets in length inclusive, and were otherwise well formed. Framing bits are excluded but FCS octets are included in length determination.
- `Packets RX and TX 4096-9216 Octets` – The total number of packets received that were between 4096 and 9216 octets in length inclusive, and were otherwise well formed. Framing bits are excluded but FCS octets are included in length determination.

Packets received successfully

- `Total Packets Received Without Error` – The total number of packets received without errors.
- `Unicast Packets Received` – The number of subnetwork-unicast packets delivered to a higher-layer protocol.
- `Multicast Packets Received` – The total number of good packets received that were directed to a multicast address. This number does not include packets directed to the broadcast address.
- `Broadcast Packets Received` – The total number of good packets received that were directed to the broadcast address. This does not include multicast packets.

Packets received with MAC errors

- `Total` – The total number of inbound packets containing errors that prevented them from being delivered to a higher-layer protocol.
- `Jabbers Received` – The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error). Note that this definition of jabber is different than the definition in IEEE-802.3 section 8.2.1.5 (10BASE5) and section 10.3.1.4 (10BASE2). These documents define jabber as the condition where any packet exceeds 20 ms. The allowed range to detect jabber is between 20 ms and 150 ms.
- `Fragments/Undersize Received` – The total number of packets received that were less than 64 octets in length. Framing bits are excluded but FCS octets are included in length determination.

- `Alignment Errors` - The total number of packets received that had a length of between 64 and 1518 octets, inclusive, but had a bad Frame Check Sequence (FCS) with a non-integral number of octets. Framing bits are excluded but FCS octets are included in length determination.
- `Rx FCS Errors` - The total number of packets received that had a length of between 64 and 1518 octets, inclusive, but had a bad Frame Check Sequence (FCS) with an integral number of octets. Framing bits are excluded but FCS octets are included in length determination.
- `Overruns` - The total number of frames discarded while the port was overloaded with incoming packets, and could not keep up with the inflow.

Received packets not forwarded

- `Total` - A count of valid frames received which were discarded (filtered) by the forwarding process.
- `Local Traffic Frames` - The total number of frames dropped in the forwarding process because the destination address was located off of this port.
- `802.3x Pause Frames Received` - A count of MAC Control frames received on this interface with an opcode indicating the PAUSE operation. This counter does not increment when the interface is operating in half-duplex mode.
- `Unacceptable Frame Type` - The number of frames, with an unacceptable frame type, discarded from this port.
- `Multicast Tree Viable Discards` - The number of frames discarded when a lookup in the multicast tree for a VLAN occurs while that tree is being modified.
- `Reserved Address Discards` - The number of frames discarded that are destined to an IEEE 802.1 reserved address and not supported by the system.
- `CFI Discards` - The number of frames discarded that have the CFI bit set and addresses in RIF are in non-canonical format.
- `Upstream Threshold` - The number of frames discarded due to lack of cell descriptors available for that packet's priority level.

Packets transmitted octets

- `Total Bytes` - The total number of data octets, including those in bad packets, received on the network, excluding framing bits but including FCS octets. This object can be used as a reasonable estimate of Ethernet utilization. If greater precision is desired, the `etherStatsPkts` and `etherStatsOctets` objects should be sampled before and after a common interval.
- `Max Frame Size` - The maximum size of the Info (non-MAC) field that this port will receive or transmit.

Packets transmitted successfully

- `Total` – The number of frames that have been transmitted by this port to its segment.
- `Unicast Packets Transmitted` – The total number of packets that higher-level protocols requested be transmitted to a subnetwork-unicast address, including those that were discarded or not sent.
- `Multicast Packets Transmitted` – The total number of packets that higher level protocols requested be transmitted to a Multicast address, including those that were discarded or not sent.
- `Broadcast Packets Transmitted` – The total number of packets that higher level protocols requested be transmitted to the Broadcast address, including those that were discarded or not sent.

Transmit errors

- `Total Errors` – The sum of Single, Multiple, and Excessive Collisions.
- `Tx FCS Errors` – The total number of packets transmitted that had a length, excluding framing bits, but including FCS octets, of between 64 and 1518 octets, inclusive, but had a bad Frame Check Sequence (FCS) with an integral number of octets
- `Oversized` – The total number of frames that exceeded the max permitted frame size. This counter has a max increment rate of 815 counts per second at 10 Mb/s.
- `Underrun Errors` – The total number of frames discarded because the transmit FIFO buffer became empty during frame transmission.

Transmit discards

- `Total Discards` – The sum of single collision frames discarded, multiple collision frames discarded, and excessive frames discarded.
- `Single Collision Frames` – The number of successfully transmitted frames on a particular interface, for which transmission is inhibited by exactly one collision.
- `Multiple Collision Frames` – The number of successfully transmitted frames on a particular interface, for which transmission is inhibited by more than one collision.
- `Excessive Collisions` – The number of frames for which transmission on a particular interface fails due to excessive collisions.
- `Port Membership Discards` – The number of frames discarded on egress for this port because egress filtering is enabled.
- `Protocol Statistics`

- 802.3x Pause Frames Transmitted - The number of MAC Control frames transmitted on this interface with an opcode indicating the PAUSE operation. This counter does not increment when the interface is operating in half-duplex mode.
- GVRP PDUs Received - The count of GVRP PDUs received in the GARP layer.
- GVRP PDUs Transmitted - The number of GVRP PDUs transmitted from the GARP layer.
- GVRP Failed Registrations - The number of times GVRP registrations were attempted, but could not be completed.
- GMRP PDUs Received - The number of GMRP PDU's received in the GARP layer.
- GMRP PDUs Transmitted - The number of GMRP PDU's transmitted from the GARP layer.
- GMRP Failed Registrations - The number of times GMRP registrations were attempted, but could not be completed.
- STP BPDUs Transmitted - The number of Spanning Tree Protocol Bridge Protocol Data Units sent.
- STP BPDUs Received - The number of Spanning Tree Protocol Bridge Protocol Data Units received.
- RST BPDUs Transmitted - The number of Rapid Spanning Tree Protocol Bridge Protocol Data Units sent.
- RSTP BPDUs Received - The number of Rapid Spanning Tree Protocol Bridge Protocol Data Units received.
- MSTP BPDUs Transmitted - The number of Multiple Spanning Tree Protocol Bridge Protocol Data Units sent.
- MSTP BPDUs Received - The number of Multiple Spanning Tree Protocol Bridge Protocol Data Units received.

Dot1x statistics

- EAPOL Frames Received - The number of valid EAPOL frames of any type that have been received by this authenticator.
- EAPOL Frames Transmitted - The number of EAPOL frames of any type that have been transmitted by this authenticator.

Time Since Counters Last Cleared - The elapsed time, in days, hours, minutes, and seconds, since the statistics for this port were last cleared.

When you specify the `switchport` keyword, the following information appears:

`Octets Received` - The total number of octets of data received by the processor, excluding framing bits but including FCS octets.

`Unicast Packets Received` - The number of subnetwork-unicast packets delivered to a higher layer protocol.

`Multicast Packets Received` - The total number of packets received that were directed to a multicast address. This number does not include packets directed to the broadcast address.

`Broadcast Packets Received` - The total number of packets received that were directed to the broadcast address. This does not include multicast packets.

`Receive Packets Discarded` - The number of inbound packets which were discarded even though no errors were detected to prevent their delivery to a higher-layer protocol. (One possible reason for discarding a packet is to free up buffer space.)

`Octets Transmitted` - The total number of octets transmitted from the interface, including framing characters.

`Packets Transmitted without Errors` - The total number of packets transmitted from the interface.

`Unicast Packets Transmitted` - The total number of packets that higher level protocols requested be transmitted to a subnetwork-unicast address, including those that were discarded or not sent.

`Multicast Packets Transmitted` - The total number of packets that higher level protocols requested be transmitted to a Multicast address, including those that were discarded or not sent.

`Broadcast Packets Transmitted` - The total number of packets that higher level protocols requested be transmitted to the Broadcast address, including those that were discarded or not sent.

`Transmit Packets Discarded` - The number of outbound packets that were discarded even though no errors were detected to prevent their delivery to a higher-layer protocol. (One possible reason for discarding a packet is to free up buffer space.)

`Most Address Entries Ever Used` - The highest number of Forwarding Database Address Table entries that have been learned by this switch since the most recent reboot.

`Address Entries in Use` - The number of learned and static entries in the Forwarding Database Address Table for this switch.

`Maximum VLAN Entries` - The maximum number of Virtual LANs (VLANs) allowed on this switch.

`Most VLAN Entries Ever Used` - The largest number of VLANs that have been active on this switch since the last reboot.

`Static VLAN Entries` - The number of active VLAN entries on this switch that have been created statically.

`Dynamic VLAN Entries` - The number of active VLAN entries on this switch that have been created by GVRP registration.

`VLAN Deletes` - The number of VLANs on this switch that have been created and deleted since the last reboot.

`Time Since Counters Last Cleared` - The elapsed time, in days, hours, minutes, and seconds, since the statistics for this switch were last cleared.

Output corresponding to VLNC60 and VLNC64

`TXRX 64 FrameSize` - as specified in Packets Received for VLNC40

`TXRX 65 to 127 FrameSize` - as specified in Packets Received for VLNC40

`TXRX 128 to 255 FrameSize` - as specified in Packets Received for VLNC40

`TXRX 256 to 511 FrameSize` - as specified in Packets Received for VLNC40

`TXRX 512 to 1023 FrameSize` - as specified in Packets Received for VLNC40

`TXRX 1024 to 1518 FrameSize` - as specified in Packets Received for VLNC40

`TXRX 1519 to 1522 FrameSize` - as specified in Packets Received for VLNC40

`RX total frames` - total number of received packets on the port

`RX good frames` - total frames received without errors and accepted by the system without discarding them due to predefined filters such as wrong Ethertypes, lack of VLAN membership on port, does not contain local destination MAC etc.

`RX error frames` - the count of error frames received on the port

`RX oversized frames` - as specified in Packets Received with MAC Errors for VLNC40

`RX ucast frames` - as specified in Packets Received with Successfully for VLNC40

`RX bcast frames` - as specified in Packets Received with Successfully for VLNC40

RX mcast frames - as specified in Packets Received with Successfully for VLNC40

RX jabber - as specified in Packets Received with MAC Errors for VLNC40

RX undersize - as specified in Packets Received with MAC Errors for VLNC40

RX alignment - as specified in Packets Received with MAC Errors for VLNC40

RX fcs - as specified in Packets Received with MAC Errors for VLNC40

RX overrun - as specified in Packets Received with MAC Errors for VLNC40

RX local traffic frames - the count of packets sent to host processor

RX mac pause frames - as specified in Packets Received with MAC Errors for VLNC40

RX discard - as specified under Total in Packets Received with MAC Errors for VLNC40

RX vlan discard - The count of packets discarded due to lack of VLAN membership on the port

RX discard bridge classifier - The count of packets with unsupported Ethertypes and unknown destination MAC addresses. (Beginning in Release 4.1)

RX discard vlan mode untagged - The count of packets received untagged when VLAN acceptframe mode is set to VLAN only.(Beginning in Release 4.1)

RX total bytes - as specified in Packets Received for VLNC40

TX total frames - as specified in Packets Transmitted Octets for VLNC40

TX good frames - as specified in Packets Transmitted Successfully for VLNC40

TX error frames - as specified in Transmit Errors for VLNC40

TX collision frames - as specified in Transmit Errors for VLNC40

TX ucast frames - as specified in Packets Transmitted Successfully for VLNC40

TX mcast frames - as specified in Packets Transmitted Successfully for VLNC40

TX bcast frames - as specified in Packets Transmitted Successfully for VLNC40

TX fcs - as specified in Transmit Errors for VLNC40

TX oversize frames - as specified in Transmit Errors for VLNC40

TX underrun - as specified in Transmit Errors for VLNC40

TX single collision - as specified in Transmit Errors for VLNC40

TX multiple collision - as specified in Transmit Errors for VLNC40

TX excessive collision - as specified in Transmit Errors for VLNC40

TX late collision - as specified in Transmit Errors for VLNC40

TX discard - as specified in Transmit Errors for VLNC40

TX total bytes - as specified in Packets Transmitted Successfully for VLNC40

Time Since Counters Last Cleared - as specified in VLNC40

Example

```
(ALU 1850TSS-5) # show interface ethernet switchport

Total Packets Received (Octets)..... 288896
Unicast Packets Received..... 0
Multicast Packets Received..... 0
Broadcast Packets Received..... 4514
Receive Packets Discarded..... 0

Octets Transmitted..... 0
Packets Transmitted Without Errors..... 0
Unicast Packets Transmitted..... 0
Multicast Packets Transmitted..... 0
Broadcast Packets Transmitted..... 0
Transmit Packets Discarded..... 0

--More-- or (q)uit

Most Address Entries Ever Used..... 2
Address Entries Currently in Use..... 1

Maximum VLAN Entries..... 3965
Most VLAN Entries Ever Used..... 2
Static VLAN Entries..... 2
Dynamic VLAN Entries..... 0
VLAN Deletes..... 0
Time Since Counters Last Cleared..... 0 day 5 hr 27 min 16 sec

(ALU 1850TSS-5) #
```

show mac-addr-table

Syntax

```
show mac-addr-table [{<macaddr> <vlan_Id> | all | count | interface <port> | vlan  
<vlan_Id>}]
```

Description

This command displays the forwarding database entries. These entries are used by the transparent bridging function to determine how to forward a received frame.

Enter `all` or no parameter to display the entire table. Enter a MAC Address and VLAN ID to display the table entry for the requested MAC address on the specified VLAN. Enter the count parameter to view summary information about the forwarding database table. Use the interface `<port>` parameter to view MAC addresses on a specific interface.

Use the vlan `<vlan_id>` parameter to display information about MAC addresses on a specified VLAN.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

macaddr - specifies the MAC address for which the table entry is to be displayed

Default: *None*

Range: MAC address range

vlan_Id - specifies a VLAN Id in the range 1-3965

port - specifies the Ethernet port parameter

Default: *None*

Range: Ethernet port address as specified in [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

If you enter `vlan <vlan_id>`, only the Mac Address, Interface, and Status fields are displayed. If you do not enter a parameter, use the keyword `all`, or enter the MAC address and VLAN ID, the following information is displayed.

Mac Address - A unicast MAC address for which the switch has forwarding and/or filtering information. The format is 6 or 8 two-digit hexadecimal numbers that are separated by colons, for example 01:23:45:67:89:AB. In an IVL system the MAC address will be displayed as 8 bytes.

Interface - The port which this address was learned.

Interface Index - This object indicates the ifIndex of the interface table entry associated with this port.

Status - The status of this entry. The meanings of the values are:

- **Static** - The value of the corresponding instance that was added by the system or a user when a static MAC filter was defined. It cannot be relearned.
- **Learned** - The value of the corresponding instance, that was learned by observing the source MAC addresses of incoming traffic, and is currently in use.
- **Management** - The value of the corresponding instance (system MAC address) is also the value of an existing instance of `dot1dStaticAddress`. It is identified with interface 0/1 and is currently used when enabling VLANs for routing.
- **Self** - The value of the corresponding instance that is the address of one of the switch's physical interfaces, the system's own MAC address.
- **GMRP Learned** - The value of the corresponding instance that was learned via GMRP and applies to Multicast.
- **Other** - The value of the corresponding instance that does not fall into one of the other categories.

If you enter the interface `<unit/slot/port>` parameter, in addition to the MAC Address and Status fields, the following field appears:

VLAN ID - The VLAN on which the MAC address was learned.

The following information displays if you enter the `count` parameter:

Dynamic Address count - The number of MAC addresses in the forwarding database that were automatically learned.

Static Address (User-defined) count - The number of MAC addresses in the forwarding database that were manually entered by a user.

Total MAC Addresses in use - The number of MAC addresses currently in the forwarding database.

Total MAC Addresses available - The number of MAC addresses the forwarding database can handle.

Example

```
(ALU 1850TSS-5) # show mac-addr-table
```

Mac Address	Interface	IfIndex	Status
00:01:00:60:1D:E8:08:50	cpu1	53	Management

```
(ALU 1850TSS-5) #
```

show running-config

Syntax

show running-config {all | <scriptname>}

Description

This command displays or captures the current setting of different protocol packages supported on the switch. This command displays or captures commands with settings and configurations that differ from the default value. To display or capture the commands with settings and configurations that are equal to the default value, include the **[all]** option.

The output is displayed in script format, which can be used to configure another switch with the same configuration. If the optional <scriptname> is provided with a file name extension of .scr, the output is redirected to a script file with that name and extension.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

scriptname - specifies the name of the file to which the output is redirected

Default: *None*

Support for no form

None

User guidelines

The `show running-config` command does not display the User Password, even if you set one that is different from the default.

If you issue the `show running-config` command from a serial connection, while the command output is being displayed, access to the switch through remote connections, like Telnet, is suspended.

Important! `show running-config all` displays the *entire* config database and is extremely long.

The running configuration information can be uploaded to an external system using the `copy` command.

Output

The configuration is displayed in Script format.

Example

```
(ALU 1850TSS-5) # show running-config all
```

show sysinfo

Syntax

show sysinfo

Description

This command displays switch information.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

`System Description` - The text used to identify this switch.system.

Beginning in R4.0, the format of this field shall be defined as in the ‘show version’ command.
`System Name` - The name used to identify the switch. The factory default is blank. To configure the system name, see [“SNMP commands” \(p. 5-72\)](#).

`System Location` - The text used to identify the location of the switch. The factory default is blank. To configure the system location, see [“SNMP commands” \(p. 5-72\)](#).

`System Contact` - The text used to identify a contact person for this switch. The factory default is blank. To configure the system location, see [“SNMP commands” \(p. 5-72\)](#).

System ObjectID - The base object ID for the switch's enterprise MIB.

System Up Time - The time in days, hours and minutes since the last switch reboot.

MIBs Supported - A list of MIBs supported by this agent.

Example

```
(ALU 1850TSS-5) # show sysinfo
```

show tech-support

Syntax

show tech-support

Description

This command displays system and configuration information when you contact technical support.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

The output of this command combines the output of

- show version
- show sysinfo
- show port all
- show logging
- show event log
- show logging buffered
- show trap log
- show running config

Example

```
(ALU 1850TSS-5) # show tech-support
```

Logging commands

Overview

This section describes the commands used to configure system logging, and to view logs and logging settings.

logging buffered

Syntax

logging buffered

Description

This command enables logging to an in-memory log that keeps up to 128 logs.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no logging buffered disables logging to in-memory log.

User guidelines

By default, logging is disabled. The severity level is critical when enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# logging buffered
```

logging buffered wrap

Syntax

logging buffered wrap

Description

This command enables the wrapping of in-memory logging when the log file reaches full capacity. Otherwise, logging stops when the log file reaches full capacity.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no logging buffered wrap disables wrapping of in-memory logging and configures logging to stop when the log file capacity is full.

User guidelines

By default, wrapping is enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# logging buffered wrap
```

logging cli-command

Syntax

logging cli-command

Description

This command enables the CLI command logging feature. This enables the system to log all CLI commands issued on it.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no logging cli-command disables cli-command logging.

User guidelines

By default, cli command logging is enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# logging cli-command
```

logging console

Syntax

logging console [<severitylevel>]

Description

This command enables logging to the console.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

severitylevel - specifies the severity level of logging

Default: critical (2)

Range: {emergency (0) | alert (1) | critical (2) | error (3) | warning (4) | notice (5) | info (6) | debug (7)}

Support for no form

no logging console disables logging to the console.

User guidelines

By default, logging to console is disabled. The default severity level is `critical` when enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# logging console
```


logging host

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

logging host remove

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

logging port

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

logging syslog

This command is not supported on the VLNC40, VLNC60, or the VLNC64.

show logging

Syntax

show logging

Description

This command displays logging configuration information.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Logging Client Local Port - The port on the collector/relay to which syslog messages are sent.

CLI Command Logging - Shows whether CLI Command logging is enabled.

Console Logging - Shows whether console logging is enabled.

Console Logging Severity Filter - The minimum severity to log to the console log. Messages with an equal or lower numerical severity are logged.

Buffered Logging - Shows whether buffered logging is enabled.

Syslog Logging - Shows whether syslog logging is enabled.

Log Messages Received - The number of messages received by the log process. This includes messages that are dropped or ignored.

Log Messages Dropped - The number of messages that could not be processed due to error or lack of resources.

Log Messages Relayed - The number of messages sent to the collector/relay.

Example

```
(ALU 1850TSS-5) # show logging

Logging Client Local Port      : 514
CLI Command Logging:          : enabled
Console Logging                : disabled
Console Logging Severity Filter : alert
Buffered Logging               : enabled

Syslog Logging                 : disabled

Log Messages Received          : 29
Log Messages Dropped           : 0
Log Messages Relayed           : 0

(ALU 1850TSS-5) #
```

show logging buffered

Syntax

show logging buffered

Description

This command displays the buffered logging of system startup and system operation logs.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

Output is paginated

Output

Buffered (In-Memory) Logging - Shows whether the In-Memory log is enabled or disabled.

Buffered Logging Wrapping Behavior - The behavior of the In Memory log when faced with a log-full situation.

Buffered Log Count - The count of valid entries in the buffered log.

Example

```
(ALU 1850TSS-5) # show logging buffered

Buffered (In-Memory) Logging           : enabled
Buffered Logging Wrapping Behavior     : On
Buffered Log Count                     : 25

<9> JAN 01 00:00:13 0.0.0.0-0 UNKN[268434944]:
    /vobs/xplore/src/usmdb/base/usmdb_sim.c(1540) 1 %% Error 0 (0x0)
<10> JAN 01 00:00:19 0.0.0.0-1 UNKN[268434944]: bootos.c(234) 2 %%
    Event(0xaaaaaaaa)
<14> JAN 01 00:00:19 0.0.0.0-1 UNKN[268434944]: bootos.c(239) 3 %%
    Starting code...
<14> JAN 01 00:00:34 0.0.0.0-1 UNKN[257162288]:
    /vobs/xplore/src/system_support/base/infrastructure/edb/edb.c(360
    ) 4 %% EDB Callback: Unit Join: 1.
<14> JAN 01 00:00:35 0.0.0.0-1 UNKN[257162288]:
    /vobs/xplore/src/mgmt/cli_web_mgr/cli_web_api.c(499) 5 %% not able
    to open the file specified
<14> JAN 01 00:00:35 0.0.0.0-1 NIM[249901880]:
    /vobs/xplore/src/system_support/base/infrastructure/nim/nim_util.
    c(95) 6 %% NIM: incorrect phase for operation

--More-- or (q)uit
```


show logging hosts

Syntax

show logging hosts

Description

This command displays all configured logging hosts.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

This command displays all configured logging hosts. (Used for deleting hosts.)

IP Address - The IP address of the logging host.

Severity Level - The minimum severity to log to the specified address. The possible values are emergency (0), alert (1), critical (2), error (3), warning (4), notice (5), info (6), or debug (7).

Port - Displays the server port number, which is the port on the local host from which syslog messages are sent.

Host Status - The state of logging to configured syslog hosts. If the status is disable, no logging occurs.

Example

```
(ALU 1850TSS-5) # show logging hosts

Index      IP Address      Severity      Port      Status
-----
1          11.22.33.44     warning      1234      Active

(ALU 1850TSS-5) #
```

show logging traplogs

Syntax

show logging traplogs

Description

This command displays SNMP trap events and statistics.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Number of Traps Since Last Reset - Shows the number of traps since the last boot.

Trap Log Capacity - Shows the number of traps the system can retain.

Number of Traps Since Log Last Viewed - Shows the number of new traps since the command was last executed.

Log - Shows the log number.

System Up Time - Shows how long the system had been running at the time the trap was sent.

Trap - Shows the text of the trap message.

Example

```
(ALU 1850TSS-5) # show logging traplogs

Number of Traps Since Last Reset..... 5
Trap Log Capacity..... 256
Number of Traps Since Log Last Viewed..... 0

Log System Up Time          Trap
-----
 0 0 days 00:00:46          Cold Start: Unit: 0
 1 0 days 00:00:27          Link Up: 0/12
 2 0 days 00:00:27          Link Up: 0/11
 3 0 days 00:00:27          Link Up: 0/10
 4 0 days 00:00:26          Link Up: 0/9

(ALU 1850TSS-5) #
```

System utility and clear commands

traceroute

Syntax

traceroute <ipaddr> [<port>]

Description

This command discovers the routes that packets actually take when traveling to their destination through the network on a hop-by-hop basis.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddr - specifies the IP address of the destination

Default: *None*

Range: IPv4 address range

port - specifies the UDP port used as the destination of the packets sent as part of the traceroute. This should be an unused port on the destination system.

Default: 33434

Range: 0-65535

Support for no form

None

User guidelines

None

Output

List of nodes traversed

Example

```
(ALU 1850TSS-5) # traceroute 152.148.128.47
```

```
Tracing route over a maximum of 20 hops
```

1	152.148.116.1	0 ms	0 ms	0 ms
2	152.148.128.47	0 ms	0 ms	0 ms

```
(ALU 1850TSS-5) #
```

clear config

Syntax

clear config

Description

This command resets the configuration to the factory defaults without powering-off the switch. When you issue this command, a prompt appears to confirm that the reset should proceed. When you confirm the reset by entering *y*, the switch is reset.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

This command will delete all configured data, and will terminate all telnet, ssh, and http sessions. It may not be possible the access the system remotely after executing this command. Use this command cautiously.

Output

None

Example

```
(ALU 1850TSS-5) # clear config
```

clear counters

Syntax

clear counters <interface-number> on VLNC40

clear counters <entity-type> <entity-value> on VLNC60, VLNC64

Description

This command clears the statistics for a specified Ethernet interface, Multilink Group interface, PPP interface, Pseudowire, or PSN Tunnel as applicable on the VLNC40, VLNC60, VLNC64.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-value -

Default: *None*

Range: Ethernet-port as specified in [Appendix A, “Addressable entities”](#).

entity-type - specifies the type of the entity.

Default: *None*

Range: {ethernet | mlppp | ppp | pwe | psn}

The type mlppp or ppp is applicable on VLNC60 only.

entity-value - specifies the value of Ethernet/MLPPP/PPP interface, PWE or PSN.
The value must match the <entity-type> specified.

Default: *None*

Range:

For {ethernet | pwe | psn}, the range is {Ethernet-Port | PWE | PSN}
as specified in [Appendix A, “Addressable entities”](#).

For mlppp, the range is 1-8.

For ppp, the range is T1-Port or E1-Port as specified in
[Appendix A, “Addressable entities”](#).

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # clear counters d1-1 on VLNC40
(ALU 1850TSS-5) # clear counters mlppp 1 on VLNC60
(ALU 1850TSS-5) # clear counters pwe samplepwe on VLNC60, VLNC64
```

clear counters (for PDH/SONET/SDH)

Syntax

```
clear counters <interface-type> {{{ne| fe} {15min | day} <interface-num>} | all}
```

Description

This command clears the performance monitoring counters on TDM/SONET/SDH interfaces. **ne** and **fe** correspond to all near end and far end performance monitoring counters respectively. If you specify **15min**, the performance monitoring counters of current interval bin (interval 0) are cleared. If you specify **day**, the performance monitoring counters of current total bin (day 0) are cleared. This command will not clear the performance monitoring counters for other interval bins, 1-96, and day bins, 1-2.

If you specify **all**, it clears the performance monitoring counters on all the interfaces of the type specified in <interface-type>. For each of the interfaces, it clears performance monitoring counters corresponding to interval 0 and day 0 for both **ne** and **fe**.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-type - specifies the type of the interface.

Default: *None*

Range:

{t1 | e1} on VLNC60

{{oc3 | sts1 | vt | ds1} or {stm1 | vc4 | vc12 | e1}} on VLNC64

interface-num - specifies the interface number. This value must match the type specified in <interface-type>.

Default: *None*

Range:

T1-Port, E1-Port, OC3-Port, STS1-Path, VTDS1-Port, STM1-Port,
VC4-Path, VCE1-Port as specified in [Appendix A, “Addressable entities”](#).

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # clear counters t1 ne 15min a-1-1  
(ALU 1850TSS-5) # clear counters oc3 ne 15min main-1-1
```

clear counters all

Syntax

clear counters all

Description

This command clears all the statistics (or performance monitoring counters) on all entities specified in commands [“clear counters”](#) (p. 4-62) and [“clear counters \(for PDH/SONET/SDH\)”](#) (p. 4-64).

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # clear counters all
```

clear pass

Syntax

clear pass

Description

This command resets all user passwords to the factory defaults without powering-off the switch. You are prompted to confirm that the password reset should proceed. The factory default password is NULL.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # clear pass
```

clear port-channel

Syntax

```
clear port-channel
```

Description

This command clears all port-channels (LAGs).

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # clear port-channel
```

clear traplog

Syntax

clear traplog

Description

This command clears the trap log

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # clear traplog
```

clear vlan

Syntax

clear vlan

Description

This command resets VLAN configuration parameters to the factory defaults.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # clear vlan
```


enable passwd

Syntax

enable passwd

Description

This command prompts you to change the Privileged EXEC password. Passwords are a maximum of eight alphanumeric characters. The password is case sensitive. The default password is NULL.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

The password can only be changed when in Privileged Exec mode.

Output

None

Example

```
(ALU 1850TSS-5) # enable passwd
```

logout

Syntax

logout

Description

This command closes the current telnet or SSH connection or resets the current serial connection. The system prompts whether to save pending configuration changes before quitting.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # logout
```

ping

Syntax

ping

Description

This command checks if another computer is on the network and listens for connections. The source and target devices must have the ping utility enabled and running on top of TCP/IP. You can ping the switch from any IP workstation to which the switch is connected through the default VLAN (VLAN 1), if there is a physical path between the switch and the workstation. The terminal interface sends three pings to the target station.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddr - specifies the IP address of the destination

Default: *None*

Range: IPv4 address range

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # ping 152.148.1.1
```

quit

Syntax

quit

Description

This command closes the current telnet or SSH connection or resets the current serial connection. The system prompts whether to save pending configuration changes before quitting.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # quit
```

reload {warm}

Syntax

reload {warm}

Description

The **reload** command resets the switch without powering it off. Reset means that all network connections are terminated and the boot code executes. The switch uses the stored configuration to initialize the switch. You are prompted to confirm that the reset should proceed if there are any unsaved changes. The LEDs on the switch indicate a successful reset.

The **reload warm** command re-initializes the software, but leaves the hardware devices untouched. This means that all network connections through the VLNC40 stay up, even as the boot code executes. However, management connections on the VLNC40 will be disrupted. The switch uses the stored configuration to initialize. You are prompted to confirm that the reset should proceed if there are any unsaved changes. The LEDs on the switch indicate a successful reset. The warm option is not supported only on VLNC40.

The warm option is not supported on VLNC60 and VLNC64.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

The indicator for a warm reload

Support for no form

None

User guidelines

You must save configuration changes before logging out.

Output

None

Example

```
(ALU 1850TSS-5) # reload warm
```

copy

Syntax

copy <source> <destination> [**noprompt**]

Description

The **copy** command uploads and downloads files to and from the switch. You can also use the **copy** command to manage dual images (image1 and image2) on the file system. Upload and download files from a server by using TFTP or Xmodem.. If you specify the **noprompt** option, the command will be executed unconditionally, without additional prompting for input. The *noprompt* option is available starting in Release 4.0.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

source - specifies the source from which to copy

Range: as per the table, [Table 4-1, “Copy Parameters” \(p. 4-79\)](#)

destination - specifies the destination for the copy

Range: as per the table, [Table 4-1](#)

url - The URL in the table, [Table 4-1](#) is provided as: {xmodem |
tftp://<ipaddr>/<filepath>/<filename>}

For TFTP, the <ipaddr> parameter is the IP address of the server, <filepath> is the path to the file, and <filename> is the name of the file you want to upload or download.

Table 4-1 Copy Parameters

Source	Destination	Description
nvrām:clibanner	<url>	Copies the CLI banner to a server.
nvrām:errorlog	<url>	Copies the error log file to a server.
nvrām:log	<url>	Copies the log file to a server.
nvrām:script <scriptname>	<url>	Copies a specified configuration script file to a server.
nvrām:startup-config	<url>	Copies the startup configuration to a server.
nvrām:traplog	<url>	Copies the trap log file to a server.
system:running-config	nvrām:startup-config	Saves the running configuration to nvrām.
<url>	nvrām:clibanner	Downloads the CLI banner to the system.
<url>	nvrām:script <destfilename>	Downloads a configuration script file to the system. During the download of a configuration script, the copy command validates the script. In case of any error, the command lists all the lines at the end of the validation process and prompts you to confirm before copying the script file.
<url>	nvrām:sshkey-dsa	Downloads an SSH key file.
<url>	nvrām:sshkey-rsa1	Downloads an SSH key file.
<url>	nvrām:sshkey-rsa2	Downloads an SSH key file.
<url>	nvrām:ssl.pem-dhweak	Downloads an HTTP secure-server certificate.
<url>	nvrām:ssl.pem-dhstrong	Downloads an HTTP secure-server certificate.
<url>	nvrām:ssl.pem-root	Downloads an HTTP secure-server certificate.
<url>	nvrām:ssl.pem-server	Downloads an HTTP secure-server certificate.
<url>	nvrām:startup-config	Downloads the startup configuration file to the system.
<url>	nvrām:system-image	Downloads a code image to the system.

Table 4-1 Copy Parameters (Continued)

Source	Destination	Description
<url>	{image1 image2}	Download an image from the remote server to either image. In a stacking environment, the downloaded image is distributed to the stack nodes.
{image1 image2}	<url>	Upload either image to the remote server.
image1	image2	Copy image1 to image2 .
image2	image1	Copy image2 to image1 .

Support for no form

None

User guidelines

During execution of the **copy** command, management traffic will be blocked. After entering the command, you are given a warning and prompted whether to continue. This warning is not issued if the *noprompt* option is used.

SSH keys should not be longer than 2048 bits. Longer keys (e.g., 4096 bits) will download correctly but require too much processing and are therefore not practical.

During execution of the copy command, you are given a progress indication for some long-lasting operations. This progress indication is always inhibited if the *noprompt* option is used.

Output

None

Example

```
(ALU 1850TSS-5) # copy nvram:startup-config
tftp://152.148.1.1/home/Admin/Startup_Configuration_file
```

write memory

Syntax

write memory [**noprompt**]

Description

This command saves running configuration changes to NVRAM so that the changes will persist during a reboot. Specifying the **noprompt** option causes the command to be executed unconditionally, without additional prompting for user input. This command is the same as `copy system:running-config nvram:startup-config`.

The *noprompt* option is available starting in Release 4.0.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

During execution of the write memory command, management traffic will be blocked. After entering the command is executed, you are given a warning and prompted whether to continue. This warning is not issued if the *noprompt* option is used.

Output

None

Example

```
(ALU 1850TSS-5) # write memory
```

Simple Network Time Protocol (SNTP) Commands

Overview

This section describes the commands you use to automatically configure the system time and date by using SNTP.

sntp broadcast client poll-interval

Syntax

sntp broadcast client poll-interval <poll-interval>

Description

This command sets the poll interval for SNTP broadcast clients in seconds.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

poll-interval - specifies the poll interval value to be set as a power of two.

Default: 6

Range: 6 - 16

Support for no form

`no sntp broadcast client poll-interval <poll-interval>` resets the poll interval for the SNTP broadcast client back to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # sntp broadcast client poll-interval 8
```

sntp client mode

Syntax

```
sntp client mode [broadcast | unicast]
```

Description

This command enables Simple Network Time Protocol (SNTP) client mode and may set the mode to either broadcast or unicast. By default this is disabled.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax.

Support for no form

`no sntp client mode [broadcast | unicast]` disables the SNTP client mode.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # sntp client mode broadcast
```

sntp client port

Syntax

sntp client port <portid>

Description

This command sets the SNTP client port id value.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

portid - specifies the port id value.

Default: *123*

Range: 1-65535

Support for no form

no sntp client port resets the client port back to its default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # sntp client port 200
```

sntp unicast client poll-interval

Syntax

sntp unicast client poll-interval <poll-interval>

Description

This command sets the poll interval for SNTP unicast clients in seconds.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

poll-interval - specifies the poll interval as a power of two.

Default: 6

Range: 6-16

Support for no form

no sntp unicast client poll-interval resets the poll interval for SNTP unicast clients to its default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # sntp unicast client poll-interval 8
```


sntp unicast client poll-retry

Syntax

sntp unicast client poll-retry <poll-retry>

Description

This command will set the poll retry for SNTP unicast clients.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

poll-retry - specifies the poll retry value.

Default: *1*

Range: 0-10

Support for no form

no sntp unicast client poll-retry will reset the poll retry for SNTP unicast clients to its default value..

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # sntp unicast client poll-retry 5
```

sntp multicast client poll-interval

Syntax

sntp multicast client poll-interval <poll-interval>

Description

This command sets the poll interval for SNTP multicast clients in seconds.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

poll-interval - specifies the poll interval as a power of two.

Default: 6

Range: 6-16

Support for no form

no sntp unicast client poll-interval resets the poll interval for SNTP multicast clients to its default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # sntp multicast client poll-interval 8
```

sntp server

Syntax

sntp server <ipaddress> [<priority> [<version> [<portid>]]]

Description

This command configures an SNTP server (a maximum of three).

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddress - specifies the IP address of the server.

Default: *none*

Range: IPv4 Address

priority - specifies the priority of the server.

Default: *none*

Range: 1-3

version - specifies the version of the server.

Default: *none*

Range: 1-4

portid - specifies the portid of the server.

Default: *none*

Range: 1-65535

Support for no form

no sntp server remove <ipaddress> deletes a server from the configured SNTP servers.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # sntp server 20.20.20.1
```

show sntp

Syntax

show sntp

Description

This command displays SNTP settings and status.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Last Update Time - Time of last clock update.

Last Attempt Time - Time of last transmit query (in unicast mode).

Last Attempt Status - Status of the last SNTP request (in unicast mode) or unsolicited message (in broadcast mode).

Broadcast Count - Current number of unsolicited broadcast messages that have been received and processed by the SNTP client since last reboot.

Multicast Count - Current number of unsolicited multicast messages that have been received and processed by the SNTP client since last reboot

Example

```
(ALU 1850TSS-5) # show sntp
```

show sntp client

Syntax

show sntp client

Description

This command displays SNTP client settings.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Client Supported Modes - Supported SNTP Modes (Broadcast, Unicast, or Multicast).

SNTP Version - The highest SNTP version the client supports.

Port - SNTP Client Port.

Client Mode - Configured SNTP Client Mode.

Poll Interval - Poll interval value for SNTP clients in seconds as a power of two.

Poll Timeout - Poll timeout value in seconds for SNTP clients.

Poll Retry - Poll retry value for SNTP clients.

Example

```
(ALU 1850TSS-5) # show sntp client
```


show sntp server

Syntax

```
show sntp server
```

Description

This command displays SNTP server settings and configured servers.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 4.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Server IP Address - IP Address of configured SNTP Server.

Server Type - Address Type of Server.

Server Stratum - Claimed stratum of the server for the last received valid packet.

Server Reference ID - Reference clock identifier of the server for the last received valid packet.

Server Mode - SNTP Server mode.

Server Maximum Entries - Total number of SNTP Servers allowed.

Server Current Entries - Total number of SNTP configured.

For each configured server:

IP Address - IP Address of configured SNTP Server.

Address Type - Address Type of configured SNTP server.

Priority - IP priority type of the configured server.

Version - SNTP Version number of the server. The protocol version used to query the

server in unicast mode.

Port - Server Port Number

Last Attempt Time - Last server attempt time for the specified server.

Last Update Status - Last server attempt status for the server.

Total Unicast Requests - Number of requests to the server.

Failed Unicast Requests - Number of failed requests from server.

Example

```
(ALU 1850TSS-5) # show sntp server
```

5 Management commands

Overview

This section contains various commands related to management.

Contents

This chapter covers these topics.

Network interface commands	5-5
enable (Privileged EXEC access)	5-5
serviceport ip	5-7
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Network interface commands

enable (Privileged EXEC access)

Syntax

enable

Description

This command gives you access to the Privileged EXEC mode. Privileged EXEC mode allows you to configure the network interface. This command requires you to enter the Privileged EXEC password. See [“enable passwd” \(p. 4-71\)](#) for additional details.

Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

The command changes the CLI context to Privileged EXEC mode.

Output

Changes the prompt to Privileged EXEC mode.

Example

```
(ALU 1850TSS-5) > enable  
(ALU 1850TSS-5) #
```


serviceport ip

Syntax

serviceport ip <ipaddr> <netmask> [<gateway>]

Description

This command sets the IP address, the netmask and the gateway of the serviceport. The serviceport is the RJ45 port on faceplate of the VLNC40, used for out-of-band management access. The IP Address and gateway must be on the same subnet.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddr - IP Address of the Service port

Default:

192.168.0.2 on VLNC40 in Release 3.0 and Release 4.0

192.168.0.3 on VLNC60 in Release 4.0

169.254.1.1 on VLNC40, VLNC60 and VLNC64, starting Release 4.1

Range: IPv4 Address Range

netmask - Subnet Mask of the Address

Default:

255.255.255.0 on VLNC40 in Release 3.0 and Release 4.0

255.255.255.0 on VLNC60 in Release 4.0

255.255.0.0 on VLNC40, VLNC60 and VLNC64, starting Release 4.1

Range: 0-255.0-255.0-255.0-255

gateway - IP Address of the Gateway

Default: 0.0.0.0 (no gateway)

Range: IPv4 Address Range

Support for no form

None

User guidelines

The **gateway** parameter is optional. When a gateway is defined on the serviceport, and another gateway is defined on the network port, the network port gateway will take precedence, making the serviceport gateway ineffective.

The serviceport and network port must be on different subnets. See [“network parms” \(p. 5-11\)](#) for additional information.

Output

Example

```
(ALU 1850TSS-5) # serviceport ip 152.148.1.1 255.255.0.0
```

serviceport protocol

Syntax

serviceport protocol {none | bootp | dhcp} [noprompt]

Description

This command specifies the serviceport configuration protocol. If you modify this value, the change is effective immediately. For the `bootp` parameter, the switch periodically sends requests to a BootP server until a response is received. For the `dhcp` parameter, the switch periodically sends requests to a DHCP server until a response is received. For the `none` parameter, you must configure network information for the switch manually, using the **serviceport ip** command. If you specify the **noprompt** option the command executes unconditionally, without additional prompting for input.

The **noprompt** option is available starting in Release 4.0.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

none or **bootp** or **dhcp**

Support for no form

None

User guidelines

This command takes effective immediately.

Before executing the command, you are warned that this command will change the IP configuration. You are prompted to continue unless you specify the **noprompt** option.

The serviceport and the network port, cannot both be programmed for DHCP or bootp.

Output

None

Example

```
(ALU 1850TSS-5) # serviceport protocol dhcp
```

network parms

Syntax

network parms <ipaddr> <netmask> [<gateway>]

Description

This command sets the IP address, netmask, and gateway for the network port. The network port is an internal port used for in-band management access. The network port is accessible via any of the faceplate or shelf Ethernet ports. The IP Address and gateway must be on the same subnet.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddr - IP Address of the Service port

Default: *None*

Range: IPv4 Address Range

netmask - Subnet mask of the address

Default: *None*

Range: 0-255.0-255.0-255.0-255

gateway - IP Address of the Gateway

Default: *None*

Range: IPv4 Address Range

Support for no form

None

User guidelines

The **gateway** parameter is optional.

The network port gateway takes precedence over the serviceport gateway, if both are defined. The serviceport and network port must be on different subnets. See [“serviceport ip” \(p. 5-7\)](#) for additional information.

Output

None

Example

```
(ALU 1850TSS-5) # network parms 152.148.1.1 255.255.255.
```

network protocol

Syntax

network protocol {none | bootp | dhcp} [noprompt]

Description

This command specifies the network port configuration protocol. If you modify this value, the change takes effect immediately. For the **bootp** parameter, the switch periodically sends requests to a BootP server until a response is received. For the **dhcp** parameter, the switch periodically sends requests to a DHCP server until a response is received. For the **none** parameter, you must configure the network information for the switch manually, using the **network parms** command. If you specify the **noprompt** option the command executes unconditionally, without additional prompting for input.

The **noprompt** option is available starting in Release 4.0.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

none or **bootp** or **dhcp**

Support for no form

None

User guidelines

This command is effective immediately.

Before executing the command, you are warned that this command will change the IP configuration. You are prompted to continue unless you specify the **noprompt** option.

The serviceport and the network port cannot both be programmed for DHCP or bootp.

Output

None

Example

```
(ALU 1850TSS-5) # network protocol dhcp
```


network mac-address

Syntax

network mac-address <mac-addr>

Description

This command sets the locally administered MAC addresses. The following rules apply:

- Bit 6 of byte 0, called the U/L bit, indicates whether the address is universally administered (b'0') or locally administered (b'1').
- Bit 7 of byte 0, called the I/G bit, indicates whether the destination address is an individual address (b'0') or a group address (b'1').

A locally administered address must have bit 6 ON (b'1') and bit 7 OFF (b'0'). For example, the second character of the twelve character macaddr must be 2, 6, A, or E.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

mac-addr - MAC Address

Default: *None*

Range: Unicast MAC Address Range

Support for no form

None

User guidelines

This command is effective immediately.

Output

None

Example

```
(ALU 1850TSS-5) # network mac-address 02:15:44:8b:7a:11
```

network mac-type

Syntax

```
network mac-type {local | burnedin}
```

Description

This command specifies whether the switch uses the burned-in MAC address or the locally administered MAC address. The default is to use the burned in MAC address.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

local or **burnedin**

Support for no form

The no form resets the mac-type to its default (burned in).

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # network mac-type burnedin
```

network javamode

Syntax

network javamode

Description

This command specifies whether or not the switch should allow access to the Java applet in the header frame of the Web interface. When access is enabled, the Java applet can be viewed from the Web interface. When access is disabled, you cannot view the Java applet.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no network javamode disallows access to the Java applet in the header frame of the Web interface. When access is disabled, you cannot view the Java applet.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # no network javamode
```

show network

Syntax

show network

Description

This command displays configuration settings associated with the network interface on the switch. The configuration parameters associated with the network interface do not affect the configuration of the front panel or shelf ports through which traffic is switched or routed.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

`IP Address` - The IP address of the interface. The factory default is 0.0.0.0

`Subnet Mask` - The IP subnet mask for this interface. The factory default is 0.0.0.0

`Default Gateway` - The default gateway for this IP interface. The factory default is 0.0.0.0

Burned In MAC Address - The burned in MAC address used for in-band connectivity. This MAC address is retrieved from the VLNC40 EEPROM.

Locally Administered MAC Address - If desired, a locally administered MAC address can be configured for in-band connectivity. To take effect, `MAC Address Type` must be set to `Locally Administered`. Enter the address as twelve hexadecimal digits (6 bytes) with a colon between each byte. Bit 1 of byte 0 must be set to a 1 and bit 0 to a 0, i.e., byte 0 should have the following mask 'xxxx xx10'. The MAC address used by this bridge when it must be referred to in a unique fashion. It is recommended that this be the numerically smallest MAC address of all ports that belong to this bridge. However it is only required to be unique. When concatenated with `dot1dStpPriority`, a unique `BridgeIdentifier` is formed which is used in the Spanning Tree Protocol. This field is applicable only on VLNC40.

MAC Address Type - Specifies which MAC address should be used for in-band connectivity. The choices are the burned in, or the Locally Administered address. The factory default is to use the burned in MAC address.

Network Configuration Protocol Current - Indicates which network protocol is being used. The options are `bootp` | `dhcp` | `none`.

Example

```
(ALU 1850TSS-5) # show network

IP Address..... 0.0.0.0
Subnet Mask..... 0.0.0.0
Default Gateway..... 0.0.0.0
Burned In MAC Address..... 00:60:1D:E8:08:50
Locally Administered MAC Addr..... 02:04:FF:65:87:11
MAC Address Type..... Burned In
Network Configuration Protocol Current..... None
Management VLAN ID..... 1

(ALU 1850TSS-5) #
```

show serviceport

Syntax

show serviceport

Description

This command displays service port configuration.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

`IP Address` - The IP address of the interface. The factory default value is 192.168.0.2

`Subnet Mask` - The IP subnet mask for this interface. The factory default value is 255.255.255.0

`Default Gateway` - The default gateway for this IP interface. The factory default value is 0.0.0.0

`ServPort Configuration Protocol Current` - Indicates what network protocol, if any, was used on the last, or current, power-up cycle.

Burned in MAC Address - The burned in MAC address used for out-of-band connectivity. This MAC address is retrieved from the VLNC40 EEPROM.

Physical Status - Starting in Release 4.0, indicates the negotiated port speed and duplex mode.

Flow Mode - Starting in Release 4.0, displays whether flow-control is enabled or not. Fixed value is (disabled)

Physical Mode - Starting in Release 4.0, displays the desired port speed and duplex mode. The fixed value is (autonegotiation)

Max MTU Size - Starting in Release 4.0, the maximum transmission unit (MTU) size of a frame, in bytes. Fixed value is (1500 bytes).

Link Status - The link is up or down.

Example

```
(ALU 1850TSS-5) # show serviceport
```

```
IP Address..... 152.148.117.224
Subnet Mask..... 255.255.254.0
Default Gateway..... 152.148.116.1
ServPort Configured Protocol Current..... DHCP
Burned In MAC Address..... 00:60:1D:E8:08:51
```

```
(ALU 1850TSS-5) #
```

Note: This example describes command behavior starting in Release 4.0

```
(ALU 1850TSS-5) # show serviceport
```

```
IP Address..... 152.148.117.224
Subnet Mask..... 255.255.254.0
Default Gateway..... 152.148.116.1
ServPort Configured Protocol Current..... DHCP
Burned In MAC Address..... 00:60:1D:E8:08:51
Physical Status..... 100 Full
FlowMode..... disabled
Physical..... autonegotiation
Max MTU ..... 1500 bytes
LinkStatus..... up
```

```
(ALU 1850TSS-5) #
```

Console port access commands

configure

Syntax

configure

Description

This command gives you access to the *Global Config Mode*. From the *Global Config Mode*, you can configure a variety of system settings, including user accounts. From the *Global Config Mode*, you can enter other command modes, including *Line Config Mode*.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # configure
```


lineconfig

Syntax

lineconfig

Description

This command gives you access to the *Line Config Mode*, which allows you to configure various Telnet settings and the console port.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Changes prompt to *Line Config Mode*

Example

```
(ALU 1850TSS-5) (Config)# lineconfig
(ALU 1850TSS-5) (line)#
```

serial baudrate

Syntax

```
serial baudrate <rate_value>
```

Description

This command specifies the communication rate of the terminal interface. The supported rates are 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200.

Mode

Line Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

rate_value

Default: 9600

Range: {1200 | 2400 | 4800 | 9600 | 19200 | 38400 | 57600 | 115200}

Support for no form

no serial baudrate resets the communication rate of the terminal interface to the default.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (line)# serial baudrate 19200
```

serial timeout

Syntax

```
serial timeout <timeout_value>
```

Description

This command specifies the maximum connect time, in minute, that a serial console login will remain active without console activity. A value of 0 indicates that a console can be connected indefinitely.

Mode

Line Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

timeout_value

Default: 5

Range: 0-160

Support for no form

no serial timeout sets the timeout value to its default.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (line)# serial timeout 100
```

show serial

Syntax

show serial

Description

This command displays serial communication settings for the switch.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

`Serial Port Login Timeout (minutes)` - Specifies the length of time, in minutes, that an inactive serial port connection will be maintained before being closed by the switch. Any numeric value between 0 and 160 is allowed, the factory default is 5. A value of 0 disables the timeout.

`Baud Rate (bps)` - The default baud rate at which the serial port will try to connect. The available values are 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200. The factory default is 9600.

Character Size (bits) - The number of bits in a character. The number of bits is always 8.

Flow Control - Whether Hardware flow control is enabled or disabled. Hardware flow control is always disabled.

Stop Bits - The number of Stop bits per character. The number of Stop bits is always 1.

Parity Type - The Parity Method used on the Serial Port. The Parity Method is always None.

Example

```
(ALU 1850TSS-5) # show serial

Serial Port Login Timeout (minutes)..... 5
Baud Rate (bps)..... 9600
Character Size (bits)..... 8
Flow Control..... Disable
Stop Bits..... 1
Parity..... none

(ALU 1850TSS-5) #
```

Telnet commands

Overview

This section describes the commands you use to configure and view Telnet settings. You can use Telnet to manage the device from a remote management host.

ip telnet server enable

Syntax

ip telnet server enable

Description

This command enables Telnet connections to the system and to enable the Telnet Server Admin Mode. This command opens the Telnet listening port.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no telnet server enable disables Telnet access to the system and disables the Telnet Server Admin Mode. This command closes the Telnet listening port and disconnects all open Telnet sessions.

User guidelines

If you do not specify this command, the Telnet server is enabled.

Output

None

Example

```
(ALU 1850TSS-5) # ip telnet server enable
```

telnet

Syntax

```
telnet <host> <port> [{debug}] [{line}] [{noecho}]
```

Description

This command establishes a new outbound Telnet connection to a remote host. The host value must be a valid IP address. Valid values for port should be a valid decimal integer in the range of 0 to 65535, where the default value is 23. If **[debug]** is specified, the current Telnet options enabled are displayed. The optional `line` parameter sets the outbound Telnet operational mode as `linemode`, where by default, the operational mode is `character mode`. The `noecho` option disables local echo.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

host - the host for the connection

Default: *None*

Range: IPv4 Address

port - the port for the connection

Default: 23

Range: 0 - 65535

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # telnet 152.148.1.1 debug noecho
```

transport input telnet

Syntax

transport input telnet

Description

This command regulates new incoming and outgoing Telnet sessions. If enabled, new Telnet sessions can be established until there are no more sessions available. An established session remains active until the session is ended or an abnormal network error ends the session.

Important! If the Telnet Server Admin Mode is disabled, Telnet sessions cannot be established, you must specify the `ip telnet server enable` command to enable Telnet Server Admin Mode.

Mode

Line Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no transport input telnet prevents new Telnet sessions from being established.

User guidelines

By default, new inbound Telnet sessions are enabled (allowed).

Output

None

Example

```
(ALU 1850TSS-5) (line)# no transport input telnet
```

transport output telnet

Syntax

transport output telnet

Description

This command regulates new outbound Telnet connections. If enabled, new outbound Telnet sessions can be established until the system reaches the maximum number of simultaneous outbound Telnet sessions allowed. An established session remains active until the session is ended or an abnormal network error ends it.

Mode

Line Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no transport output telnet command prevents new outbound Telnet connections from being established.

User guidelines

By default, new outbound Telnet sessions are enabled (allowed).

Output

None

Example

```
(ALU 1850TSS-5) (line)# no transport output telnet
```

session-limit

Syntax

session-limit <value>

Description

This command specifies the maximum number of simultaneous outbound Telnet sessions. A value of 0 indicates that no outbound Telnet session can be established.

Mode

Line Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

value

Default: 5

Range: 0-5

Support for no form

no session-limit sets the maximum number of simultaneous outbound Telnet sessions to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (line)# no session limit
```

session-timeout

Syntax

session-timeout <value>

Description

This command sets the outbound Telnet session timeout value in minutes.

Mode

Line Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

value

Default: 5

Range: 1-160

Support for no form

no session-timeout sets the outbound Telnet session timeout value to the default.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (line)# no session timeout
```

telnetcon maxsessions

Syntax

telnetcon maxsessions <value>

Description

This command specifies the maximum number of inbound Telnet connection sessions that can be established. A value of 0 indicates that no Telnet connections can be established.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

value

Default: 5

Range: 0-5

Support for no form

no telnetcon maxsessions sets the maximum number of inbound Telnet connection sessions that can be established to the default value

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # telnetcon maxsessions 3
```

telnetcon timeout

Syntax

telnetcon timeout <value>

Description

This command sets the inbound Telnet connection session timeout value in minutes. A session is active as long as the session has not been idle for the value set.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

value

Default: 5

Range: 1-160

Support for no form

no telnetcon timeout sets the inbound Telnet connection session timeout value to the default.

User guidelines

When you change the timeout value, the new value is applied to all active and inactive sessions immediately. Any sessions that have been idle longer than the new timeout value are disconnected immediately.

For the no form of the command, changing the timeout value for active sessions does not become effective until the session is re-accessed. Any keystroke also activates the new timeout duration.

Output

None

Example

```
(ALU 1850TSS-5) # telnetcon timeout 100
```


disconnect

Syntax

```
disconnect {<session_id> | all}
```

Description

This command closes Telnet or SSH sessions. The value **all** is used to close all Telnet and SSH sessions. The `show login session` command can be used to view the possible values for **<session-id>**.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

session_id

Default: *None*

Range: 0-42

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # disconnect 1
```

show telnet

Syntax

show telnet

Description

This command displays the current outbound Telnet settings. These are the settings that apply to Telnet connections initiated from the switch to a remote system.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Outbound Telnet Login Timeout - Indicates the number of minutes an outbound Telnet session is allowed to remain inactive before being logged off.

Maximum Number of Outbound Telnet Sessions - Indicates the number of simultaneous outbound Telnet connections allowed.

Allow New Outbound Telnet Sessions - Indicates whether outbound Telnet sessions will be allowed.

Example

```
(ALU 1850TSS-5) # show telnet

Outbound Telnet Login Timeout (minutes)..... 5
Maximum Number of Outbound Telnet Sessions..... 5
Allow New Outbound Telnet Sessions..... No

(ALU 1850TSS-5) #
```

show telnetcon

Syntax

show telnetcon

Description

This command displays the current inbound Telnet settings. These are the settings that apply to Telnet connections initiated from a remote system to the switch.

Mode

Privileged EXEC Mode

User EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Remote Connection Login Timeout (minutes) - This object indicates the number of minutes a remote connection session is allowed to remain inactive before being logged off. It may be specified as a number from 1 to 160. The factory default is 5.

Maximum Number of Remote Connection Sessions - This object indicates the number of simultaneous remote connection sessions allowed. The factory default is 5.

Allow New Telnet Sessions - This object indicates whether new Telnet sessions will be allowed. A setting of `no` blocks new Telnet sessions. The factory default value is `yes`.

Telnet Server Admin Mode - This object indicates the status of the telnet server admin mode

Example

```
(ALU 1850TSS-5) # show telnetcon

Remote Connection Login Timeout (minutes)..... 12
Maximum Number of Remote Connection Sessions..... 5
Allow New Telnet Sessions..... Yes
Telnet Server Admin Mode..... Enable

(ALU 1850TSS-5) #
```

Secure Shell (SSH) commands

Overview

This section describes the commands you use to configure SSH access to the switch. Use SSH to access the switch from a remote management host. The system allows a maximum of 5 SSH sessions.

ip ssh

Syntax

ip ssh

Description

This command enables SSH access to the system.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no ip ssh disables SSH access to the system.

User guidelines

By default, SSH access to the system is disabled.

Output

None

Example

```
(ALU 1850TSS-5) # ip ssh
```

ip ssh protocol

Syntax

ip ssh protocol [1] [2]

Description

This command is used to set or remove protocol levels, or versions, for SSH. Settings of SSH1 (1), SSH2 (2), or both SSH 1 and SSH 2 (1 and 2) are allowed.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

By default, the SSH protocols 1 and 2 are set.

Output

None

Example

```
(ALU 1850TSS-5) # ip ssh protocol 1 2
```


ip ssh server enable

Syntax

ip ssh server enable

Description

This command enables the IP secure shell server.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no ip ssh server enable disables the IP secure shell server.

User guidelines

By default, the SSH server is disabled.

Output

None

Example

```
(ALU 1850TSS-5) # ip ssh server enable
```

sshcon maxsessions

Syntax

sshcon maxsessions <value>

Description

This command specifies the maximum number of SSH connection sessions that can be established. A value of 0 indicates that no ssh connections can be established.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

value

Default: 5

Range: 0-5

Support for no form

no sshcon maxsessions sets the maximum number of allowed SSH connection sessions to the default value.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # sshcon maxsessions 4
```

sshcon timeout

Syntax

sshcon timeout <value>

Description

This command sets the SSH connection session timeout value in minutes. A session is active as long as the session has not been idle for longer than the value set.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

value

Default: 5

Range: 1-160

Support for no form

no sshcon timeout sets the SSH connection session timeout value, in minutes, to the default.

User guidelines

A change in the timeout value for active sessions does not become effective until the session is re-accessed. Any keystroke also activates the new timeout duration.

For the no form of the command, changing the timeout value for active sessions does not become effective until the session is re-accessed. Any keystroke also activates the new timeout duration.

Output

None

Example

```
(ALU 1850TSS-5) # sshcon timeout 60
```

show ip ssh

Syntax

show ip ssh

Description

This command displays the ssh settings.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Administrative Mode - This field indicates whether the administrative mode of SSH is enabled or disabled.

Protocol Level - This field indicates the protocol level, and may have the values of version 1, version 2 or both versions 1 and version 2.

SSH Sessions Currently Active - This field specifies the current SSH sessions.

Max SSH Sessions Allowed - This field indicates the max number of SSH sessions

SSH Timeout - Indicates the timeout value

Example

```
(ALU 1850TSS-5) # show ip ssh
SSH Configuration
Administrative Mode: ..... Disabled
Protocol Levels: ..... Versions 1 and 2
SSH Sessions Currently Active: ..... 0
Max SSH Sessions Allowed: ..... 5
SSH Timeout: ..... 5
(ALU 1850TSS-5) #
```

Hypertext Transfer Protocol (HTTP) commands

This section describes the commands you use to configure HTTP and secure HTTP access to the switch. Access to the switch using a Web browser is enabled by default. Everything you can view and configure by using the CLI is also available by using the Web browser.

ip http server

Syntax

ip http server

Description

This command enables access to the switch through the Web interface. When access is enabled, you can login to the switch from the Web interface. When access is disabled, you cannot login to the Web server on the switch. Disabling the Web interface takes effect immediately. All interfaces are affected. By default access is enabled.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no ip http server disables access to the switch through the Web interface. When access is disabled, you cannot login to the Web server on the switch.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # no ip http server
```


ip http java

Syntax

ip http java

Description

This command enables the Web Java mode. The Java mode applies to both secure and unsecure Web connections. Java mode is by default enabled.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no ip http java disables the Web Java mode.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # no ip http java
```

show ip http

Syntax

show ip http

Description

This command displays the http settings for the switch.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

HTTP Mode (Unsecure) - The unsecure HTTP server administrative mode

Java Mode - The java applet administrative mode which applies to both secure and unsecure web connections

Maximum Allowable HTTP Sessions - The number of unsecure http sessions allowed

HTTP Session Hard Timeout - The hard timeout for unsecure http sessions in hours

HTTP Session Soft Timeout - The soft timeout for unsecure http sessions in minutes

HTTP Mode (Secure) - The secure HTTP server administrative mode

Secure Port - The secure HTTP server port number

Secure Protocol Level(s) - The protocol level, which may have the values SSL3, TLS1, or both SSL3 and TLS1

Maximum Allowable HTTPS Sessions - The number of allowable secure http sessions

HTTPS Session Hard Timeout - The hard timeout for secure http sessions in hours

HTTPS Session Soft Timeout - The soft timeout for secure http sessions in minutes

Example

```
(ALU 1850TSS-5) # show ip http

HTTP Mode (Unsecure): Enabled
Java Mode: Enabled
Maximum Allowable HTTP Sessions: 16
HTTP Session Hard Timeout: 24      hours
HTTP Session Soft Timeout: 5       minutes

HTTP Mode (Secure): Disabled
Secure Port: 443
Secure Protocol Level(s): TLS1 SSL3
Maximum Allowable HTTPS Sessions: 16
HTTPS Session Hard Timeout: 24     hours
HTTPS Session Soft Timeout: 5      minutes

(ALU 1850TSS-5) #
```

User account commands

Overview

This section describes commands to add, manage, and delete system users.

The system has two default users: `admin` and `guest`. The `admin` user can view and configure system settings, and the `guest` user can only view settings.

Important! The `admin` user cannot be deleted, and there is only one user allowed with read/write privileges. There can be up to five read-only users on the system.

users name

Syntax

users name <username>

Description

This command adds a new user account, if space permits. Up to six user names can be defined. The <username> is not case sensitive when you add and delete users, or when a user logs in. However, when you use the <username> to set the user password, authentication, or encryption, you must enter the <username> in the same case that was used when it was created. The `show users` command provides the exact case of the user names.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

username - specifies the name of the user account

Default: *None*

Range: String 1-8 characters in length. Alphanumeric characters as well as the dash ('-') and underscore ('_') are allowed.

Support for no form

no users <username> removes a user account. The admin user account cannot be deleted using this command

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# users name User1
```

users passwd

Syntax

users passwd <username>

Description

This command is used to change a password. Passwords are a maximum of eight alphanumeric characters. If a user is authorized for authentication, or encryption is enabled, the password length must be at least eight alphanumeric characters. The password is case sensitive. When changing a password, you are prompted for the old password. If there is no password, you must press enter. You must enter the **<username>** in the same case that was used when it was created. The `show users` command provides the case of the **<username>**.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

username - specifies the name of the account

Default: *None*

Range: String 1-8 characters in length. Alphanumeric characters as well as the dash ('-') and underscore ('_') are allowed.

Support for no form

no users passwd <username> sets the password of an existing user blank. When you change a password, you are prompted for the old password. If there is no password, you must press enter.

User guidelines

Default user password is blank.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# users passwd User1
```

users snmpv3 accessmode

Syntax

```
users snmpv3 accessmode <username> {readonly | readwrite}
```

Description

This command specifies the snmpv3 access privileges for the specified login user. The valid `accessmode` values are `readonly` or `readwrite`. The **<username>** is the login user name for which the specified access mode applies. The default mode is `readwrite` for the `admin` user and `readonly` for all other users. You must enter **<username>** in the same case that was used when it was created. The `show users` command is used to see the case of **<username>**.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

username - specifies the name of the account

Default: *None*

Range: String 1-8 characters in length. Alphanumeric characters as well as the dash ('-') and underscore ('_') are allowed.

Support for no form

no users snmpv3 accessmode <username> sets the snmpv3 access privileges for the specified user as `readwrite` for the `admin` user and `readonly` for all other users. The **<username>** is the user name for which the specified access mode will apply

User guidelines

By default, admin user has "readwrite", others have "readonly" privileges

Output

None

Example

```
(ALU 1850TSS-5) (Config)# users snmpv3 accessmode User1 readwrite
```

users snmpv3 authentication

Syntax

```
users snmpv3 authentication <username> {none | md5 | sha}
```

Description

This command specifies the authentication protocol for the specified user. The valid authentication protocols are `none`, `md5`, or `sha`. If you specify `md5` or `sha`, the login password is also used as the snmpv3 authentication password and therefore must be at least eight characters in length. The **<username>** is the user name associated with the authentication protocol. You must enter the **<username>** in the same case that was used when it was created. The `show users` command can be used to see the case of the **<username>**.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

username - specifies the name of the account

Default: *None*

Range: String 1-8 characters in length. Alphanumeric characters as well as the dash ('-') and underscore ('_') are allowed.

Support for no form

no users snmpv3 accessmode <username> sets the snmpv3 authentication protocol to none. The **<username>** value is the user name for which the specified authentication protocol will apply

User guidelines

By default, there is no authentication for an username

Output

None

Example

```
(ALU 1850TSS-5) (Config)# users snmpv3 authentication User1 sha
```

users snmpv3 encryption

Syntax

```
users snmpv3 encryption <username> {none | des [key]}
```

Description

This command specifies the encryption protocol for the specified user. The valid encryption protocols are **des** or **none**. If you select **des**, you can specify the required key on the command line. The encryption key must be 8 to 64 characters long. If you select **des** but do not provide a key, you are prompted for the key. When you use the **des** protocol, the login password is also used as the snmpv3 encryption password. So, it must be a minimum of eight characters long. If you select **none**, you do not need to provide a key.

The **<username>** value is the login user name associated with the specified encryption protocol. You must enter the **<username>** in the same case that was used when it was created. The `show users` command can be used to see the case of the **<username>**.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

username - specifies the name of the account

Default: *None*

Range: String 1-8 characters in length. Alphanumeric characters as well as the dash ('-') and underscore ('_') are allowed.

Support for no form

no users snmpv3 encryption <username> sets the encryption protocol to none. The **<username>** is the login user name for which the specified encryption protocol will be used

User guidelines

By default, there is no encryption for a username.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# users snmpv3 encryption User1 des
```

show login session

Syntax

show login session

Description

This command displays current Telnet and serial port connections to the switch.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

ID - The Login Session ID

User Name - The name you will use to login using the serial port or Telnet.

Connection From - The IP address of the Telnet client machine or EIA-232 for the serial port connection.

Idle Time - Time this session has been idle.

Session Time - Total time this session has been connected.

Example

```
(ALU 1850TSS-5) # show login session
```

ID	User Name	Connection From	Idle Time	Session Time	Session Type
---	-----	-----	-----	-----	-----
00	admin	152.148.205.199	00:00:00	00:22:29	Telnet

```
(ALU 1850TSS-5) #
```

show users

Syntax

show users

Description

This command displays the configured user names and their settings. This command is only available for users with Read/Write privileges. The SNMPv3 fields will only be displayed if SNMP is available on the system.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

User Name - The name you enter to login using the serial port, Telnet, or Web.

Access Mode - Shows whether you are able to change parameters on the switch (Read/Write) or only able to view them (Read Only). The factory default for the admin user is Read/Write access. For the guest the default is Read Only access. There can only be one Read/Write user and up to five Read Only users.

SNMPv3 Access Mode - This field displays the SNMPv3 Access Mode. If the value is set to ReadWrite, the SNMPv3 user is able to set and retrieve parameters on the system. If

the value is set to ReadOnly, the SNMPv3 user is only able to retrieve parameter information. The SNMPv3 access mode may be different than the CLI and Web access mode.

SNMPv3 Authentication - This field displays the authentication protocol to be used for the specified login user.

SNMPv3 Encryption - This field displays the encryption protocol to be used for the specified login user.

Example

```
(ALU 1850TSS-5) # show users
```

User Name	User Access Mode	SNMPv3 Access Mode	SNMPv3 Authentication	SNMPv3 Encryption
-----	-----	-----	-----	-----
admin	Read/Write	Read/Write	None	None
guest	Read Only	Read Only	None	None
t-user	Read Only	Read Only	None	None
t_user	Read Only	Read Only	None	None

```
(ALU 1850TSS-5) #
```

SNMP commands

Overview

This section describes the commands used to configure Simple Network Management Protocol (SNMP) on the switch. You can configure the switch to act as an SNMP agent so that it can communicate with SNMP managers on the network.

snmp-server

Syntax

```
snmp-server {sysname <name> | location <loc> | contact <con>}
```

Description

This command sets the name and the physical location of the switch, and the organization responsible for the network.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the name of the system

Default: *None*

Range: Alphanumeric string 1-31 characters in length

loc - specifies the location of the system

Default: *None*

Range: Alphanumeric string 1-31 characters in length

con - specifies the contact of the system

Default: *None*

Range: Alphanumeric string 1-31 characters in length

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server sysname System1 location  
Westford contact SystemAdmin
```

snmp-server community

Syntax

snmp-server community <name>

Description

This command adds and names a new SNMP community. A community name, **<name>**, is associated with the switch and with a set of SNMP managers that manage it with a specified privileged level. There may be up to 6 community names in the system.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the community name of the system

Default: *None*

Range: String of 1-16 case sensitive characters.

Support for no form

no snmp-server community <name> removes the community name from the table.
The **<name>** is the community name to be deleted

User guidelines

Community names in the SNMP Community Table must be unique. When making multiple entries using the same community name, the first entry is kept and processed. All duplicate entries are ignored.

By default, are 2 community names in the system.

It is possible to remove any or all community names from the system (including `public`, `private`), but the startup configuration must contain at least one community name.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server community Provider1
```

snmp-server community ipaddr

Syntax

snmp-server community ipaddr <name> <ipaddr>

Description

This command sets a client IP address for an SNMP community. The address is the associated community SNMP packet sending address and is used along with the client IP mask to denote a range of IP addresses from which SNMP clients may use that community to access the device. A value of 0.0.0.0 allows access from any IP address. Otherwise, this value is ANDed with the mask to determine the range of allowed client IP addresses. The name is the applicable community name.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddr - specifies the IP address of the SNMP community

Default: *None*

Range: IPv4 address range

name - specifies the community name of the system

Default: *None*

Range: String of 1-16 case sensitive characters.

Support for no form

no snmp-server community ipaddr <name> sets the client IP address for an SNMP community to 0.0.0.0. The name is the applicable community name.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server community ipaddr Provider1  
1.1.1.1
```

snmp-server community ipmask

Syntax

snmp-server community ipmask <name><ipmask>

Description

This command sets a client IP mask for an SNMP community. The address is the associated community SNMP packet sending address. It is used along with the client IP address value to denote a range of IP addresses from which SNMP clients may use that community to access the device. A value of 255.255.255.255 will allow access from only one station, and will use that machine's IP address for the client IP Address. A value of 0.0.0.0 will allow access from any IP address. The name is the applicable community name.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipmask - specifies the IP mask of the SNMP community

Default: *None*

Range: 0-255.0-255.0-255.0-255

name - specifies the community name of the system

Default: *None*

Range: String of 1-16 case sensitive characters.

Support for no form

no snmp-server community ipmask <name> command sets a client IP mask for an SNMP community to 0.0.0.0.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server community ipmask Provider1  
255.255.255.0
```

snmp-server community mode

Syntax

snmp-server community mode <name>

Description

This command activates an SNMP community. If a community is enabled, an SNMP manager associated with this community manages the switch according to its access right. If the community is disabled, no SNMP requests using this community are accepted. In this case, the SNMP manager associated with this community cannot manage the switch until the Status is changed back to Enable.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the community name of the system

Default: *None*

Range: String of 1-16 case sensitive characters.

Support for no form

no snmp-server community mode <name> deactivates an SNMP community. If the community is disabled, no SNMP requests using this community are accepted. In this case, the SNMP manager associated with this community cannot manage the switch until the Status is changed back to Enable.

User guidelines

By default, the mode for public and private communities is enabled and for others it is disabled

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server community mode Provider1
```

snmp-server community ro

Syntax

snmp-server community ro <name>

Description

This command restricts access to switch information. The access mode is read-only, also called public.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the community name of the system

Default: *None*

Range: String of 1-16 case sensitive characters.

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server community ro Provider1
```

snmp-server community rw

Syntax

snmp-server community rw <name>

Description

This command restricts access to switch information. The access mode is read/write, also called private.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the community name of the system

Default: *None*

Range: String of 1-16 case sensitive characters.

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server community rw Provider1
```

snmp-server enable traps violation

Syntax

snmp-server enable traps violation

Description

This command enables sending new violation traps that designate when a packet with a disallowed source MAC address is received on a locked port.

Mode

Interface Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no snmp-server enable traps violation disables the sending of new violation traps.

User guidelines

By default, these traps are disabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server enable traps violation
```

snmp-server enable traps

Syntax

snmp-server enable traps

Description

This command enables the Authentication Failure trap.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no snmp-server enable traps disables the Authentication Failure trap.

User guidelines

By default, the Authentication Failure traps are enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server enable traps
```

snmp-server enable traps linkmode

Syntax

snmp-server enable traps linkmode

Description

This command enables Link Up/Down traps for the entire switch. When enabled, link traps are sent only if the Link Trap flag setting associated with the port is enabled.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no snmp-server enable traps linkmode disables Link Up/Down traps for the entire switch.

User guidelines

By default, the Link Up/Down traps for the entire switch are enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server enable traps linkmode
```


snmp-server enable traps multiusers

Syntax

snmp-server enable traps multiusers

Description

This command enables Multiple User traps. When the traps are enabled, a Multiple User Trap is sent when a user logs in to the terminal interface (EIA 232 or Telnet) and there is an existing terminal interface session.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no snmp-server enable traps multiusers disables Multiple User traps.

User guidelines

By default, the Multiple User traps are enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server enable traps multiusers
```

snmp-server enable traps stpmode

Syntax

snmp-server enable traps stpmode

Description

This command enables sending new root traps and topology change notification traps.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

no snmp-server enable traps stpmode disables sending new root traps and topology change notification traps.

User guidelines

By default, these traps are enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp-server enable traps stpmode
```

snmptrap

Syntax

snmptrap <name> <ipaddr> [**snmpversion** <snmpversion>]

Description

This command adds an SNMP trap receiver. The maximum length of <name> is 16 case sensitive, alphanumeric characters. The <snmpversion> is the version of SNMP. The version parameter options are `snmpv1` or `snmpv2`.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the community name used when sending the trap to the receiver, but it is not directly associated with the SNMP Community Table, specified in [“snmp-server community”](#) (p. 5-74).

Default: *None*

Range: String of 1-16 case sensitive alphanumeric characters

ipaddr - IPv4 address

Default: *None*

Range: IPv4 Address Range

snmpversion - specifies the version of SNMP

Default: `snmpv2`

Range: `snmpv1` | `snmpv2`

Support for no form

no snmptrap <name> <ipaddr> deletes trap receivers for a community.

User guidelines

The <name> does not need to be unique, however; the <name> and <ipaddr> pair must be unique. Multiple entries can exist with the same <name>, as long as they are associated with a different <ipaddr>. The reverse scenario is also acceptable.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmptrap Provider1 152.148.1.1
```

snmptrap snmpversion

Syntax

snmptrap snmpversion <name> <ipaddr> <snmpversion>

Description

This command modifies the SNMP version of a trap.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the community name used when sending the trap to the receiver, but it is not directly associated with the SNMP Community Table, specified in [“snmp-server community”](#) (p. 5-74).

Default: *None*

Range: String of 1-16 case sensitive alphanumeric characters

ipaddr - IPv4 address

Default: *None*

Range: IPv4 Address Range

snmpversion - specifies the version of SNMP

Default: snmpv2

Range: snmpv1 | snmpv2

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmptrap snmpversion Provider1 152.148.1.1  
snmpv2
```

snmptrap ipaddr

Syntax

snmptrap ipaddr <name> <ipaddrold> <ipaddrnew>

Description

This command assigns an IP address to a specified community name.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the community name used when sending the trap to the receiver, but it is not directly associated with the SNMP Community Table, specified in “[snmp-server community](#)” (p. 5-74).

Default: *None*

Range: String of 1-16 case sensitive alphanumeric characters

ipaddrold - old IPv4 address

Default: *None*

Range: IPv4 Address Range

ipaddrnew - new IPv4 address

Default: *None*

Range: IPv4 Address Range

Support for no form

None

User guidelines

IP addresses in the SNMP trap receiver table must be unique. If you make multiple entries using the same IP address, the first entry is retained and processed. All duplicate entries are ignored.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmptrap Provider1 152.148.1.1 152.148.2.2
```


snmptrap mode

Syntax

snmptrap mode

Description

This command activates or deactivates an SNMP trap. Enabled trap receivers are active and able to receive traps. Disabled trap receivers are inactive and not able to receive traps.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no snmptrap mode deactivates an SNMP trap. Disabled trap receivers are inactive and not able to receive traps.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmptrap mode
```

snmp trap link-status

Syntax

snmp trap link-status

Description

This command enables link status traps by interface.

Mode

Interface Config Mode

Interface T1 Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no snmp traps link-status disables link status traps by interface.

User guidelines

This command is valid only when the Link Up/Down Flag is enabled, See [“snmp-server enable traps linkmode”](#) (p. 5-86)

Output

None

Example

```
(ALU 1850TSS-5) (Interface d1-1)# snmp trap link status
```

snmp trap link-status all

Syntax

snmp trap link-status all

Description

This command enables link status traps for all interfaces.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no snmp trap link-status all disables link status traps for all interfaces.

User guidelines

This command is valid only when the Link Up/Down Flag is enabled, See [“snmp-server enable traps linkmode”](#) (p. 5-86)

Output

None

Example

```
(ALU 1850TSS-5) (Config)# snmp trap link status all
```

show snmpcommunity

Syntax

show snmpcommunity

Description

This command displays SNMP community information. Six communities are supported. You can add, change, or delete communities. The switch does not have to be reset for changes to take effect. The SNMP agent of the switch complies with SNMP Versions 1, 2, or 3. SNMP RFCs provide more information about the SNMP specifications. The SNMP agent sends traps through TCP/IP to an external SNMP manager based on the SNMP configuration, consisting of the trap receiver and other SNMP community parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

SNMP Community Name - The community string to which this entry grants access. A valid entry is a case-sensitive alphanumeric string of up to 16 characters. Each row of this table must contain a unique community name.

Client IP Address - An IP address, or portion thereof, from which this device will accept SNMP packets with the associated community. The requesting entity's IP address is ANDed with the Subnet Mask before being compared to the IP Address.

Important! If the Subnet Mask is set to 0.0.0.0, an IP Address of 0.0.0.0 matches all IP addresses. The default value is 0.0.0.0.

Client IP Mask - A mask to be ANDed with the requesting entity's IP address before comparison with IP Address. If the result matches with IP Address then the address is an authenticated IP address. For example, if the IP Address is 9.47.128.0 and the corresponding Subnet Mask is 255.255.255.0, the range of incoming IP addresses could equal 9.47.128.0 - 9.47.128.255. The default value is 0.0.0.0.

Access Mode - The access level for this community string.

Status - The status of this community access entry.

Example

```
(ALU 1850TSS-5) # show snmpcommunity
```

SNMP Community Name	Client IP Address	Client IP Mask	Access Mode	Status
public	0.0.0.0	0.0.0.0	Read Only	Enable
private	0.0.0.0	0.0.0.0	Read/Write	Enable

```
(ALU 1850TSS-5) #
```

show snmptrap

Syntax

show snmptrap

Description

This command displays SNMP trap receivers. Trap messages are sent across a network to an SNMP Network Manager. These messages alert the manager to events occurring within the switch or on the network. Up to six trap receivers are supported simultaneously.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

SNMP Trap Name - The community string of the SNMP trap packet sent to the trap manager. The string is case sensitive and can be up to 16 alphanumeric characters.

IP Address - The IP address to receive SNMP traps from this device.

Status - Indicates the receiver's status, enabled or disabled.

Example

```
(ALU 1850TSS-5) # show snmptrap
```

SNMP Trap Name	IP Address	SNMP Version	Status
trapreceiver	11.22.33.44	snmpv2	Enable

```
(ALU 1850TSS-5) #
```

show trapflags

Syntax

show trapflags

Description

This command displays trap conditions. You configure which traps the switch should generate by enabling or disabling the trap condition. If a trap condition is enabled and the condition is detected, the SNMP agent on the switch sends the trap to all enabled trap receivers. You do not have to reset the switch to implement the changes. Cold and warm start traps are always generated and cannot be disabled.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

Parameters

None

Support for no form

None

User guidelines

None

Output

Authentication Flag - Can be enabled or disabled. The factory default is enabled. This flag indicates whether authentication failure traps will be sent.

Link Up/Down Flag - Can be enabled or disabled. The factory default is enabled. This flag indicates whether link status traps will be sent.

Multiple Users Flag - Can be enabled or disabled. The factory default is enabled. This flag indicates whether a trap will be sent, either through Telnet or the serial port, when the same user ID is logged into the switch more than once at the same time.

Spanning Tree Flag - Can be enabled or disabled. The factory default is enabled. This flag indicates whether spanning tree traps are sent.

ACL Traps - May be enabled or disabled. The factory default is disabled. This indicates whether ACL traps are sent.

Example

```
(ALU 1850TSS-5) # show trapflags

Authentication Flag..... Disable
Link Up/Down Flag..... Enable
Multiple Users Flag..... Enable
Spanning Tree Flag..... Enable
ACL Traps..... Disable

(ALU 1850TSS-5) #
```

Configuration scripting commands

Overview

Configuration Scripting allows you to generate text-formatted script files representing the current configuration of a system. You can upload these configuration script files to a PC or UNIX system and edit them. Then, you can download the edited files to the system to apply a new configuration. You can apply configuration scripts to one or more switches with little or no modification.

You can use the **show running-config** command to capture the running configuration into a script. You can use the **copy** command to transfer the configuration script to or from the switch.

You should use scripts on systems with the default configuration. However, you are not prevented from applying scripts on systems that have been configured with non-default settings.

Scripts must conform to the following rules:

- The file extension must be `.scr`.
- A maximum of ten scripts are allowed on the switch.
- The combined size of all script files on the switch shall not exceed 2048 KB.
- The maximum number of command lines in a configuration file is 2000.

You can type single-line annotations at the command prompt to use when writing test or configuration scripts, to improve script readability. The exclamation point (!) character flags the beginning of a comment. The comment flag character can begin a word anywhere on the command line. All input following this character is ignored. Any command line that begins with the “!” character is recognized as a comment line and ignored by the parser.

script apply

Syntax

```
script apply <scriptname>
```

Description

This command applies a command script to the switch. The **<scriptname>** parameter is the name of the script to apply.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

scriptname - specifies the name of the script

Default: *None*

Support for no form

None

User guidelines

You should use scripts on systems with the default configuration. However, you are not prevented from applying scripts on systems configured with non-default settings

Output

None

Example

```
(ALU 1850TSS-5) # script apply Script1
```

script delete

Syntax

```
script delete {<scriptname> | all}
```

Description

This command deletes a specified script where the **<scriptname>** parameter is the name of the script to delete. The **<all>** option deletes all the scripts present on the switch.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

scriptname - specifies the name of the script

Default: *None*

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # script delete Script1
```

script list

Syntax

script list

Description

This command lists all scripts present on the switch as well as the remaining available space.

Mode

Global Config Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Configuration Script - The name of the script

Size - The remaining space available

Example

```
(ALU 1850TSS-5) # script list

Configuration Script Name          Size(Bytes)
-----
myscr.scr                          1402

1 configuration script(s) found.
2046 Kbytes free.

(ALU 1850TSS-5) #
```

script show

Syntax

script show <scriptname>

Description

This command displays the contents of a script file, with the name <scriptname>.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

line <number>: <line contents> - paged in blocks of 20 lines

Example

```
(ALU 1850TSS-5) # script show myscr.scr

1 : !Current Configuration:
2 : !
3 : !System Description "LVL7 FASTPATH Switching"
4 : !System Software Version "1.0.0.1"
5 : !
6 : serviceport protocol dhcp
7 : vlan database
8 : exit
9 : configure
10 : !
11 : logging buffered
12 : lineconfig
13 : exit
14 : spanning-tree configuration name "00-00-00-00-0F-F7"
15 : interface a-9
16 : no auto-negotiate
17 : exit
18 : interface a-10
19 : no auto-negotiate
20 : exit
21 : interface a-11

--More-- or (q)uit
```


script validate

Syntax

script validate <scriptname>

Description

This command validates a script file by parsing each line in the script file with the name specified in <scriptname>. T

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

scriptname - specifies the name of the script

Default: *None*

Support for no form

None

User guidelines

None

Output

<line contents> - unpagged

Example

```
(ALU 1850TSS-5) # script validate myscr.scr
serviceport protocol dhcpvlan database
exit
configure
logging buffered
lineconfig
exit
spanning-tree configuration name "00-00-00-00-0F-F7"
interface a-9
no auto-negotiate
exit
interface a-10
.....

interface d2-3
no auto-negotiate
shutdown
exit
interface d2-4
no auto-negotiate
shutdown
exit
exit

Configuration script 'myscr.scr' validated.

(ALU 1850TSS-5) #
```

Pre-Login banner and system prompt and paging commands

Overview

This section describes the commands used to configure the pre-login banner and the system prompt, and CLI pagination mode for each active login session. The pre-login banner is the text that displays before you log in at the user prompt.

copy (pre-login banner)

Syntax

copy

Description

The copy command includes the option to upload or download the CLI Banner to or from the switch. You can specify local URLs by using TFTP, Xmodem, Ymodem, or Zmodem.

The command has the following two forms:

```
copy <tftp://<ipaddr>/<filepath>/<filename>> nvram:clibanner
```

```
copy nvram:clibanner <tftp://<ipaddr>/<filepath>/<filename>>
```

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ipaddr - IP address of system to upload to (download from) the banner

Default: *None*

Range: IPv4 address

filepath - Path of the file

Default: *None*

Range: String

filename - Name of the file

Default: *None*

Range: String

Support for no form

None

User guidelines**Output**

None

Example

```
(ALU 1850TSS-5) # copy tftp: //152.148.1.1/Home/User1/Banner  
nvram:clibanner
```

set prompt

Syntax

set prompt <prompt_string>

Description

This command changes the name of the prompt. Starting in Release 4.0, the default prompt is `ALU 1850TSS-5-{40|60|64}`. The choice of 40, 60 or 64 is determined by the type of pack being managed.

Mode

Privileged EXEC Mode

Release and pack information

VLNC40, starting Release 3.0

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

prompt_string

Default: *None*

Range: Up to 64 character alphanumeric string. Special characters other than “.” may also be included in the string.

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) # set prompt SystemBOSTON
(SystemBOSTON) #
```


6 Circuit Emulation Service commands

Overview

This section describes the commands required to configure a Circuit Emulation Service on the VLNC60/VLNC64 circuit pack.

The following configuration steps must be performed on Switches at both ends of the Circuit Emulation Service:

1. Configure the Packet Switched Network (PSN) Tunnel
A Tunnel is a point-to-point connection between 2 switches located at the edge of a Packet Network. It guarantees certain bandwidth requirements across the 2 endpoints.
 - The PSN Tunnel is uni-directional in nature. Hence, one PSN Tunnel is configured in each direction of data flow, i.e. the outgoing and incoming directions.
2. Configure the Pseudowire
A Pseudowire emulates all essential attributes of a service (such as T1) across a Packet Network. If the Packet Network is based on MPLS, it is a pair of Label Switched Paths across the network.
3. Associate the Pseudowire with the PSN Tunnel
A Pseudowire is carried inside a PSN Tunnel. Hence, it has to be associated with a PSN Tunnel. A Pseudowire is bi-directional in nature. Hence it is associated with an incoming and an outgoing PSN Tunnel.
4. Associate an interface with the Pseudowire
An interface which carries the underlying traffic that is being emulated must be associated with the Pseudowire. E.g. when the Pseudowire emulates a T1 connection, the T1 physical interface must be associated with the Pseudowire.

Important! A PSN Tunnel can carry more than one Pseudowire. You can repeat [Step 3](#) and [Step 4](#) to configure additional pseudowires on a single PSN Tunnel.

- A VLNC60 circuit pack can support up to 32 PSN Tunnels; up to 16 of the PSN Tunnels can traverse a single Ethernet interface.

- A VLNC64 circuit pack can support up to 336 PSN Tunnels; up to 168 PSN Tunnels can traverse a single Ethernet interface.
- A VLNC60 circuit pack can support up to 8 Pseudowires.
- A VLNC64 circuit pack can support up to 84 Pseudowires.

Contents

This chapter covers these topics.

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PSN tunnel

psntunnel

Syntax

psntunnel <name>

Description

This command changes the context to *PSN Tunnel Config Mode*. It also creates a PSN Tunnel identified by <name>, if the tunnel does not exist already.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - specifies the tunnel name

Default: None

Range: 1 to 31 alphanumeric character string

Support for no form

no psntunnel <name> removes the PSN Tunnel from the system.

This command is executed in *Global Config Mode*

User guidelines

All subsequent commands in the *PSN Tunnel Config Mode* will be applied to the PSN Tunnel name specified in this command.

The PSN Tunnel will be administratively down after it is initially configured. It must be explicitly enabled using the **no shutdown** command specified under “[shutdown \(for PSN-Tunnel\)](#)” (p. 6-12). This can be done after configuring all the parameters applicable to the tunnel.

For any subsequent parameter modification, the PSN Tunnel must be explicitly disabled using the **shutdown** command, then enabled using **no shutdown** after the parameter has been configured.

A minimum set of parameters must be configured to bring up the PSN Tunnel. These are specified below:

- Direction of the PSN Tunnel - *Outgoing or Incoming*
 - Outgoing direction is set using “[outsegment](#)” (p. 6-6).
 - Incoming direction is set using “[insegment](#)” (p. 6-9).
- Destination address and Nexthop address (for Outgoing tunnels)
 - Destination address for the PSN Tunnel is set using “[outsegment](#)” (p. 6-6).
 - Nexthop address for the PSN Tunnel is set using “[outsegment](#)” (p. 6-6).
- The pack supports only static IP routing. Hence, you must create a static IP route for *destination address* with nexthop as specified in the **outsegment** command mentioned above. The ip route commands are specified in [Chapter 2, “Routing commands”](#).

Output

Change user prompt to (ALU 1850TSS-5) (Config-<PSN Tunnel name>)#

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelfromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub) #
```

outsegment

Syntax

```
outsegment destination <dst-addr> nexthop <nexthop-addr> [outgoing-interface  
<out-interface>] [outlabel <label-value>]
```

Description

A PSN Tunnel is unidirectional and can take the role of an *outgoing tunnel* or *incoming tunnel*. This command sets the tunnel to be *outgoing* and specifies the parameters related to it.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

dst-addr - Specifies the IP address of the destination node of the PSN Tunnel

Default: *None*

Range: Standard IPv4 Unicast address

nexthop-addr - Specifies the next hop address of the PSN Tunnel

Default: *None*

Range: Standard IPv4 Unicast Address

out-interface - Specifies the output Ethernet interface through which the PSN Tunnel's destination can be reached.

Default: *None*

Range: **Ethernet-Port**

See [Appendix A, "Addressable entities"](#)

label-value - specifies the PSN Tunnel's outgoing label.

In Release 4.1, this parameter is not applicable and does need not be specified.

Default: *None*

Range: 16-1048575

Support for no form

None

User guidelines

The PSN type must be MPLS.

In Release 4.0 and Release 4.1, the **outlabel** parameter is not applicable. This is because there is no *outgoing label* for a PSN Tunnel in these releases.

The PSN Tunnel is identified without its corresponding label using the following method:

- Typically an Ethernet frame carrying a PSN Tunnel with a Pseudowire inside it needs 2 labels - *outer label for PSN Tunnel*, and *inner label for Pseudowire*.
- In Release 4.0 and Release 4.1, every MPLS packet has only its Pseudowire label (inner label).
- From the Pseudowire label (inner label), the VLNC60/VLNC64 knows the PSN Tunnel with which it is associated. (This association is explicitly configured through [“connect-psntunnel”](#) (p. 6-42).)
- Without a PSN tunnel label (outer label), the VLNC60/VLNC64 can identify the associated PSN Tunnel using just the Pseudowire label (inner label).

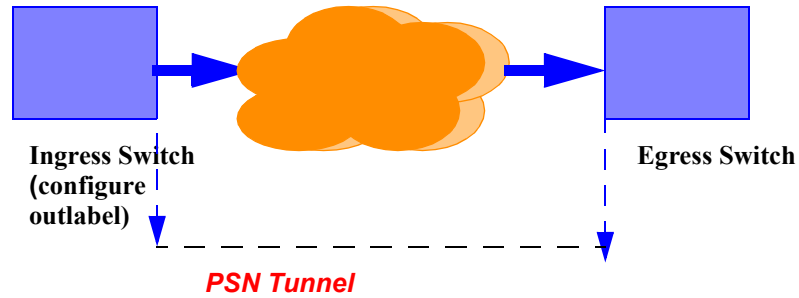
The pack supports, only static IP routing. Hence, you must create a static IP route for a *destination address* with nexthop as specified in the **outsegment** command. See **ip route** in [Chapter 2, “Routing commands”](#).

A PSN Tunnel can only be an *outgoing tunnel* or *incoming tunnel*. If you want to change an outgoing PSN Tunnel to an incoming PSN Tunnel, the PSN Tunnel has to be removed and recreated.

Once configured, the IP address of the destination node of the PSN Tunnel cannot be modified. You must delete the PSN Tunnel and recreate it in order to change the IP address of the destination.

The label values 0-15 are reserved by the IETF standard.

The outgoing PSN Tunnel must be configured on an ingress Alcatel-Lucent 1850 TSS-5 of a network.

**Output**

None

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelfromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)# outsegment
  destination 152.148.10.10 nexthop 20.20.20.2 outgoing-interface
  d2-1
```

insegment

Syntax

insegment [**incoming-interface** <**in-interface**>] [**inlabel** <**label-value**>]

Description

A PSN Tunnel is unidirectional and can take the role of an *outgoing tunnel* or *incoming tunnel*. This command sets the tunnel to be *incoming* and specifies the parameters related to it. Although both the parameters are optional for this command, at the minimum, the command **insegment** has to be specified to set the direction of the PSN Tunnel to be incoming.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

in-interface - Specifies the incoming Ethernet interface through which the PSN Tunnel's packets can be received.

Default: *None*

Range: Ethernet-Port as per [Appendix A, "Addressable entities"](#)

label-value - specifies the PSN Tunnel's incoming label.

Default: *None*

Range: 16-1048575

Support for no form

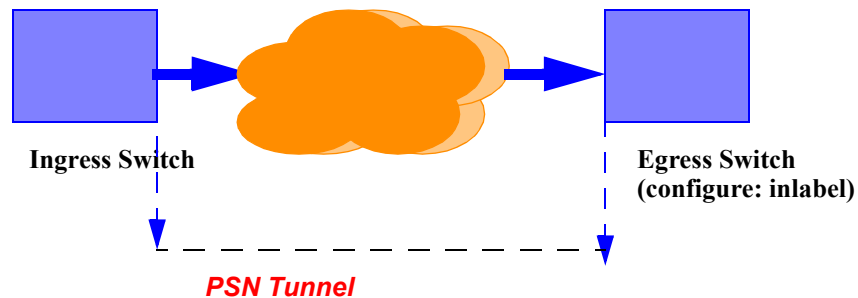
None

User guidelines

The label values 0-15 are reserved by the IETF standard.

A PSN Tunnel can only be an **outgoing tunnel** or **incoming tunnel**. If you want to change an incoming tunnel to outgoing tunnel, the PSN Tunnel has to be removed and recreated.

When this parameter is configured, the PSN Tunnel takes the role of an incoming tunnel. Hence, you must configure this parameter on an egress switch of the network, where data is received from the PSN Tunnel.



Output

None

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelfromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)# insegment inlabel
100
```


exp (for PSN-Tunnel)

Syntax

exp <pri-value>

Description

This command specifies the EXP value to be applied on the outgoing Ethernet frames from the PSN Tunnel. EXP value refers to the priority treatment which this PSN Tunnel must be provided in the underlying MPLS network.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

pri-value - Specifies the 802.1p priority value. 7 represents the highest priority

Default: 6

Range: {0 | 1 | 2 | 3 | 4 | 5 | 6 | 7}

Support for no form

no exp restores default value

User guidelines

Tunnel must be an outgoing tunnel.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelfromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)# exp 5
```

shutdown (for PSN-Tunnel)

Syntax

shutdown

Description

This command disables the PSN Tunnel administratively.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no shutdown enables the PSN Tunnel

User guidelines

This command brings down traffic on all the Pseudowires in the PSN Tunnel.

The circuit pack generates traps associated with the administrative state of the PSN Tunnel, if the traps are enabled.

A minimum configuration must have been performed on the PSN Tunnel for the **no shutdown** to succeed. These are specified below:

- Direction of the PSN Tunnel - *Outgoing or Incoming*
 - Outgoing direction is set using [“outsegment”](#) (p. 6-6).
 - Incoming direction is set using [“insegment”](#) (p. 6-9)
- Destination address and Nexthop address (for Outgoing tunnels)
 - Destination address for the PSN Tunnel is set using [“outsegment”](#) (p. 6-6).
 - Nexthop address for the PSN Tunnel is set using [“outsegment”](#) (p. 6-6).

Output

None

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelFromCellSite1toHub  
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)# exp 5 shutdown
```

service-vlan (for PSN-Tunnel)

Syntax

service-vlan <vlanid> [**pbit** <pbit-value>]

Description

This command specifies the VLAN tag to append to the outgoing BFD traffic on the PSN Tunnel.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

vlanid - This parameter specifies the VLAN id for the Ethernet frame.

Default: *None*

Range: 1-3965

pbit-value - This parameter specifies the VLAN Priority for the Ethernet frame. The highest priority is indicated by 7.

Default: 7

Range: 0-7

Support for no form

no service-vlan removes any associated VLAN tagging for the outgoing BFD traffic on the PSN Tunnel. This means the BFD traffic will be sent out untagged. The p-bit value is reset to 7.

User guidelines

The outgoing Ethernet interface on the pack, through which this BFD traffic is carried, must be configured to participate in the *vlanid* VLAN specified in the command. This is configured using the command [“vlan participation”](#) (p. 1-81).

Output

None

Example

```
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)# service-vlan 100 6
```

show psntunnel

Syntax

show psntunnel <name>

Description

This command displays information regarding the PSN Tunnel.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - Specifies the name of the PSN Tunnel

Support for no form

None

User guidelines

None

Output

The output is as follows:

Tunnel Type - PSN Tunnel type - MPLS.

Signaling - PSN Signaling type - Static.

EXP - Configured EXP value.

Tunnel VLAN Tag - VLAN id and P-bit value, beginning in Release 4.1.

Tunnel Direction - Inbound or Outbound

inlabel - PSN Tunnel labels are not supported.

outlabel - PSN Tunnel labels are not supported.

Destination - Destination address of the tunnel or None. Not applicable if the tunnel is inbound.

Nexthop - Nexthop address or None. Not applicable if the tunnel is inbound.

outgoing interface - Configured outgoing interface value or None. Not Applicable if the tunnel is outbound.

incoming interface - Configured incoming interface value or None. Not Applicable if the tunnel is outbound.

Backup Tunnel Name - Configured backup PSN tunnel.

Admin status - Configured Tunnel admin status {up | down}

Operational status - Tunnel {up | down}.

Failure Code - Diagnostic code to identify cause of failure (0x0 if operational status is up).

Creation Time - Time of creation of Tunnel.

UP Time - Duration for which the Tunnel is up.

Trap Status - Enabled or Disabled.

Pseudowires taking this Tunnel - Number of Pseudowires taking this Tunnel.

Last uptime - The last time at which the tunnel became operationally up.

In Frame Count - Number of frames received.

Out Frame Count - Number of frames transmitted.

Tx Discard Count - Number of frames discarded in transmit direction.

Rx Discard Count - Number of frames discarded in receive direction.

Time Since Counters Last Cleared - Time elapsed since the counters were last cleared.

Example

```
(ALU 1850TSS-5) # show psntunnel CESOP_SCRIPT_OUTTUNNEL_1

Tunnel Type..... MPLS
Tunnel Signaling Type..... STATIC
Tunnel EXP..... 6
Tunnel VLAN (P-Bit)..... Untagged (N/A)
Tunnel Direction..... Inbound
Tunnel Inlabel..... N/A
Tunnel Outlabel..... N/A
Tunnel Destination..... -----
Tunnel Nexthop..... -----
Tunnel Outgoing Interface..... -----
Tunnel Incoming Interface..... d1-2
Backup Tunnel Name..... -----
Tunnel Admin Status..... UP
Tunnel Operational Status..... DOWN
Tunnel Failure Code..... 0x1
Tunnel Creation Time..... FEB 01 00:00:29 2008
Tunnel UP Time..... -----
Tunnel Last UP Time..... FEB 04 00:00:34 2008
Tunnel Trap Status..... Enabled
Pseudowires taking this tunnel as active tunnel:
-----
Out Frame Count..... 0
In Frame Count..... 0
TX Discarded Count..... 0
RX Discarded Count..... 0

Time Since Counters Last Cleared..... 0 day 1 hr 2 min 25
sec
```


show psntunnel brief

Syntax

show psntunnel brief

Description

This command displays brief information regarding all PSN Tunnels.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Total Tunnels - The count of total number of Tunnels configured.

PSN Tunnel - Name of the PSN Tunnel.

All the fields from Tunnel Type through Backup Tunnel Name as specified in “[show psntunnel](#)” (p. 6-16).

Example

```
(ALU 1850TSS-5) # show psntunnel brief

Total Number of Psn Tunnels..... 2

Psn Tunnel psn-to60-out
-----

Tunnel Type..... MPLS
Tunnel Signaling Type..... STATIC
Tunnel EXP..... 6
TUNNEL VLAN (P-Bit)..... Untagged (N/A)
Tunnel Direction..... Outbound
Tunnel Inlabel..... N/A
Tunnel Outlabel..... N/A
Tunnel Destination..... 60.60.60.60
Tunnel Nexthop..... 6.6.1.60
Tunnel Outgoing Interface..... d1-2
Tunnel Incoming Interface..... -----
Tunnel Creation Time..... FEB 01 00:00:29 2008
Tunnel Admin Status..... UP
Backup Tunnel Name..... -----

--More-- or (q)uit

Psn Tunnel psn-to60-in
-----

Tunnel Type..... MPLS
Tunnel Signaling Type..... STATIC
Tunnel EXP..... 6
TUNNEL VLAN (P-Bit)..... Untagged (N/A)
Tunnel Direction..... Inbound
Tunnel Inlabel..... N/A
Tunnel Outlabel..... N/A
Tunnel Destination..... -----
Tunnel Nexthop..... -----
Tunnel Outgoing Interface..... -----
Tunnel Incoming Interface..... d1-2
Tunnel Creation Time..... FEB 04 00:00:31 2008

Tunnel Admin Status..... UP
Backup Tunnel Name..... -----
```

show psntunnel all

Syntax

show psntunnel {up | down | all}

Description

This command displays information on all the PSN Tunnel. If you specify Up, it displays information only for PSN Tunnels that are operationally up. If you specify Down, it displays information only for PSN Tunnels that are operationally down.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax.

Support for no form

None

User guidelines

None

Output

Displays output as follows:

Tunnel Name - PSN Tunnel Name.

Tunnel Index - An index for the PSN Tunnel which uniquely identifies it.

Interface Index - SNMP IfIndex for the PSN Tunnel.

Operational Status - {UP | Down}.

Failure Code - Diagnostic code to identify cause of failure.

Direction - {Inbound | Outbound}.

Displays the following additional information if you specify Up.

Up Time - Time elapsed since the Tunnel became operationally up.

Last Up Time - Actual time when the Tunnel became operationally up.

Displays the following additional information if you specify Down.

Last Change Time - Actual time when the Tunnel became operationally down.

Example

```
(ALU 1850TSS-5) # show psntunnel all
```

Tunnel Name	Tunnel Index	Intf Index	Oper. Status	Failure Code	Dir
-----	-----	-----	-----	-----	-----
psn-to60-out	0	485	DOWN	0x1	Outbound
psn-to60-in	1	486	DOWN	0x1	Inbound
psn-pLoop-out1	4	489	UP	0x0	Outbound
psn-pLoop-out2	5	490	UP	0x0	Outbound

Bi-directional Forwarding Detection (BFD)

Overview

Bi-directional Forwarding Detection is a protocol used to monitor the status of PSN Tunnels. This section specifies the configuration commands for BFD.

The following are the general User guidelines for BFD feature.

BFD status can be enabled on a pack level as well as on a PSN Tunnel level. If you do not explicitly specify the BFD status on a PSN Tunnel, the pack-level status is assumed. However, if the PSN Tunnel level BFD status is explicitly configured, it overrides the pack-level configuration for its BFD status.

If BFD is enabled on a PSN Tunnel, when the tunnel is enabled using **no shutdown**, ([Table , “shutdown \(for PSN-Tunnel\)” \(p. 6-12\)](#)), a minimum set of mandatory parameters must be configured for the BFD session. If not, the BFD session will fail to come up. The minimum set of parameters are UDP Port, Local Discriminator, and Remote Discriminator. The commands to configure these parameters are specified in this section.

bfd

Syntax

bfd

Description

This command enables or disables BFD signaling on all PSN Tunnels on the pack. By default BFD is disabled at pack level. This is a pack-level configuration and can be overridden by PSN Tunnel-level configuration using [“bfd” \(p. 6-35\)](#).

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no bfd disables the BFD signaling on all PSN Tunnels on the pack.

User guidelines

By default BFD is disabled on the pack.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# bfd
```

udp

Syntax

udp <udp-port-id>

Description

This command enables UDP port configuration. This UDP port id is inserted as the source port for outgoing BFD packets. This is applicable only for outgoing PSN Tunnels.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

udp-port-id -

Default: *None*

Range: 49152 - 65535

Support for no form

None

User guidelines

This parameter is applicable only for outgoing PSN Tunnels.

This is a mandatory parameter for the BFD session on a PSN Tunnel.

You must ensure that the BFD session is disabled on the PSN Tunnel before modifying this parameter.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelFromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)#  udp 49152
```


local-discriminator

Syntax

local-discriminator <local-discriminator-value>

Description

This command enables the local discriminator configuration.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

local-discriminator-value -

Default: *None*

Range: 1-366

Support for no form

None

User guidelines

The local-discriminator-value must match the remote-discriminator-value for BFD on other end of the PSN Tunnel. See [“remote-discriminator” \(p. 6-28\)](#) for configuring remote discriminator.

This is a mandatory parameter for the BFD session on a PSN Tunnel.

You must ensure that the BFD session is disabled on the PSN Tunnel before modifying this parameter.

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelFromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelFromCellSite1toHub)# local-
discriminator 300
```

remote-discriminator

Syntax

remote-discriminator <remote-discriminator-value>

Description

This command enables the remote discriminator configuration.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

remote-discriminator-value -

Default: *None*

Range: 1-366

Support for no form

None

User guidelines

The remote-discriminator value must match the local-discriminator value for BFD on the other end of the PSN Tunnel. See [“local-discriminator”](#) (p. 6-27) for configuring local-discriminator.

You must ensure that the remote-discriminator value is unique on the remote device of the BFD session.

This is a mandatory parameter for the BFD session on a PSN Tunnel.

You must ensure that the BFD session is disabled on the PSN Tunnel before modifying this parameter.

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelFromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)# remote-
discriminator 300
```

min-rx-interval

Syntax

min-rx-interval <rx-interval-value>

Description

This is the minimum interval, in milliseconds, between received BFD Control packets that this Tunnel supports.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

rx-interval-value -

Default: 300 msec

Range: 200 - 5000 msec, in increments of 100 msec

Support for no form

no min-rx-interval resets the minimum interval between received BFD Control packets to 300 msec.

User guidelines

Modifying this parameter is non-disruptive, and does not affect the BFD session.

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelFromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)# min-rx-interval
300
```

min-tx-interval

Syntax

min-tx-interval <tx-interval-value>

Description

This is the minimum interval, in milliseconds, used when transmitting BFD Control packets on this Tunnel.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

tx-interval-value -

Default: 300 msec

Range: 200 - 5000 msec, in increments of 100 msec

Support for no form

no min-tx-interval resets the minimum interval to use when transmitting BFD Control packets to 300 msec.

User guidelines

Modifying this parameter is non-disruptive, and does not affect the BFD session.

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelFromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)# min-tx-interval
300
```

multiplier

Syntax

multiplier <**multiplier-value**>

Description

The negotiated transmit interval, multiplied by this value, provides the detection time for the transmitting pack in Asynchronous mode

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

multiplier-value -

Default: 3

Range: [3 | 6 | 9]

Support for no form

no multiplier resets the multiplier value to 3

User guidelines

Modifying this parameter is non-disruptive, and does not affect the BFD session.

Example

```
(ALU 1850TSS-5) (Config)# psntunnel tunnelFromCellSite1toHub
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub)# multiplier 3
```

show bfd

Syntax

```
show bfd {<tunnel-name> | all}
```

Description

This command displays information on all BFD sessions or for a specific Tunnel.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

tunnel-name -

Default: *None*

Range: PSN. See [Appendix A, “Addressable entities”](#).

Support for no form

None

Output

Displays output as follows if you specify all.

Tunnel - PSN Tunnel Name.

Tunnel index - Index value for the Tunnel.

Local Discriminator - Local Discriminator for the Tunnel.

Remote Discriminator - Remote Discriminator for the Tunnel.

Admin Status - Admin Status of BFD on the Tunnel.

Operational Status - Operational Status of BFD on the Tunnel.

Displays the following for a specific BFD session.

Tunnel - Index value for the Tunnel.

Admin State - Enabled | Disabled.

Operational State - Up | Down.

Local Detection Time - Time interval used to detect BFD packets.

UDP port - Value configured in “udp” (p. 6-25)>.

Local Discriminator - Value configured in “local-discriminator” (p. 6-27).

Remote Discriminator - Value configured in “remote-discriminator” (p. 6-28).

Multiplier - Value configured in “multiplier” (p. 6-32).

Min Receive Interval - Value configured in “min-rx-interval” (p. 6-30).

Min Transmit Interval - Value configured in “min-tx-interval” (p. 6-31).

Example

```
(ALU 1850TSS-5) # show bfd all
Tunnel      Tunnel  Local  Remote  Admin      Operation
Name         Index   Dis.   Disc    Status     Status
-----
psn-to60-out      0      11     11     Enabled    Down
psn-to60-in       1       3      3     Enabled    Down
psn-to61-out       2     10     10     Enabled    Down
psn-to61-in       3       8      8     Enabled    Down

(ALU 1850TSS-5) # show bfd psn-to60-out
MPLS TUNNEL ID..... 0
BFD Admin Mode..... Enabled
BFD operation state..... Operational Down
BFD local detection time..... 0
BFD source UDP port Number..... 58611
BFD local Discriminator..... 11
BFD remote Discriminator..... 11
BFD detect multiplier..... 3
BFD Minimal Required Receive Interval..... 200
BFD Minimal Desired transmit Interval..... 200
```


bfd

Syntax

bfd

Description

This command enables BFD signaling on the PSN Tunnel.

Mode

PSN Tunnel Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Default: disable

Support for no form

no bfd disables the BFD signaling on the PSN Tunnel.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config-tunnelfromCellSite1toHub) # bfd
```

Pseudowire

Overview

pseudowire

Syntax

pseudowire <name>

Description

This command changes the context to *Pseudowire Config Mode*. It also creates a Pseudowire identified by <name>, if the Pseudowire does not already exist.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - Specifies the pseudowire name.

Default: *None*

Range: 1 to 31 alphanumeric character string

Support for no form

no pseudowire <name> removes the Pseudowire from the system

User guidelines

All subsequent commands in the *Pseudowire Config Mode* will be applied to the Pseudowire name specified in this command.

The Pseudowire will be administratively down after it is initially configured. It must be explicitly enabled using the **no shutdown** command specified under “[shutdown \(for PWE\)](#)” (p. 6-55). This can be done after configuring all the parameters applicable to the Pseudowire.

A minimum set of parameters must be configured to enable the Pseudowire. These are specified below:

- *outlabel* using command “[outlabel](#)” (p. 6-39)
- *inlabel* using command “[inlabel](#)” (p. 6-38)

For any subsequent parameter modification, the Pseudowire must be explicitly disabled using the **shutdown** command and then enabled using **no shutdown** after the parameter has been configured.

Output

```
Change user prompt to (ALU 1850TSS-5) (Config-<PWE name>)#
```

Example

```
(ALU 1850TSS-5) (Config)# pseudowire PWE1FromCellSite1ToHub
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub) #
```

inlabel

Syntax

inlabel <label-value>

Description

This command specifies a label with which incoming Ethernet frames for this Pseudowire are identified.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

label-value -

Default: *None*

Range: 16-1048575

Support for no form

None

User guidelines

The label values 0-15 are reserved by the IETF standard.

This value cannot be the same as any `inlabel` used for another Pseudowire on the same pack.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub)# inlabel 100
```

outlabel

Syntax

outlabel <label-value>

Description

This command specifies a label value to be used for outgoing data frames from this Pseudowire.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

label-value -

Default: *None*

Range: 16-1048575

Support for no form

None

User guidelines

The label values 0-15 are reserved by the IETF standard.

On the VLNC60, this value cannot be the same as any `outlabel` used for another Pseudowire.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub)# outlabel 100
```

service-vlan (for PWE)

Syntax

```
service-vlan <vlanid> [pbit <pbit-value>]
```

Description

This command specifies the VLAN tag to append to the Pseudowire frame.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlanid - This parameter specifies the VLAN id for the Ethernet frame.

Default: *None*

Range: 1-3965

pbit-value - This parameter specifies the VLAN Priority for the Ethernet frame. The highest priority is indicated by 7.

Default: 7

Range: 0-7

Support for no form

no service-vlan removes any associated VLAN tagging for this pseudowire. This means the Pseudowire traffic will be sent out untagged. The p-bit value is reset to 7.

User guidelines

The outgoing Ethernet interface on the pack, through which this Pseudowire traffic is carried, must be configured to participate in the *vlanid* VLAN specified in the command. This is configured using the command **vlan participation**.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub)# service-vlan 100 6
```

connect-psntunnel

Syntax

connect-psntunnel <outgoing-tunnel-name> <incoming-tunnel-name>

Description

This command specifies the association between the Pseudowire and the underlying PSN Tunnels in incoming and outgoing directions.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

outgoing-tunnel-name - This specifies the tunnel in the outgoing direction.

Default: *None*

Range: 1-32 alphanumeric character string

incoming-tunnel-name - This specifies the tunnel in the incoming direction.

Default: *None*

Range: 1-32 alphanumeric character string

Support for no form

no connect psntunnel removes the association between the Pseudowire and an underlying PSN Tunnel in the incoming and outgoing directions.

User guidelines

Create the PSN Tunnels first before making this association.

Ensure that both incoming and outgoing tunnels for a pseudowire are on the same physical interface. This ensures that any protection mechanism will work.

When the PWE to PSN Tunnel association must be changed, you must explicitly remove the existing association with the **no connect** form of the command, and create new associations using the **connect** form of the command.

The **outgoing-tunnel-name** must be an outbound tunnel and **incoming-tunnel-name** must be an inbound tunnel.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub)# connect-psntunnel  
psnTunnelFromCellSite1ToHub psnTunnelFromHubToCellSite1
```

payload-frame-count

Syntax

payload-frame-count <frame-count-value>

Description

This command specifies the number of T1/E1 frames to be transported on a single Ethernet frame. This value affects the packetization delay of the T1/E1 frames. In T1 mode each frame is 192 bits. In E1 mode, each frame is 256 bits.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

frame-count-value -

Default: 8

Range: 4, 8, 12, 16, 20 (4 is supported beginning in Release 4.1)

Support for no form

no payload-frame-count resets the number of T1/E1 frames to on a single Ethernet frame to its default.

User guidelines

In Release 4.0, the system does not prevent you from configuring all values in the range 8 - 20. You must avoid configuring values other than 8, 12, 16 and 20 as system behavior for these values is undefined.

Beginning in Release 4.1, you can specify only the specified range of values.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub) # payload-frame-count
4
```

jitter-buffer-size

Syntax

jitter-buffer-size <jitterbuffersize>

Description

This command allows you to configure the size of the jitter buffer used for transporting T1/E1 frames. The system allocates buffers equal to $(2^{\text{jitter-buffer-size}})$, to handle the jitter in the incoming Pseudowire traffic. The value you configure in this command, in conjunction with *payload-frame-count* value, corresponds to the amount of jitter that the system can handle in milliseconds.

$$\text{jitter-buffer-size in msec (for T1)} = \frac{192}{193} \times 2^{\text{jitter-buffer-size}} \times \text{payload-frame-count} \times \frac{125}{1000}$$

$$\text{jitter-buffer-size in msec (for E1)} = 2^{\text{jitter-buffer-size}} \times \text{payload-frame-count} \times \frac{125}{1000}$$

See [Table 6-1, “Jitter buffer mapping \(for T1\)”](#) (p. 6-46) and [Table 6-2, “Jitter buffer mapping \(for E1\)”](#) (p. 6-47) for jitter buffer mapping to milliseconds.

Table 6-1 Jitter buffer mapping (for T1)

payload-frame-count	Jitter buffer in msec for configured values of 2, 3, 4, 5, 6, 7, 8 respectively (accuracy: +/- 0.5 msec)
4	2, 4, 8, 16, 32, 64, 127
8	4, 8, 16, 32, 64, 127, 254
12	6, 12, 24, 48, 95, 191, 382
16	8, 16, 32, 64, 127, 255, 509
20	10, 20, 40, 80, 159, 318, 637

Table 6-2 Jitter buffer mapping (for E1)

payload-frame-count	Jitter buffer in msec for configured values of 2, 3, 4, 5, 6, 7, 8 respectively (accuracy: +/- 0.5 msec)
4	2, 4, 8, 16, 32, 64, 128
8	4, 8, 16, 32, 64, 128, 256
12	6, 12, 24, 48, 96, 192, 384
16	8, 16, 32, 64, 128, 256, 512
20	10, 20, 40, 80, 160, 320, 640

Mode*Pseudowire Config Mode***Release and pack information**

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters**jitterbuffersize -**

Default: 5

Range: 2-8

Support for no form

no jitter-buffer-size resets the size of jitter buffer to be used for transporting T1/E1 frames to its default.

User guidelines

You must modify this field based on the application being carried on the T1/E1 frames. Non-real time applications can have a higher value of jitter buffer.

If default value is acceptable, you need not specify this command.

When you modify this parameter, $(2 \wedge \text{new jitter-buffer-size})$, must be larger than *initial-delay* value.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub) # jitter-buffer-size 4
```

initial-delay

Syntax

initial-delay <initialdelay-value>

Description

Use this command to specify the initial period up to which received Pseudowire data is buffered before being sent to the corresponding TDM port. Until the Pseudowire receives data specified by this command, the system sends the TDM data pattern specified in the *pkt-filler* command. The value you configure in this command, in conjunction with *payload-frame-count* value, corresponds to the amount of initial delay that the system provides in milliseconds.

$$\text{initial-delay in msec (for T1)} = \frac{192}{193} \times \text{initial-delay} \times \text{payload-frame-count} \times \frac{125}{1000}$$

$$\text{initial-delay in msec (for E1)} = \text{initial-delay} \times \text{payload-frame-count} \times \frac{125}{1000}$$

See [Table 6-3, “Initial delay mapping \(for T1\)”](#) (p. 6-49) and [Table 6-4, “Initial delay mapping \(for E1\)”](#) (p. 6-50) for sample values of initial-delay mapping.

Table 6-3 Initial delay mapping (for T1)

payload-frame-count	Initial delay in msec for configured values of 2, 4, 8, 16, 32, 64, 128, 250 respectively (accuracy: +/- 0.5 msec)
4	1, 2, 4, 8, 16, 32, 64, 124
8	2, 4, 8, 16, 32, 64, 127, 249
12	3, 6, 12, 24, 48, 95, 191, 373
16	4, 8, 16, 32, 64, 127, 255, 497
20	5, 10, 20, 40, 80, 159, 318, 622

Table 6-4 Initial delay mapping (for E1)

payload-frame-count	Initial delay in msec for configured values of 2, 4, 8, 16, 32, 64, 128, 250 respectively (accuracy: +/- 0.5 msec)
4	1, 2, 4, 8, 16, 32, 64, 125
8	2, 4, 8, 16, 32, 64, 128, 250
12	3, 6, 12, 24, 48, 96, 192, 375
16	4, 8, 16, 32, 64, 128, 256, 500
20	5, 10, 20, 40, 80, 160, 320, 625

Mode*Pseudowire Config Mode***Release and pack information**

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters**initialdelay-value -**

Default: 16

Range: 2-250

Support for no form**no initial-delay** resets the value to its default.**User guidelines**

If the default value is acceptable, this command need not be specified.

When you modify this parameter, the new value must be less than $(2^{\text{jitter-buffer-size}})$.**Output**

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub)# initial-delay 50
```


pkt-filler

Syntax

pkt-filler <filler-value>

Description

This command allows you to configure the filler packet value to be transmitted on the PWE towards the TDM side, when there is missing TDM data.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

filler-value - Specifies the filter packet value in hexadecimal.

Default: 0xffffffff

Range: 0 - 0xffffffff

Support for no form

no pkt-filler resets the value to its default.

User guidelines

If the default value is acceptable, this value need not be specified.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub) # pkt-filler 0xA
```

ttl (for PWE)

Syntax

ttl <ttl-value>

Description

This command specifies the Time To Live, TTL, value of the outgoing labels on the Pseudowire.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

ttl-value -

Default: 2

Range: 1-255

Support for no form

no ttl resets the value to its default.

User guidelines

If the default value is acceptable, this command need not be specified.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub)# ttl 10
```

exp (for PWE)

Syntax

exp <pri-value>

Description

This command specifies the EXP value to be used on the outgoing Label of the Pseudowire. EXP value refers to the priority value this Pseudowire must be given in the underlying MPLS network.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

pri-value -

Default: 6

Range: {0 | 1 | 2 | 3 | 4 | 5 | 6 | 7}

Support for no form

no exp resets the EXP value to its default.

User guidelines

If the default value is acceptable, this command need not be specified.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub)# exp 7
```

connect-interface

Syntax

connect-interface <interface-number>

Description

This command associates a Pseudowire to an interface. Once this association is done, the traffic on the interface is emulated through the Pseudowire.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-number -

Default: *None*

Range: In **t1** mode, **T1-Port** or **VTDS1-Port**. In **e1** mode, **E1-Port** or **VCE1-Port**.

See [Appendix A, “Addressable entities”](#).

Support for no form

None

User guidelines

Once an association is created it cannot be modified or removed. The Pseudowire must be deleted and recreated.

Output

None

Example

```
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub) # connect-interface  
a-1-1
```

shutdown (for PWE)

Syntax

shutdown

Description

This command disables the Pseudowire administratively.

Mode

Pseudowire Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no shutdown enables the Pseudowire.

User guidelines

This command brings down traffic on the Pseudowire.

The circuit pack generates traps associated with the administrative state of the Pseudowire, if the traps are enabled.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# pseudowire PWE1FromCellSite1toHub  
(ALU 1850TSS-5) (Config-PWE1FromCellSite1toHub)# shutdown
```

protectionmode

Syntax

protectionmode {enable | disable}

Description

When this mode is enabled, any Pseudowire on the pack will become operationally active only upon receiving traffic from the other end of the Pseudowire connection.

Beginning in Release 4.1, the Pseudowires between VLNC60 (at remote sites) and VLNC64 (at hub sites) can be protected using UPSR. Each Remote VLNC60 is connected to 2 VLNC64s. The VLNC64s connect to a DACS and form UPSR endpoints. These UPSR endpoints are configured to be a *UPSR path-protected pair*.

At any given time, the Pseudowires must be active only on one of the VLNC64s. Hence the VLNC64s do not operationally bring up the Pseudowires. However, the VLNC60 at the remote site activates the Pseudowire towards one of the 2 VLNC64s. The VLNC60 makes this decision based on its configuration. Upon receiving traffic from the VLNC60, the Pseudowire is automatically activated on the corresponding VLNC64.

When this mode is disabled, any Pseudowire on the pack is operationally up when the pack is up. It is assumed that there is no UPSR protection being offered.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: *Disable*

Support for no form

None

User guidelines

By default, this mode is disabled.

You must explicitly enable this mode on a VLNC64 pack when it is protected by a UPSR connection. This is to avoid the Pseudowires coming up on both VLNC64s (Primary and Backup VLNC64s) simultaneously.

When the Pseudowire is administratively shut down it cannot be operationally brought up, regardless of the protectionmode status.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# protectionmode enable
```

inssrc

Syntax

```
inssrc {ssrc_value}
```

Description

This command is not supported on VLNC40, VLNC60 and VLNC64.

outssrc

Syntax

```
outssrc {ssrc_value}
```

Description

This command is not supported on VLNC40, VLNC60 and VLNC64.

show pwe

Syntax

show pwe <name>

Description

This command displays information regarding the Pseudowire.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - Specifies the name of the Pseudowire.

Support for no form

None

User guidelines

None

Output

The output is as follows -

PWE Type - Type of PWE - {T1-SAToP or E1-SAToP}.

PWE PSN Type - Type of PSN Tunnel carrying the PWE - {MPLS}.

Signaling - Signaling method of the PWE - {Static}.

EXP - Configured EXP value of the PWE.

TTL - Configured TTL value of the PWE.

Inlabel - Configured Inlabel or None.

Outlabel - Configured Outlabel or None.

RTP Header Status - RTP header is always enabled, beginning in R4.1.

RTP Payload Type - RTP header's Payload type, beginning in R4.1.

InSSRC - RTP header's InSSRC value - 2 * Inlabel, beginning in R4.1.

OutSSRC - RTP header's OutSSRC - 2 * Outlabel, beginning in R4.1.

Configured PSN Tunnels - Configured outbound and inbound PSN Tunnel pairs.

Active PSN Tunnels - Active outbound and inbound PSN Tunnel pairs. When protection is configured this maybe different from Configured PSN Tunnels.

Switchover count - The number of times the PWE has switched over between active and backup Tunnel pairs.

Payload Frame Count - Configured Payload Frame Count value.

Jitter Buffer Depth - Configured Jitter Buffer value.

Initial Delay - Configured Initial Delay value.

Packet Filler - Configured Packet Filler pattern value.

Control Word - Control word value of SAToP header.

Attached Interface - Configured T1/E1 interface to which it is attached to.

VLAN Tag - Configured VLAN id and P-bit information.

Creation Time - Creation time of the PWE.

Up Time - Time elapsed since the PWE became operationally up.

Last uptime - Last time at which the pseudowire became operationally up.

Admin status - Configured Admin status - {up | down}.

Operational status - Current operational Status {up | down} - Applicable only in R4.0.

Outbound Operational status - Current outbound operational status - {up | down}, beginning in R4.1.

Outbound Failure code - Diagnostic code to identify cause of outbound failure (0x0 if outbound operational status is up).

Inbound Operational Status - Current inbound operational status - {up | down}, beginning in R4.1.

Inbound Failure code - Diagnostic code to identify cause of inbound failure (0x0 if inbound operational status is up).

Bi-Directional Operational status - Effective operational status considering both outbound and inbound operational status - {up | down}.

Bi-Directional Failure Code - Diagnostic code to identify cause of bi-directional failure (0x0 if bi-directional operational status is up).

Trap Status - Enabled or Disabled.

Alarm - Outstanding alarm on the PWE. (stray packets, malformed packets, buffer underrun, buffer overrun, R-bit, L-bit, Loss of Packets).

Example

Output of Release 4.0:

```
(ALU 1850TSS-5) # show pwe pwe1FromCellSite1toHub
Pseudowire pwe1FromCellSite1toHub information
Signaling - Static
EXP      - 7
Pseudowire Type - satop
Inlabel  - 10
Outlabel - 20
EXP      - 7
TTL      - 255
Traps    - reporting off
Last uptime - 10:10:20 AM Jan 31, 2007
Admin status - up, Operational status - up
Configured Tunnel - forward: Tunnel1, reverse: Tunnel2
Current Tunnel Path - forward: Tunnel3, reverse: Tunnel4
Interface - a-1-1
Alarm    - set threshold - 3000, clear threshold - 10000, reporting on
Payload Frame Count - 10
Jitter Buffer Depth - 30
VLAN - 1, P-bit mapping -
Output in Release 4.1
(ALU 1850 TSS-5) #show pwe pwe2
PW Type..... E1-SAToP
PW PSN Type..... MPLS
PW Signaling Type..... STATIC
PW EXP..... 6
PW TTL..... 2
PW Inlabel..... 21
PW Outlabel..... 22
PW RTP Hdr Status..... Enabled
PW RTP Payload Type..... 101
PW Inssrc..... 42
PW Outssrc..... 44
PW SSRC Mode..... Enabled
PW Configured Tunnel Pairs..... Outbound Tunnel psn-
pLoop-out2, Inbound Tunnel psn-pLoop-in2
PW Active Tunnel Pairs..... Outbound Tunnel psn-
pLoop-out2,Inbound Tunnel psn-pLoop-in2
PW Switchover Count..... 1
PW Payload Frame Count..... 8
PW Jitter Buffer Depth..... 5
PW Initial Delay..... 16
PW Packet Filler Pattern..... 0xffffffff
PW Control Word..... 0x0
PW Attach Interface..... m1-1-1-1-2
PW VLAN (P-Bit)..... Untagged (N/A)
PW Creation Time..... JAN 01 00:00:29
1970^M
PW UP Time..... 0 day 0 hr 56 min 17
sec
PW Last UP Time..... MAR 01 00:00:36 2008
PW Admin Status..... UP
PW Outbound Operational Status..... UP
PW Outbound Failure Code..... 0x0
PW Inbound Operational Status..... UP
PW Inbound Failure Code..... 0x0
PW Bi-directional Operational Status..... UP
PW Bi-directional Failure Code..... 0x0
PW Tunnel Role..... Primary
PW Trap Status..... Enabled
PW Alarm Status..... R-bit
```

show pwe brief

Syntax

show pwe brief

Description

This command displays brief information regarding all Pseudowires.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Displays output as follows, for each Pseudowire.

Pseudowire <pseudowire-name> information

Total Number of PWEs - Total configured PWEs on the system.

Global Protection Mode - Whether protectionmode is enabled, beginning in Release 4.1.

Pseudowire name - Name of the PWE.

All the fields from PWE Type through PWE Admin Status as per [“show pwe” \(p. 6-60\)](#)

Example

```
(ALU 1850 TSS-5) #show pwe brief
```

```
Total Number of PWs..... 2
PW Global Protection Mode..... Disabled

Pseudowire pwe1
-----

PW Type..... E1-SAToP
PW PSN Type..... MPLS
PW Signaling Type..... STATIC
PW EXP..... 6
PW TTL..... 0
PW Inlabel..... 20
PW Outlabel..... 21
PW RTP Hdr Status..... Enabled
PW RTP Payload Type..... 101
PW Inssrc..... 40
PW Outssrc..... 42
PW SSRC Mode..... Enabled
PW Configured Tunnel Pairs..... Outbound Tunnel psn-
pLoop-out1,Inbound Tunnel psn-pLoop-in1
PW Active Tunnel Pairs..... Outbound Tunnel psn-
pLoop-out1,Inbound Tunnel psn-pLoop-in1
PW Payload Frame Count..... 8
PW Jitter Buffer Depth..... 5
PW Initial Delay..... 16
PW Packet Filler Pattern..... 0xffffffff
PW Attach Interface..... m1-1-1-1-1
PW VLAN (P-Bit)..... Untagged (N/A)
PW Creation Time..... FEB 1 00:00:29 2008
PW Admin Status..... UP
--More-- or (q)uit

Pseudowire pwe2
-----

PW Type..... E1-SAToP
PW PSN Type..... MPLS
PW Signaling Type..... STATIC
PW EXP..... 6
PW TTL..... 0
PW Inlabel..... 21
PW Outlabel..... 22
PW RTP Hdr Status..... Enabled
PW RTP Payload Type..... 101
PW Inssrc..... 42
PW Outssrc..... 44
PW SSRC Mode..... Enabled
PW Configured Tunnel Pairs..... Outbound Tunnel psn-
pLoop-out2, Inbound Tunnel psn-pLoop-in2^M
PW Active Tunnel Pairs..... Outbound Tunnel psn-
pLoop-out2, Inbound Tunnel psn-pLoop-in2
PW Payload Frame Count..... 8
PW Jitter Buffer Depth..... 5
PW Initial Delay..... 16
PW Packet Filler Pattern..... 0xffffffff
PW Attach Interface..... m1-1-1-1-2
PW VLAN (P-Bit)..... Untagged (N/A)
PW Creation Time..... FEB 10 00:00:29 2008
PW Admin Status..... UP
```

show pwe all

Syntax

```
show pwe {up | down | all}
```

Description

This command displays information on all PWEs configured on the system. If you specify Up, it displays information only for PWEs that are operationally up. If you specify Down, it displays information only for PWEs that are operationally down.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax.

Support for no form

None

Output

PWE Name - Name of the PWE.

PWE Index - An index value for PWE which uniquely identifies it.

PWE Interface Index - SNMP IfIndex of the Pseudowire.

Operational Status - Up or Down.

In Fail Code - Diagnostic code to identify cause of failure (0 if operational status is up, N/A if you specify Up).

Out Fail Code - Diagnostic code to identify cause of failure (0 if operational status is up, N/A if you specify Up).

Bidirectional Fail Code - Diagnostic code to identify cause of failure (0 if operational status is up).

Displays the following additional information if you specify *up*.

Up Time - Time elapsed since the PWE became operationally up.

Last Up Time - Actual time when the PWE became operationally up.

Displays the following additional information if you specify *down*.

Last Change Time - Actual time when the PWE became operationally down.

Example

```
(ALU 1850TSS-5) # show pwe all
PW          PW      Intf  Oper.   In.Fail   Out.Fail   Bi.Fail
Name        Index  Index Status   Code      Code      Code
-----
pwe1         1      422    UP      0x0       0x0       0x0
pwe2         2      423    UP      0x0       0x0       x0
pwe28        28     449   DOWN    0x40      0x40      0x300
pwe29        29     450   DOWN    0x40      0x40      0x300
```

show pwe (for snapshot)

Syntax

show pwe <name> pmon snapshot

Description

This command provides a snapshot count of the performance monitoring measurements. This measurement provides the cumulative value of performance parameters since the Pseudowire was last initialized. *Note: there are no 15-minute interval, day interval measurements for Pseudowires.*

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

name - Specifies the name of the Pseudowire

Support for no form

None

User guidelines

None

Output

The following parameters are displayed. All values range from 0 - 4294967295.

Transmitted CESoETH Frames - Number of transmitted CES over Ethernet frames.

Received CESoETH Frames - Number of received CES over Ethernet frames.

Errored Seconds, ESs - Number of Error Seconds encountered. Any second with any malformed packet, sequence error, LOPS and similar are considered errored seconds.

Severely Errored Seconds, SESS - Number of Severely Errored Seconds encountered.

Unavailable Seconds, UASs - Number of Unavailable Seconds encountered. Any consecutive ten seconds of SES are counted as one UAS.

Missing Packets - Number of missing packets (as detected via control word sequence number gaps).

Packets Re-Order - Number of packets detected out of sequence (via control word sequence number), but successfully re-ordered.

Jitter Buffer Underruns - Number of times a packet needed to be played out and the jitter buffer was empty.

MisOrder Dropped - Number of packets detected out of order (via control word sequence numbers), and could not be re-ordered, or could not fit in the jitter buffer.

Malformed Packets - Number of packets detected with unexpected size, or bad headers' stack.

Time since counters last cleared - Time elapsed since the counters were last cleared.

Time since the Pseudowire configured for counters - Time elapsed since the counting started on the Pseudowires. For existing Pseudowires, this is approximately within 2 minutes when the system initialized. For newly created Pseudowires, this is the time elapsed since the Pseudowire was configured.

Example

```
(ALU 1850TSS-5) # show pwe pwelFromCellSite1toHub pmon snapshot

Number of Transmitted CESoETH Frames..... 3482716
Number of Received CESoETH Frames..... 3470556
ES..... 0
SES..... 0
UAS..... 0
FC..... 0
sequenceErrPkts..... 0
reorderedPkts..... 0
missingPkts..... 14055
bufferUnderrunPkts..... 14055
malformedPkts..... 0
  Time Since Counters Last Cleared..... 0 day 0 hr 13 min 5
  sec
  Time Since Interface Configured for Counter.. 0 day 0 hr 58 min 5
  sec
```

Protection

Overview

The VLNC60 and VLNC64 supports end to end protection of the Pseudowire using primary and backup tunnels.

The PSN Tunnel state is determined using the BFD protocol enabled on the tunnels as described in the PSN Tunnel configuration section, [“Bi-directional Forwarding Detection \(BFD\)”](#) (p. 6-23).

The command `psn-tunnel-protect` provisioning of 2 tunnels in an active/standby relationship. The Pseudowire is bound to one of the PSN Tunnels in the Pseudowire config mode. If the BFD protocol indicates that one PSN Tunnel is down, the pack moves the Pseudowire traffic to the other tunnel in the active/standby pair. Both PSN Tunnels must have BFD enabled on them for the protection scheme to work efficiently. You also need to ensure that the ingress and egress tunnels for a Pseudowire are configured on the same physical interface. In order to protect against link failure between the VLNC60/64 and the connecting device, the backup PSN Tunnels must be configured on the second interface. This ensures that in the event of a failure of the link, the pack moves the Pseudowire to the backup PSN Tunnel on an interface that is working.

Note that the command must be run for both ingress and egress tunnels, in order to protect the Pseudowire.

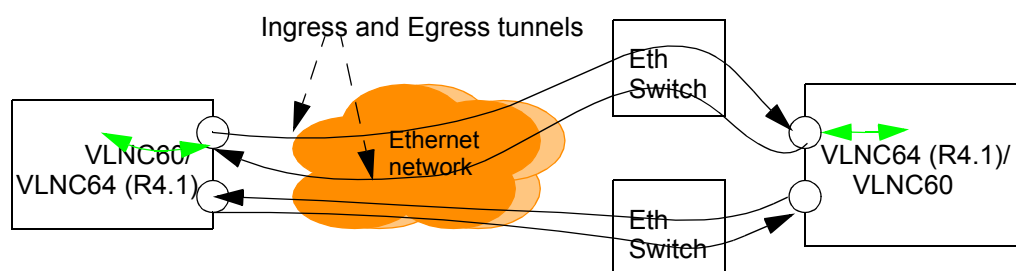


Figure 1 End-to-End Protected Tunnel Configuration

psn-tunnel-protect

Syntax

psn-tunnel-protect < tunnel-name-1 > < tunnel-name-2 >

Description

This command specifies the association between 2 PSN Tunnels for protecting each other. The association is one-to-one, i.e. each tunnel can protect only one other tunnel and vice versa. Both PSN Tunnels can be active simultaneously and carry live traffic.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

tunnel-name-1 - This specifies the tunnel that is protected by *tunnel-name-2*.

Default: *None*

Range: 1-32 alphanumeric character string

tunnel-name-2 - This specifies the tunnel that is protected by *tunnel-name-1*.

Default: *None*

Range: 1-32 (alphanumeric character string)

Support for no form

no psn-tunnel-protect < tunnel-name-1 > < tunnel-name-2 > removes the protection association between the 2 tunnels.

Developer notes

Range checking

The PSN Tunnels must already be configured on the pack

If one of the PSN Tunnels already has an association with another tunnel, the command will fail. The no form of this command must be used to remove the association first and then create this new association

BFD needs to be enabled on both PSN Tunnels

tunnel-1 and *tunnel-2* must be in the same direction: *inbound* or *outbound*

User guidelines

Create the PSN Tunnels first before creating this association.

Remove any previous protection association for a PSN Tunnel using no form of this command.

BFD must be enabled on both PSN Tunnels.

Ensure that the two Tunnels are on 2 different interfaces.

The command should be run twice, for Tunnels in the inbound and outbound directions, in order to have bidirectional protection.

tunnel-1 and **tunnel-2** must be in the same direction - *inbound* or *outbound*.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# tunnel-protect psnTunnelFromCellSite1ToHub1  
psnTunnelFromCellSite1toHub2
```

Fault management commands

Overview

The commands in this section configure the alarms and traps.

show alarm-pwe configuration

Syntax

show alarm-pwe configuration

Description

This command displays the configured status of alarms on Pseudowires. All Pseudowires have common alarm configuration.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Alarm configuration and reporting status are displayed as follows for Pseudowires:

stray packet delay - <value> sec, threshold - <count>

malformed packet delay - <value> sec, threshold - <count>

buffer under-run delay - <value> sec, threshold - <count>

buffer over-run delay - <value> sec, threshold - <count>

Beginning in Release 4.1, the command displays output as shown below:

Malformed-Packet Soak Time - Soak time for Malformed-Packet alarm in sec.

Malformed-Packet Clear Time - Clear time for Malformed-Packet alarm in sec.

Malformed-Packet Threshold - Threshold for Malformed-Packet alarm.

Stray-Packet Soak Time - Soak time for Stray-Packet alarm in sec.

Stray-Packet Clear Time - Clear time for Stray-Packet alarm in sec.

Stray-Packet Threshold - Threshold for Stray-Packet alarm.

Buffer-Overflow Soak Time - Soak time for Buffer-Overflow alarm in sec.

Buffer-Overflow Clear Time - Clear time for Buffer-Overflow alarm in sec.

Buffer-Overflow Threshold - Threshold for Buffer-Overflow alarm.

Buffer-Underflow Soak Time - Soak time for Buffer-Underflow alarm in sec.

Buffer-Underflow Clear Time - Clear time for Buffer-Underflow alarm in sec.

Buffer-Underflow Threshold - Threshold for Buffer-Underflow alarm.

Example

```
(ALU 1850TSS-5) # show alarm-pwe configuration

ALARM MALFORMED-PACKET SOAK TIME..... 2 sec.
ALARM MALFORMED-PACKET CLEAR TIME..... 2 sec.
ALARM MALFORMED-PACKET THRESHOLD..... 300
ALARM STRAY-PACKET SOAK TIME..... 2 sec.
ALARM STRAY-PACKET CLEAR TIME..... 2 sec.
ALARM STRAY-PACKET THRESHOLD..... 300^M
ALARM BUFFER_OVERRUN SOAK TIME..... 2 sec.
ALARM BUFFER-OVERRUN CLEAR TIME..... 2 sec.
ALARM BUFFER-OVERRUN THRESHOLD..... 300
ALARM BUFFER-UNDERRUN SOAK TIME..... 2 sec.
ALARM BUFFER-UNDERRUN CLEAR TIME..... 2 sec.
ALARM BUFFER-UNDERRUN THRESHOLD..... 300
```

alarm-pwe

Syntax

alarm-pwe {**soak** | **clear** | **threshold**} <**alarm-type**> <**alarm-parameter-value**>

Description

This command specifies the alarm soak/clear time interval (in seconds) or threshold (in count) value for various Pseudowire alarms.

soak refers to the time the pack will wait from the onset of a defect before declaring it to be a fault condition. The defect is detected based on the incoming signal. SNMP Traps are sent when these alarms are set after the soak time.

clear refers to the time the pack will wait before clearing a fault condition on the interface.

threshold refers to the consecutive number of packets in the Pseudowire which must have this condition in order to declare an alarm.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

alarm-type - Specifies the type of the pseudowire alarm

Default: *None*

Range: {stray-packet | malformed-packet | buffer-under-run | buffer-over-run | all}

alarm-parameter-value -

If you specify **soak** or **clear**, the alarm-parameter-value specifies the time to wait (in sec) before declaring/clearing the alarm.

Default: 2

Range: {0-30}, in steps of 1 sec

If you specify **threshold**, the alarm-parameter-value specifies the number packets in the Pseudowire which must have this condition in order to declare an alarm.

Default: 300

Range: 1-300

Support for no form

no alarm pwe <alarm-type> restores the default values for soak time, clear time and threshold.

User guidelines

None

Example

```
(ALU 1850TSS-5) (Config)# alarm-pwe soak malformed-packet 3
```


7 PDH/TDM configuration and maintenance commands

Overview

This section contains various commands related to PDH/TDM configuration and maintenance commands.

Contents

This chapter covers these topics.

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Interface mode commands

Overview

Beginning in Release 4.1, the VLNC60/VLNC64 supports the following operational modes:

t1: In **t1** mode, the pack supports T1 interfaces for circuit emulation, MLPPP, and for external BITS timing. The VLNC64 in **t1** mode supports SONET OC-3 lines, and STS-1 and VT1.5 paths.

e1: In **e1** mode, the pack supports E1 interfaces for circuit emulation, MLPPP, and for external BITS timing. The VLNC64 in **e1** mode supports SDH STM1 lines, and VC4 and VC12 paths.

Purpose

These commands allow you to select and examine the mode assignment of an interface.

interface-mode

Syntax

```
interface-mode {t1 | e1}
```

Description

This command configures the pack's T1/E1 mode, and SONET/SDH mode on the VLNC64.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: **t1**

Support for no form

None

User guidelines

PDH interfaces may not be associated with any Pseudowire.

All parameters associated with the T1 or E1 lines, and the optical lines and paths (on the VLNC64), are set to their default values.

When set to **t1** on the VLNC64, the pack's optical line, and the paths within the line, operate in SONET mode. The BITS interface is a T1 interface.

When set to **e1** on the VLNC64, the pack's optical line, and the paths within the line, operate in SDH mode. The BITS interface is an E1 interface.

When you change this mode, the pack resets.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface-mode e1
```

show interface-mode

Syntax

show interface-mode

Description

This command displays the pack's T1/E1 mode, and SONET/SDH mode on the VLNC64.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

The command displays output as follows:

interface-mode - <value>

Example

```
(ALU 1850TSS-5) (Config)# show interface-mode
Interface Mode..... T1
```

Layer 1 configuration commands: T1 interfaces

Overview

T1 interface commands

All the commands in this section are valid only in **t1** mode.

This section describes the configuration of T1 interfaces on the VLNC60 circuit pack and DS1 ports on the VLNC64 pack (beginning in Release 4.1).

The VLNC60 circuit pack supports up to 8 T1 interfaces. The VLNC64 supports up to 84 logical T1s. These are the embedded DS1 signals in the VT1.5s in the OC3 line.

VLNC60/VLNC64 packs also support a T1 interface in **t1** mode for connecting an external timing source. This is a Building Integrated Timing Supply (BITS) input. It can be used as a timing source for the entire pack.

interface (for T1)

Syntax

```
interface <interface-number>
```

Description

This command changes the context to *Interface T1 Config Mode (VLNC60)*, or *Interface VTDS1 Config Mode (VLNC64)*, or *Interface BITS LIU Config Mode*, and all subsequent configuration in this mode will be applicable to the T1 interface identified by **<interface-number>**.

Mode

Global Config Mode

Release and pack information VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-number - specifies the specific T1 interface on the VLNC60/64

Default: *None*

Range: **T1-Port**, **VTDS1-Port**, or **BITS-LIU**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Change user prompt to (ALU 1850TSS-5) (Interface "t1-interface number")# or (ALU 1850TSS-5) (Interface "vtdsl-interface number") or (ALU 1850TSS-5) (Interface "BITS interface number")

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)#

(ALU 1850TSS-5) (Config)# interface m1-1-1-1-1
(ALU 1850TSS-5) (Interface m1-1-1-1-1)#

(ALU 1850TSS-5) (Config)# interface ref-1
(ALU 1850TSS-5) (Interface ref-1)#
```

description (for T1)

Syntax

description <description>

Description

This command creates an alphanumeric description of the interface.

Mode

Interface T1 Config Mode

Interface VTDS1 Config Mode beginning in Release 4.1

Interface BITS LIU Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

description - Empty String

Default: *None*

Range: 1 to 32 alphanumeric character string

Support for no form

no description restores the description value to its default.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# description CellSite1T1Intf1
```

signalformat (for T1)

Syntax

signalformat {**sf** | **esf** | **uf**}

Description

This command sets the signal format of the T1 interface. The supported formats are: Super Frame (SF), Extended Super Frame (ESF), and Unframed, (UF).

Mode

Interface T1 Config Mode

Interface BITS LIU Config Mode

Interface VTDSI Config Mode beginning in Release 4.1

Interface BITS LIU Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default - **esf** for T1-port, **sf** for BITS-LIU

Range - {**sf** | **esf** | **uf**}

uf is not applicable for **BITS-LIU**

Support for no form

no signalformat restores the signal format of the interface to its default.

User guidelines

If default value is acceptable, this command need not be specified.

uf is not applicable for **BITS-LIU**.

uf is not allowed when encapsulation is ppp.

Beginning in Release 4.1, if the format is changed from **esf** to a different value, and an inband-requested loopback is active, the inband-requested loopback is released (see **inbandlpbkdsx**).

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# signalformat sf
```


linecode

Syntax

linecode {**b8zs** | **ami**}

Description

This command sets the linecode value on the T1 interface. These are Alternate Mark Inversion (AMI), and Bipolar 8 Zero Substitution (B8ZS).

Mode

Interface T1 Config Mode

Interface BITS LIU Config Mode (not applicable in E1 interface mode)

Release and pack information

VLNC60, starting Release 4.0

Parameters

Enumeration as per Syntax

Default - **b8zs** for T1-port and **ami** for **BITS-LIU**.

Support for no form

no linecode resets the linecode value on the interface to its default.

User guidelines

On T1-port, do not use AMI when the encapsulation on the interface is PPP.

If the default value is acceptable, you need not specify the command.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# linecode ami
```

linebuildout

Syntax

linebuildout {short} {{0-110 | 110-220 | 220-330 | 330-440 | 440-550 | 550-660}}

Description

This command specifies the length of the cable in feet that connects to the T1 interface on the other end of the VLNC60 T1 interface. Note that this is not applicable to the Logical T1s (DS1s) on the OC3 interface of VLNC64.

Mode

Interface T1 Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

Enumeration as per Syntax.

`short` refers to Short Haul Transmission

For short haul, the value is specified in feet as {0-110 | 110-220 | 220-330 | 330-440 | 440-550 | 550-660}

Default: short, 0-110

Support for no form

no linebuildout restores the default value for linebuildout range.

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# linebuildout short 0-110
```

encapsulation (for T1)

Syntax

encapsulation {ppp | satop}

Description

This command specifies the type of service associated with the T1 interface.

Mode

Interface T1 Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default - *None*

Support for no form

no encapsulation {ppp | satop} removes the encapsulation from the interface.

User guidelines

ppp is applicable only on VLNC60. Only HDLC framing is supported for PPP.

ppp is not allowed when the interface signalformat is **uf**.

In order to change the encapsulation on an interface, you must remove the encapsulation using the no form of the command, then provide the new encapsulation value.

You cannot use the no form, when a Multilink Interface (MLG) or a Pseudowire is associated with this interface.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1  
(ALU 1850TSS-5) (Interface a-1-1)# encapsulation satop
```

show interface configuration (for T1)

Syntax

show interface configuration <interface-number>

Description

This command displays the information associated with an interface.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-number -

Default: *None*

Range: **T1-Port**, **VTDS1-Port**, or **BITS-LIU**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

Some values are not applicable to some types of interfaces (as specified below), and are not displayed for them.

Output

Interface - Interface number

Description - The provisioned description of the interface

Signalformat - T1 signal format of the interface

Linecode - Line code value of the interface

Linebuildout - Linebuildout value of the interface (*not applicable for VTDS1-Port or BITS-LIU*)

Encapsulation - Type of service on the interface (*not applicable for BITS-LIU*)

Timing Source - Timing source of the interface (*not applicable for BITS-LIU*)

Differential Timing Domain - Differential timing domain used for RTP timestamp generation/recovery (*applicable only for VTDS1-Ports*)

Inband Loopbacks from DSX - Whether responding to inband loopback requests from the DSX is enabled or disabled (*applicable only for T1-Ports*)

Example

```
(ALU 1850TSS-5) # show interface configuration a-1-1

INTERFACE NUMBER..... a-1-1
DESCRIPTION..... T1-Port
SIGNAL FORMAT..... esf
LINE CODE..... b8zs
LINE BUILD OUT..... 0-110
TIMING SOURCE..... differential
ENCAPSULATION..... satop
INBAND LOOPBACK DSX..... disable
```

Layer 1 configuration commands: E1 interfaces

E1 interface commands

All the commands in this section are valid only in **e1** mode, beginning in Release 4.1.

This section describes the configuration of E1 interfaces on the VLNC60/64 circuit packs.

The VLNC60 circuit pack supports up to 8 E1 interfaces. The VLNC64 supports up to 63 logical E1s. These are the embedded E1 signals in the VC12s in the STM1 line.

The VLNC60/VLNC64 packs also support an E1 interface in **e1** mode for connecting an external timing source. This is a Building Integrated Timing Supply (BITS) input and can be used as a timing source for the entire pack.

interface (for E1)

Syntax

```
interface <interface-number>
```

Description

This command changes the context to *Interface E1 Config Mode (VLNC60)*, or *Interface VCE1 Config Mode (VLNC64)*, or *Interface BITS LIU Config Mode*, and all subsequent configuration in this mode will be applicable to the E1 interface identified by <interface-number>.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

interface-number - specifies the specific E1 interface on the VLNC60/64

Default: *None*

Range: **E1-Port**, **VCE1-Port**, or **BITS-LIU**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Change user prompt to (ALU 1850TSS-5) (Interface "e1-if number") or (ALU 1850TSS-5) (Interface "vce1-interface number") or (ALU 1850TSS-5) (Interface "BITS interface number")

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)#

(ALU 1850TSS-5) (Config)# interface m1-1-1-1-1
(ALU 1850TSS-5) (Interface m1-1-1-1-1)#

(ALU 1850TSS-5) (Config)# interface ref-1
(ALU 1850TSS-5) (Interface ref-1)#
```


description (for E1)

Syntax

description <description>

Description

This command creates an alphanumeric description of the interface.

Mode

Interface E1 Config Mode

Interface VCE1 Config Mode

Interface BITS LIU Config Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

description -

Default: *None*

Range: 1 to 32 alphanumeric character string

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# description CellSite1E1Intf1
```

signalformat (for E1)

Syntax

signalformat {fas | crc4}

Description

This command is used to set the signal format of the E1 interface. The supported formats are: Frame Alignment Signal (FAS), and Cyclic Redundancy Check-4 multiframe alignment (CRC4).

Mode

Interface E1 Config Mode

Interface VCE1 Config Mode

Interface BITS LIU Config Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: **crc4**

Range: {**fas** | **crc4**}

Support for no form

None

User guidelines

By default the interface signalformat is CRC4.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# signalformat fas
```

encapsulation (for E1)

Syntax

encapsulation {ppp | satop}

Description

This command specifies the type of service associated with the E1 interface.

Mode

Interface E1 Config Mode

Interface VCE1 Config Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: *None*

Support for no form

no encapsulation {ppp | satop} removes the encapsulation from the interface

User guidelines

In order to change the encapsulation on an interface, you must remove the encapsulation using the no form of the command, then provide the new encapsulation value.

ppp is applicable only on VLNC60. Only HDLC framing is supported for PPP.

You cannot use the no form, when a Multilink Interface (MLG) or a Pseudowire is associated with this interface.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1  
(ALU 1850TSS-5) (Interface a-1-1)# encapsulation satop
```

show interface configuration (for E1)

Syntax

show interface configuration <interface-number>

Description

This command is used to display the information associated with an interface.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.1

VLNC64, starting Release 4.1

Parameters

interface-number -

Default: *None*

Range: **E1-Port**, **VCE1-Port**, or **BITS-LIU**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

Some values are not applicable to some types of interfaces (as specified below), and are not displayed for them.

Output

Interface - Interface number

Description - The provisioned description of the interface

Signalformat - E1 signal format of the interface

Encapsulation - Type of service on the interface (*not applicable for BITS-LIU*)

Timing Source - Timing source of the interface (*not applicable for BITS-LIU*)

Differential Timing Domain - Differential timing domain used for RTP timestamp generation/recovery (*applicable only for VCE1-Ports*)

Example

```
(ALU 1850TSS-5) # show interface configuration a-1-1
```

OC3/STM1 interface commands

Overview

This section describes the configuration of the channelized OC3/STM1 interface on the VLNC64 circuit pack. The VLNC64 circuit pack supports a single OC3/STM1 channelized interface in Release 4.1.

When in **t1** mode, the command applies to the OC3 interface. When in **e1** mode, the command applies to the STM1 interface.

interface (for OC3/STM1)

Syntax

interface <interface-number>

Description

This command changes the context to *Interface OC3 Config Mode* or *Interface STM1 Config Mode* and all subsequent configuration in this mode will be applicable to the physical OC3/STM1 interface.

Mode

Global Config Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interface-number - specifies the specific optical interface

Default: *None*

Range: **OC3-Port** or **STM1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Change user prompt to (ALU 1850TSS-5) (Interface main-1-1)# or (ALU 1850TSS-5) (Interface "STM1-interface number")

Example

```
(ALU 1850TSS-5) (Config)# interface main-1-1
(ALU 1850TSS-5) (Interface main-1-1)#
```


description (for OC3/STM1)

Syntax

description <description>

Description

This command creates an alphanumeric description for the interface.

Mode

Interface OC3 Config Mode

Interface STM1 Config Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

description -

Default: Empty string (null)

Range: 1 to 32 alpha numeric character string

Support for no form

None

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface main-1-1
(ALU 1850TSS-5) (Interface main-1-1)# description HubSite1VLNC64Main
```

s1-ssm

Syntax

s1-ssm {enable | disable}

Description

This command enables or disables S1 Sync Status Messaging (SSM) on the OC3/STM1 interface.

Mode

Interface OC3 Config Mode

Interface STM1 Config Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: **enable**

Support for no form

None

User guidelines

When sync messaging is disabled, the incoming message is ignored, and the outgoing message is set to Do Not Use (DUS).

When sync messaging is enabled and the shelf is timing from the optical interface, if the incoming message drops below ST3 (SONET) or SEC (SDH), the shelf enters holdover. When free-running or in holdover, the outgoing message is ST3/SEC. When timing from the BITS input, the outgoing message is STU/SSU_A.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface main-1-1
(ALU 1850TSS-5) (Interface main-1-1)# s1-ssm disable
```

show interface configuration (for OC3/STM1)

Syntax

show interface configuration <interface-number>

Description

This command displays the information associated with an OC3/STM1 interface.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interface-number - specifies the specific optical interface

Default: *None*

Range: **OC3-Port** or **STM1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Interface Number - Interface number of the port

Description - User-defined description of the port

Timing Source - Timing source of the interface

S1 SSM - Whether S1 byte sync messaging is enabled or disabled

Example

```
(ALU 1850TSS-5) # show interface configuration main-1-1
```

interface (for STS-1/VC4)

Syntax

interface <interface-number>

Description

This command changes the context to *Interface STS1 Config Mode* or *Interface VC4 Config Mode* and all subsequent configuration in this mode will be applicable to the specific HO path

Mode

Global Config Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interface-number - specifies the specific HO Path of the optical interface

Default: *None*

Range: **STS1-path** or **VC4-path**

See [Appendix A, "Addressable entities"](#)

Support for no form

None

User guidelines

None

Output

Change user prompt to (ALU 1850TSS-5) (Interface "STS1-interface number") or (ALU 1850TSS-5) (Interface "VC4-interface number")

Example

```
(ALU 1850TSS-5) (Config)# interface m1-1-1
(ALU 1850TSS-5) (Interface m1-1-1) #
```

Loopback commands

Overview

This section describes the commands used to configure and display interface Loopback operations. Loopback capabilities on an interface are used for maintenance and diagnostics purposes.

inbandlpbkdsx

Syntax

inbandlpbkdsx

Description

This command enables responding to inband loopback requests received from the DSX. When enabled, the loopback CLI command is denied.

When enabled, the NE will set up a facility loopback when it sees a T1 signal coming from the DSX containing the signal pattern 11000 for at least 5 seconds, or if it sees an ESF-formatted signal with a BOC code of 0 001001 0 11111111 4 times contiguously. The NE releases the DSX-requested loopback when it sees a T1 signal coming from the DSX containing the signal pattern 11100 for at least 5 seconds, or if it sees an ESF-formatted signal with a BOC code of 0 010010 0 11111111 or 0 011100 0 11111111 four times contiguously.

Mode

Interface T1 Config Mode

Release and pack information

VLNC60, starting Release 4.1

Parameters

None

Support for no form

no inbandlpbkdsx disables responding to inband loopback requests.

User guidelines

By default, responding to inband loopback requests is disabled.

Enabling responding to inband loopback requests is denied if a CLI-initiated loopback is active.

Inband loopbacks are released if **signalformat** is changed from **esf** to another value.

Output

None

Example

```
(ALU 1850TSS-5) (Interface "t1-interface number")# inbandlpbkdsx
```

loopback

Syntax

loopback {facility | terminal | loopback-eth | loopback-opt}

Description

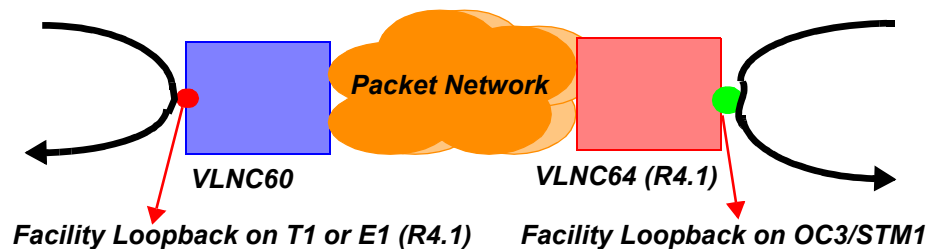
This command enables a loopback on the specified interface.

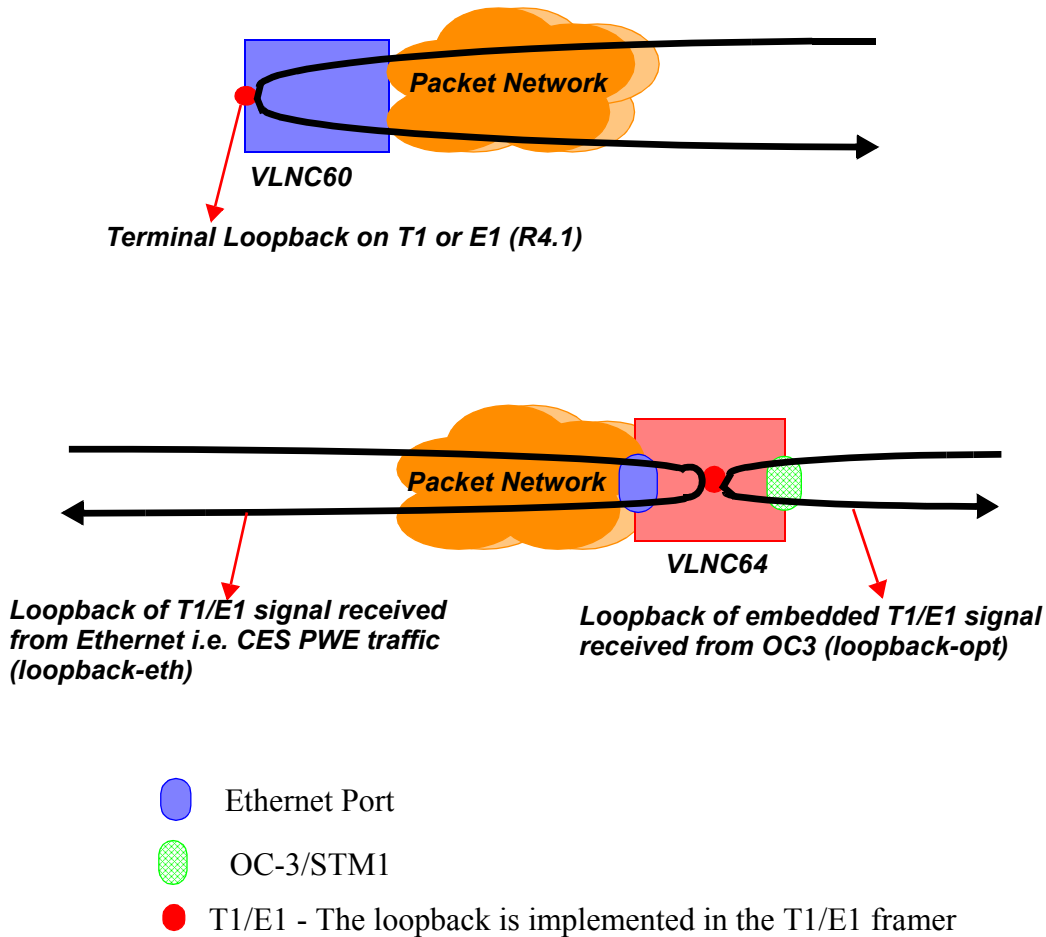
The **facility** parameter refers to facility loopback operations and is applicable on T1/E1 interfaces of the VLNC60 and the OC3/STM1 interface of the VLNC64.

The **terminal** parameter refers to terminal loopback operations and is applicable on T1/E1 interfaces of the VLNC60.

loopback-eth - refers to a loopback of the T1/E1 signal being received from the Ethernet interface on the VLNC64. This T1/E1 signal is received from the Packet network as CES Pseudowire traffic.

loopback-opt - refers to a loopback of the T1/E1 signal being received in the VT1.5/VC12 of the OC3/STM1 interface on the VLNC64.





Mode

Interface T1 Config Mode

Interface E1 Config Mode beginning in Release 4.1

Interface VTDS1 Config Mode beginning in Release 4.1

Interface VCE1 Config Mode beginning in Release 4.1

Interface OC3 Config Mode beginning in Release 4.1

Interface STM1 Config Mode beginning in Release 4.1

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: *None*

Support for no form

no loopback removes the corresponding loopback on the interface.

User guidelines

facility is supported on T1/E1 interfaces on VLNC60 (for both Circuit Emulation and MLPPP services), and the OC3/STM1 interface of VLNC64.

terminal is supported on a T1/E1 interface on VLNC60 when its encapsulation is Circuit Emulation ([“encapsulation \(for T1\)”](#) (p. 7-15) sets the encapsulation on the port).

loopback-eth, **loopback-opt** are supported on T1/E1s interfaces on VLNC64.

Creating a loopback on an interface disrupts user traffic on the interface.

Once enabled, an interface continues to loop back the traffic until explicitly removed.

For the **facility** loopback on T1/E1 interfaces on VLNC60, T1/E1 AIS is sent via the Pseudowire towards the other end of the packet network, subject to alarm masking behavior.

For the **facility** loopback on OC3/STM1 interfaces on VLNC64, path AIS is sent toward the packet network, which results in T1/E1 AIS sent via the Pseudowire towards the other end of the packet network (subject to alarm masking behavior).

For the **loopback-opt** on T1/E1 interfaces on VLNC64, T1/E1 AIS is sent via Pseudowire towards the other end of the packet network (subject to alarm masking behavior).

Beginning in Release 4.1, if responding to inband loopback requests is enabled for this interface (see **inbandlpbkdsx**), this command is denied.

Only one loopback may be active on an interface.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# loopback facility

(ALU 1850TSS-5) (Config)# interface main-1-1
(ALU 1850TSS-5) (Interface a-1-1)# loopback facility

(ALU 1850TSS-5) (Config)# interface m1-1-1-1-1
(ALU 1850TSS-5) (Interface a-1-1)# loopback loopback-eth
```

show loopback

Syntax

show loopback <interface-number>

Description

This command displays the loopback information on a specified interface.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-number -

Default: *None*

Range: **T1-Port**, **E1-Port**, **VTDS1-Port**, **VCE1-Port**, **OC3-Port**, or **STM1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Displays the loopback related information on an interface.

Interface - Interface number

Enabled loopbacks on the interface

`facility` - refers to facility loopback operation and is applicable on T1/E1 interfaces on VLNC60 and OC3/STM1 interfaces on VLNC64

`terminal` - refers to terminal loopback operation and is applicable on T1/E1 interfaces on VLNC60

`loopback-eth` - refers to loopback of the T1/E1 signal being received from the Ethernet interface on the VLNC64. This signal is received from the Packet network as CES Pseudowire traffic

`loopback-opt` - refers to loopback of embedded T1/E1 signal being received in the VT1.5/VC12 path of the optical interface on the VLNC64

Source (applicable for T1-Ports only, beginning in Release 4.1)

`command` - the loopback was initiated by a **loopback** command

`inband-dsx` - the loopback was initiated by an inband request received from the DSX

Example

```
(ALU 1850TSS-5) # show loopback a-1-1
(ALU 1850TSS-5) # show loopback main-1-1
(ALU 1850TSS-5) # show loopback m1-1-1-1-1
```

Performance monitoring

Overview

This section describes the commands used to display the performance monitoring information of various interfaces on the VLNC60/64 circuit pack

The consolidated form of the command is specified below:

```
show perfmon counters {ne | fe} {15min | day} <interval-value>  
<interface-number> [{vt | ds1} | {vc12 | e1} | {section | line} | {ms | rs}]
```

Of the command line parameters given above, the specific parameter options that are applicable to various interfaces are described in the following sections:

VLNC60 T1 interface parameters - [“Performance monitoring on VLNC60 T1 interfaces” \(p. 7-43\)](#)

VLNC60 E1 interface parameters - [“Performance monitoring on VLNC60 E1 interface” \(p. 7-50\)](#)

VLNC64 DS1 interface parameters - [“Performance monitoring on VLNC64 DS1 interface” \(p. 7-57\)](#)

VLNC64 E1 interface parameters - [“Performance monitoring on VLNC64 E1 interface” \(p. 7-64\)](#)

OC3 parameters - [“Performance monitoring on OC3 interface” \(p. 7-70\)](#)

STM1 parameters - [“Performance monitoring on STM1 interface” \(p. 7-77\)](#)

STS-1 parameters - [“Performance monitoring on STS1 path” \(p. 7-84\)](#)

VC4 parameters - [“Performance monitoring on VC4 path” \(p. 7-90\)](#)

VT parameters - [“Performance monitoring on VT path” \(p. 7-96\)](#)

VC12 parameters - [“Performance monitoring on VC12 path” \(p. 7-102\)](#)

The details of the parameters are given below:

ne - refers to near-end performance monitoring measurements

fe - refers to far-end performance monitoring measurements

15min - refers to 15-minute bins for the performance monitoring measurements

day - refers to 24 hour bins for the performance monitoring measurements

interval-value - specifies a binning interval of performance monitoring measurements

For the 15-minute period, the range of **interval-value** is 0-96.

- 0 refers to the current 15-minute interval being measured.
- Every 15 minutes, the measured values are moved to a historical record, called a bin. There are up to 96 bins of 15-minute measurement values. Bin 1 is the most-recent complete 15-minute record. Bin 96 is the oldest 15-minute record. This process of maintaining the measured values in historical records is known as Binning.

For day counters, the range of **interval-value** is 0-2.

- The day counters represent *cumulative* values for a 24 hour period, i.e. this is the sum of 24 15-minute measurement bins.
- 0 refers to the total measurement value for the 24 hours preceding the current 15-minute measurement period.
- 1 refers to the total count for performance parameters corresponding to *previous day*. This is the sum of measurements for the 24-hour period preceding the current 24-hour period.
- 2 refers to the total count for performance parameters *2 days ago*. This is the sum of measurements for the 24-hour period preceding the latest two 24-hour periods.

interface-number - specifies the port, path or optical line number

VT/VC12 or DS1/E1 refer to performance monitoring measurements at the VT/VC12 or DS1/E1 level on the VLNC64. Since VT/VC12 and DS1/E1 interfaces have the same interface name, this keyword is necessary to distinguish between the two

For T1/E1 on VLNC60, measurements are on the signal coming from the DSX.

Section or Line refer to performance monitoring measurements at ***Section or Line level hierarchy*** respectively on the OC3 interface of the VLNC64

RS or MS refer to performance monitoring measurements at the ***Regenerator Section or Multiplex Section level hierarchy*** respectively on the STM1 interface of the VLNC64

The starting time for performance monitoring measurement is approximately the time at which the pack initialized (within about 2 minutes of pack initialization).

Performance monitoring on VLNC60 T1 interfaces

Overview

The commands in this section configure the performance monitoring counters for T1 interfaces.

These commands apply only when the shelf is in **t1** mode.

show perfmon counters (for T1:current)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
```

Description

This command is used to display the current 15-minute performance monitoring values being measured on a specific T1 interface. These counters correspond to the *Dsx1CurrentEntry* in IETF RFC 2495.

ne requests near-end parameters.

fe requests far-end parameters.

fe is only applicable when the service on the T1 interface is PPP.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default: *None*

Range: 0

interface-number - specifies the applicable T1 interface

Default: *None*

Range: **T1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

Far-end parameters are supported only when *encapsulation* on the interface is PPP. Encapsulation is specified using command “[encapsulation \(for T1\)](#)” (p. 7-15).

The CSSs parameter is displayed only when encapsulation on the interface is PPP.

Only line-level parameters are supported when the *signalformat* of the interface is UF.

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

Valid Data - {Partial|Yes|No} - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring, due to loopback tests or setting encapsulation to none). In addition **fe** counters are set to No if there is alarm defect in near end.

Line Parameters:

- **LCVs**—Line Code Violations (LCVs). This is applicable only for **ne**.
- **LESs**—Line Errored Seconds (LES) - A Line Errored Second is a second in which one or more Line Code Violation error events were detected. This is applicable for **ne** and **fe**. **fe** is applicable only when encapsulation is PPP and when signalformat is ESF.

Path Parameters (applicable to ESF & SF format for **ne**; ESF for **fe**):

- **ESs**—Errored Seconds (ES) - For ESF links an Errored Second is a second with one or more Path Code Violation OR one or more Out of Frame defects OR one or more Controlled Slip events OR a detected AIS defect.
- **SEs**—Severely Errored Seconds (SES) - A Severely Errored Second for ESF signals is a second with 320 or more Path Code Violation Error Events OR one or more Out of Frame defects OR a detected AIS defect.
- **SEFSs**—Severely Errored Framing Second (SEFS) - A Severely Errored Framing Second is a second with one or more Out of Frame defects OR a detected AIS defect.
- **UASs**—Unavailable Seconds (UAS) - Unavailable Seconds (UAS) are calculated by counting the number of seconds that the interface is unavailable (at least 10 consecutive SEFS seconds).
- **CSSs** (applicable only when encapsulation on the interface is PPP)—Controlled Slip Seconds (CSS) - A Controlled Slip Second is a one-second interval containing one or more controlled slips. This is not incremented during an Unavailable Second.
- **PCVs**—Path Coding Violations (PCV).
- `Time since counters last cleared` - Time elapsed since the counters were last cleared.
- `Time since interface configured for counters` - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 a-1-1
```

show perfmon counters (for T1:interval)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
```

Description

This command is used to display the historic record of performance monitoring values on a specific T1 interface. There are a total of 96 bins. 1 is the most-recently completed 15-minute bin. The value 96 is derived based on collecting the performance monitoring parameters measured over 15 minute intervals for the previous 24 hours (24x4 intervals). These counters are based on *Dsx1IntervalEntry* in IETF RFC 2495.

ne requests near-end parameters.

fe requests far-end parameters.

fe is only applicable when the service on the T1 interface is PPP.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default: *None*

Range: 1-96, 1 is the most-recently completed 15-minute interval

interface-number - specifies the specific T1 interface on the VLNC60.

Default: *None*

Range: **T1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

Far-end parameters are supported only when *encapsulation* on the interface is PPP. Encapsulation is specified using command [“encapsulation \(for T1\)”](#) (p. 7-15).

The **CSSs** parameter is displayed only when encapsulation on the interface is PPP.

Only line-level parameters are supported when the *signalformat* of the interface is UF.

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for T1:current\)”](#) (p. 7-43).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 1 a-1-1
```

show perfmon counters (for T1:day)

Syntax

```
show perfmon counters {ne | fe} day <interval-value> <interface-number>
```

Description

This command is used to display the cumulative performance monitoring values on the T1 interface. The periods for which the values are displayed are:

- Total count for performance parameters for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to *previous day* - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters *2 days ago* - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne requests near-end parameters.

fe requests far-end parameters.

fe is only applicable when the service on the T1 interface is PPP.

These values correspond to *Dsx1TotalEntry* in RFC 2495. Measurements for *previous day* and *2 days ago* are implemented by Alcatel-Lucent and are not part of the RFC.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

interval-value - specifies the total period for which the performance monitoring parameters are displayed. **0** represents current cumulative measurements. **1** represents cumulative measurements for the past 24 hour period. **2** represents cumulative measurements from 2 days ago

Default: 0

Range: 0-2

interface-number - specifies the specific T1 interface on the VLNC60.

Default: *None*

Range: **T1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

Far-end parameters are supported only when *encapsulation* on the interface is PPP. Encapsulation is specified using command [“encapsulation \(for T1\)”](#) (p. 7-15).

The *CSSs* parameter is displayed only when encapsulation on the interface is PPP.

Only line-level parameters are supported when the *signalformat* of the interface is UF.

Output

For a list of parameters please refer to **Output Parameters** section of [“show perfmon counters \(for T1:current\)”](#) (p. 7-43).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne day 0 a-1-1
```

Performance monitoring on VLNC60 E1 interface

Overview

These commands apply only when the shelf is in **e1** mode, beginning in Release 4.1.

show perfmon counters (for E1:current)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
```

Description

This command is used to display the current 15-minute performance monitoring values being measured on a specific E1 interface. These counters correspond to the *Dsx1CurrentEntry* in IETF RFC 2495.

ne requests near-end parameters; **fe** requests far-end parameters. **fe** is only applicable when the service on the E1 interface is PPP.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.1

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default: *None*

Range: 0

interface-number - specifies the applicable E1 interface

Default: *None*

Range: **E1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

Valid Data - {Partial|Yes|No} - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring, due to loopback tests or setting encapsulation to none). In addition **fe** counters are set to No if there is alarm defect in near end.

Line Parameters: (supported only on **ne**)

- **LESS**—Line Errored Seconds (**les**) - A Line Errored Second is a second in which one or more BiPolar Violation or Loss of Signal error events were detected.
- **LSESS**—Line Severely Errored Seconds (**lses**) - A Line Severely Errored Second is a second in which 2048 or more BiPolar Violation or Loss of Signal error events were detected.

Path Parameters:

- **ESS**—Errored Seconds (**es**) - An Errored Second is a second with one or more LOF, AIS, or FAS/NFAS defects.
- **SESS**—Severely Errored Seconds (**ses**) - A Severely Errored Second is a second with 28 or more errored FAS/NFAS defects, or one or more LOF or AIS defects.
- **UASS**—Unavailable Seconds (**uas**) - Unavailable Seconds are calculated by counting the number of seconds that the interface is unavailable (at least 10 consecutive SES seconds).

- BBEs—Background Block Errors (**bbe**) (CRC4 format only) - BBE is incremented by the number of errored blocks when 1 to 27 errored blocks are detected in a second.
- Time since counters last cleared - Time elapsed since the counters were last cleared.
- Time since interface configured for counters - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 a-1-1
```


show perfmon counters (for E1:interval)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
```

Description

This command is used to display the historic record of performance monitoring values on a specific E1 interface. There are a total of 96 intervals. 1 is the most-recently completed 15-minute interval. The value 96 is derived based on collecting the performance monitoring parameters measured over 15-minute intervals for the previous 24 hours (24x4 intervals). These counters are based on Dsx1IntervalEntry in IETF RFC 2495.

ne requests near-end parameters; fe requests far-end parameters. fe is only applicable when the service on the E1 interface is PPP.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default: *None*

Range: 1-96, 1 is the most recently-completed 15-minute interval

interface-number - specifies the specific E1 interface on the VLNC60.

Default: *None*

Range: **E1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for E1:current\)”](#) (p. 7-50)

Example

```
(ALU 1850TSS-5) # show perfmon counters 15min 1 a-1-1
```

show perfmon counters (for E1:day)

Syntax

```
show perfmon counters {ne | fe} day <interval-value> <interface-number>
```

Description

This command is used to display the cumulative performance monitoring values on the E1 interface. The periods for which the values are displayed are:

- Total count for performance parameters for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to *previous day* - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters *2 days ago* - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne requests near-end parameters; **fe** requests far-end parameters. **fe** is only applicable when the service on the E1 interface is PPP.

These values correspond to *Dsx1TotalEntry* in RFC 2495. Measurements for *Previous day* and *2 days ago* are implemented by Alcatel-Lucent and are not part of the RFC.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.1

Parameters

interval-value - specifies the total period for which the performance monitoring parameters are displayed. 0 represents current cumulative measurements, 1 represents cumulative measurements for the past 24 hour period, 2 represents cumulative measurements from 2 days ago

Default: 0

Range: 0-2

interface-number - specifies the specific E1 interface on the VLNC60.

Default: None

Range: **E1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for E1:current\)”](#) (p. 7-50)

Example

```
(ALU 1850TSS-5) # show perfmon counters day 0 a-1-1
```

Performance monitoring on VLNC64 DS1 interface

Overview

These commands apply only when the shelf is in **t1** mode.

show perfmon counters (for VLNC64 DS1:current)

Syntax

```
show perfmon counters ne 15min <interval-value> <interface-number>
```

Description

This command is used to display the current performance monitoring values being measured on a specific DS1 port. These values correspond to *Dsx1CurrentEntry* specification in IETF RFC 2495.

ne refers to near-end performance monitoring parameters. Monitoring occurs on the signal coming from the SONET network.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default: *None*

Range: 0

interface-number - specifies the applicable DS1 port

Default: *None*

Range: **VTDS1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

Valid Data - {Partial|Yes|No} - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring or due to loopback tests or setting encapsulation to none).

Path Parameters (*applicable to ESF & SF format*):

- **ESs**—Errored Seconds (**es**) - For ESF links an Errored Second is a second with one or more Path Code Violation OR one or more Out of Frame defects OR one or more Controlled Slip events OR a detected AIS defect.
- **SEsS**—Severely Errored Seconds (**ses**) - A Severely Errored Second for ESF signals is a second with 320 or more Path Code Violation Error Events OR one or more Out of Frame defects OR a detected AIS defect.
- **SEFSs**—Severely Errored Framing Second (**sefs**) - A Severely Errored Framing Second is a second with one or more Out of Frame defects OR a detected AIS defect.
- **UASs**—Unavailable Seconds (UAS) - Unavailable Seconds (**uas**) are calculated by counting the number of seconds that the interface is unavailable (at least 10 consecutive SEFS seconds).
- **PCVs**—Path Coding Violations (**pcv**)
- Time since counters last cleared - Time elapsed since the counters were last cleared.

- Time since interface configured for counters - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 m1-1-1-1-1 DS1
```

show perfmon counters (for VLNC64 DS1:interval)

Syntax

```
show perfmon counters ne 15min <interval-value> <interface-number> ds1
```

Description

This command is used to display the historic record of 15-minute intervals of performance monitoring values on a specific DS1 interface. There are a total of 96 intervals. 1 is the most recently completed 15-minute interval. The value 96 is derived based on collecting the performance monitoring parameters measured over 15 minute intervals for the previous 24 hours (24x4 intervals). These values are based on *Dsx1IntervalEntry* in IETF RFC 2495.

ne refers to near-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default: *None*

Range: 1-96 (1 is the most-recently completed 15-minute interval)

interface-number - specifies the specific DS1 port

Default: *None*

Range: **VTDS1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to **Output Parameters** section of [“show perfmon counters \(for VLNC64 DS1:current\)”](#) (p. 7-57)

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 1 m1-1-1-1-1 ds1
```

show perfmon counters (for VLNC64 DS1:day)

Syntax

show perfmon counters ne day <interval-value> <interface-number> ds1

Description

This command is used to display the cumulative performance monitoring values on the DS1 port. The periods for which the values are displayed are:

- Total measurement value for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to *previous day* - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters *2 days ago* - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne refers to near-end parameters.

These values correspond to *Dsx1TotalEntry* in RFC 2495. Measurements for *Previous day* and *2 days ago* are implemented by Alcatel-Lucent and are not part of the RFC.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the period for which the performance monitoring parameters are displayed. 0 represents current cumulative measurements, 1 represents cumulative measurements for the past 24 hour period, 2 represents cumulative measurements from 2 days ago

Default: 0

Range: 0-2

interface-number - specifies the specific DS1 port

Default: *None*

Range: **VTDS1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for VLNC64 DS1:current\)”](#) (p. 7-57)

Example

```
(ALU 1850TSS-5) # show perfmon counters ne day 0 m1-1-1-1-1 ds1
```

Performance monitoring on VLNC64 E1 interface

Overview

These commands apply only when the shelf is in **e1** mode, beginning in Release 4.1.

show perfmon counters (for VLNC64 E1:current)

Syntax

```
show perfmon counters ne 15min <interval-value> <interface-number> e1
```

Description

This command is used to display the current performance monitoring values being measured on a specific E1 port. These values correspond to *Dsx1CurrentEntry* specification in IETF RFC 2495.

ne refers to near-end parameters. Monitoring occurs on the signal coming from the SDH network.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default: *None*

Range: 0

interface-number - specifies the applicable E1 port

Default: *None*

Range: **VCE1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

Valid Data - {Partial|Yes|No} - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring or due to loopback tests or setting encapsulation to none).

Path Parameters:

- **ESs**—Errored Seconds (**es**) - An Errored Second is a second with one or more LOF, AIS, or FAS/NFAS defects.
- **SESS**—Severely Errored Seconds (**ses**) - A Severely Errored Second is a second with 28 or more errored FAS/NFAS defects, or one or more LOF or AIS defects.
- **UASs**—Unavailable Seconds (**uas**) - Unavailable Seconds are calculated by counting the number of seconds that the interface is unavailable (at least 10 consecutive SES seconds).
- **BBEs**—Background Block Errors (**bbe**) (CRC4 format only) - BBE is incremented by the number of errored blocks when 1 to 27 errored blocks are detected in a second.
- `Time since counters last cleared` - Time elapsed since the counters were last cleared.
- `Time since interface configured for counters` - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 m1-1-1-1-1 e1
```

show perfmon counters (for VLNC64 E1:interval)

Syntax

```
show perfmon counters ne 15min <interval-value> <interface-number> e1
```

Description

This command is used to display the historic record of 15-minute intervals of performance monitoring values on a specific E1 interface. There are a total of 96 intervals. 1 is the most-recently completed 15-minute interval. The value 96 is derived based on collecting the performance monitoring parameters measured over 15 minute intervals for the previous 24 hours (24x4 intervals). These values are based on *Dsx1IntervalEntry* in IETF RFC 2495.

ne refers to near-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default: *None*

Range: 1-96 (1 is the most-recently completed 15-minute interval)

interface-number - specifies the specific DS1 port

Default: *None*

Range: **VTCE1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for VLNC64 E1:current\)”](#) (p. 7-64).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 1 m1-1-1-1-1 e1
```

show perfmon counters (for VLNC64 E1:day)

Syntax

show perfmon counters ne day <interval-value> <interface-number> **e1**

Description

This command is used to display the cumulative performance monitoring values on the E1 port. The periods for which the values are displayed are:

- Total measurement value for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to *previous day* - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters *2 days ago* - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne refers to near-end parameters.

These values correspond to *Dsx1TotalEntry* in RFC 2495. Measurements for *Previous day* and *2 days ago* are implemented by Alcatel-Lucent and are not part of the RFC.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the period for which the performance monitoring parameters are displayed. 0 represents current cumulative measurements, 1 represents cumulative measurements for the past 24 hour period, 2 represents cumulative measurements from 2 days ago

Default: 0

Range: 0-2

interface-number - specifies the specific E1 port

Default: *None*

Range: **VCE1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for VLNC64 E1:current\)”](#) (p. 7-64).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne day 0 m1-1-1-1-1 e1
```

Performance monitoring on OC3 interface

Overview

These commands are valid only in **tl** mode, beginning in Release 4.1.

show perfmon counters (for OC3:current)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
{section | line}
```

Description

This command is used to display the current performance monitoring values being measured on the OC3 interface. These values correspond to the *SonetSectionCurrentEntry*, *SonetLineCurrentEntry* in IETF RFC 2558.

ne refers to near-end parameters; **fe** refers to far-end parameters. Far-end monitoring is not available on section.

section refers to the measurement corresponding to Section level of the SONET hierarchy; line refers to the measurement corresponding to Line level of the SONET hierarchy

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default: *None*

Range: 0

Specifies the level within the SONET hierarchy on which the PMON has to be retrieved.

Default: Section

Range: {Section | Line}

interface-number - specifies the applicable OC3 interface

Default: main-1-1

Range: **OC3-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

`Valid Data - {Partial|Yes|No}` - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring, due to loopback tests). In addition **fe** counters are set to No if there is alarm defect in near end.

`Errored Seconds (es)` - The counter associated with the number of Errored Seconds encountered by a SONET Section/Line

`Severely Errored Seconds (ses)` - The counter associated with the number of Severely Errored Seconds encountered by a SONET Section/Line

`Severely Errored Framing Seconds (sefs)` - The counter associated with the number of Severely Errored Framing Seconds encountered by a SONET Section. (Not displayed for line.)

`Coding Violations (cv)` - The counter associated with the number of Coding Violations encountered by a SONET Section/Line

`Unavailable Seconds (uas)` - The counter associated with the number of Unavailable Seconds encountered by a SONET Line. (Not displayed for section.)

- Time since counters last cleared - Time elapsed since the counters were last cleared.
- Time since interface configured for counters - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 main-1-1 section
```

show perfmon counters (for OC3:interval)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
{section | line}
```

Description

This command is used to display the historic record of 15-minute intervals of performance monitoring values of a OC3 interface. There are a total of 96 intervals. 1 is the most-recently completed 15-minute interval. The value 96 is derived based on collecting the performance monitoring parameters measured over 15 minute intervals for the previous 24 hours (24x4 intervals). These values correspond to *SonetSectionIntervalEntry*, *SonetLineIntervalEntry* in IETF RFC 2558.

ne refers to near-end parameters; **fe** refers to far-end parameters. Far-end monitoring is not available on section.

section refers to the measurement corresponding to Section level of the SONET hierarchy;
line refers to the measurement corresponding to Line level of the SONET hierarchy.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default:- *None*

Range: 1-96

interface-number - specifies the applicable OC3 interface

Default: main-1-1

Range: **OC3-Port**

See [Appendix A](#), “Addressable entities”

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for OC3:current\)”](#) (p. 7-70).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 1 main-1-1 line
```

show perfmon counters (for OC3:day)

Syntax

```
show perfmon counters {ne | fe} day <interval-value> <interface-number> {section  
| line}
```

Description

This command is used to display the cumulative performance monitoring values on the OC3 interface. The periods for which the values are displayed are:

- Total measurement value for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to *previous day* - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters *2 days ago* - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne refers to near-end parameters; **fe** refers to far-end parameters. Far-end monitoring is not available on section.

section refers to the measurement corresponding to Section level of the SONET hierarchy; **line** refers to the measurement corresponding to Line level of the SONET hierarchy.

These values are supported by Alcatel-Lucent. They are not part of RFC 2558.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the total period for which the performance monitoring parameters are displayed. 0 represents current cumulative measurement, 1 represents cumulative measurement for the past 24 hour period, 2 represents cumulative measurement from 2 days ago

Default: 0

Range: 0-2

interface-number - specifies the applicable OC3 interface

Default: main-1-1

Range: **OC3-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for OC3:current\)”](#) (p. 7-70).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne day 1 main-1-1 line
```


Performance monitoring on STM1 interface

Overview

These commands are valid only in **e1** mode, beginning in Release 4.1.

show perfmon counters (for STM1:current)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number> {rs | ms}
```

Description

This command is used to display the current performance monitoring values being measured on the STM1 interface. These values correspond to the *SonetSectionCurrentEntry*, *SonetLineCurrentEntry* in IETF RFC 2558 (which uses the SONET terminology for the equivalent SDH functionality).

ne refers to near-end parameters, **fe** refers to far-end parameters. Far-end monitoring is not available for **rs**.

rs refers to the measurements corresponding to the Regenerator Section level of the SDH hierarchy; **ms** refers to the measurements corresponding to the Multiplex Section level of the SDH hierarchy.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default: *None*

Range: 0

Specifies the level within the SDH hierarchy on which the PMON is to be retrieved.

Default: RS

Range: {RS | MS}

interface-number - specifies the applicable STM1 interface

Default:- main-1-1

Range: **STM1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

Valid Data - {Partial|Yes|No} - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring, due to loopback tests). In addition **fe** counters are set to No if there is alarm defect in near end.

Errored Seconds (es) - The counter associated with the number of Errored Seconds encountered by an SDH RS/MS.

Severely Errored Seconds (ses) - The counter associated with the number of Severely Errored Seconds encountered by an SDH RS/MS.

Severely Errored Framing Seconds (sefs) - The counter associated with the number of Severely Errored Framing Seconds encountered by an SDH RS. (Not displayed for ms.)

Background Block Errors (bbe) - The counter associated with the number of BBEs encountered by an SDH RS/MS. This is equivalent to RFC 2558 CV (coding violations).

Unavailable Seconds (uas) - The counter associated with the number of Unavailable Seconds encountered by an SDH MS. (Not displayed for RS.)

- Time since counters last cleared - Time elapsed since the counters were last cleared.
- Time since interface configured for counters - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 main-1-1 RS
```

show perfmon counters (for STM1:interval)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number> {rs | ms}
```

Description

This command is used to display the historic record of 15-minute intervals of performance monitoring values of an STM1 interface. There are a total of 96 intervals. 1 is the most-recently completed 15-minute interval. The value 96 is derived based on collecting the performance monitoring parameters measured over 15 minute intervals for the previous 24 hours (24x4 intervals). These values correspond to *SonetSectionIntervalEntry*, *SonetLineIntervalEntry* in IETF RFC 2558 (which uses the SONET terminology for the equivalent SDH functionality).

ne refers to near-end parameters, **fe** refers to far-end parameters. Far-end monitoring is not available for **rs**.

rs refers to the measurements corresponding to the Regenerator Section level of the SDH hierarchy; **ms** refers to the measurements corresponding to the Multiplex Section level of the SDH hierarchy.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default: None

Range: 1-96

interface-number - specifies the applicable STM1 interface

Default: main-1-1

Range: **STM1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for STM1:current\)”](#) (p. 7-77).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 1 main-1-1 line
```

show perfmon counters (for STM1:day)

Syntax

```
show perfmon counters {ne | fe} day <interval-value> <interface-number> {rs | ms}
```

Description

This command is used to display the cumulative performance monitoring values on the STM1 interface. The periods for which the values are displayed are:

- Total measurement value for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to *previous day* - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters *2 days ago* - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne refers to near-end parameters, **fe** refers to far-end parameters. Far-end monitoring is not available for **rs**.

rs refers to the measurements corresponding to the Regenerator Section level of the SDH hierarchy; **ms** refers to the measurements corresponding to the Multiplex Section level of the SDH hierarchy.

These values are supported by Alcatel-Lucent. They are not part of RFC 2558.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the total period for which the performance monitoring parameters are displayed. 0 represents the current cumulative measurements, 1 represents cumulative measurements for the past 24 hour period, 2 represents cumulative measurements from 2 days ago.

Default: 0

Range: 0-2

interface-number - specifies the applicable STM1 interface

Default: main-1-1

Range: **STM1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for STM1:current\)”](#) (p. 7-77).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne day 1 main-1-1 rs
```

Performance monitoring on STS1 path

Overview

These commands are only allowed in **t1** mode, beginning in Release 4.1.

show perfmon counters (for STS-1:current)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
```

Description

This command is used to display the current performance monitoring values being measured on a SONET STS-1 Path. These values correspond to the *SonetPathCurrentEntry* specification in IETF RFC 2558.

ne refers to near-end parameters; **fe** refers to far-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default: *None*

Range: 0

interface-number - specifies the specific STS-1 Path

Default: *None*

Range: **STS1-Path**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

Valid Data - {Partial|Yes|No} - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring). In addition **fe** counters are set to No if there is alarm defect in near end.

Errored Seconds (es) - The counter associated with the number of Errored Seconds encountered by a SONET Path.

Severely Errored Seconds (ses) - The counter associated with the number of Severely Errored Seconds encountered by a SONET Path.

Coding Violations (cv) - The counter associated with the number of Coding Violations encountered by a SONET Path.

Unavailable Seconds (uas) - The counter associated with the number of Unavailable Seconds encountered by a SONET Path.

- Time since counters last cleared - Time elapsed since the counters were last cleared.
- Time since interface configured for counters - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 m1-1-1
```

show perfmon counters (for STS-1:interval)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
```

Description

This command is used to display the historic record of 15-minute intervals of performance monitoring values of a SONET STS-1 Path. There are a total of 96 intervals. 1 is the most-recently completed 15-minute interval. The value 96 is derived based on collecting the performance monitoring parameters measured over 15 minute intervals for the previous 24 hours (24x4 intervals). These values correspond to the specification *SonetPathIntervalEntry* in IETF RFC 2558.

ne refers to near-end parameters; **fe** refers to far-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default: *None*

Range: 1-96

interface-number - specifies the specific STS-1 Path

Default: *None*

Range: **STS1-Path**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to **Output Parameters** section of [“show perfmon counters \(for STS-1:current\)”](#) (p. 7-84).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 1 m1-1-1
```

show perfmon counters (for STS-1:day)

Syntax

```
show perfmon counters {ne | fe} day <interval-value> <interface-number>
```

Description

This command is used to display the cumulative performance monitoring values of a SONET STS-1 Path. The periods for which the values are displayed are:

- Total measurement value for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to *previous day* - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters *2 days ago* - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne refers to near-end parameters; **fe** refers to far-end parameters.

These values are supported by Alcatel-Lucent. They are not part of RFC 2558.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the total period for which the performance monitoring parameters are displayed. 0 represents current cumulative measurement, 1 represents cumulative measurement for the past 24 hour period, 2 represents cumulative measurement from 2 days ago.

Default: 0

Range: 0-2

interface-number - specifies the specific STS-1 Path

Default: *None*

Range: **STS1-Path**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for STS-1:current\)”](#) (p. 7-84).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne day 1 m1-1-1
```

Performance monitoring on VC4 path

Overview

These commands are only allowed in **e1** mode, beginning in Release 4.1.

show perfmon counters (for VC4:current)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
```

Description

This command is used to display the current performance monitoring values being measured on a SDH VC4 Path. These values correspond to the *SonetPathCurrentEntry* specification in IETF RFC 2558 (which uses the SONET terminology for the equivalent SDH functionality).

ne refers to near-end parameters; **fe** refers to far-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default: *None*

Range: 0

interface-number - specifies the specific VC4 Path

Default: *None*

Range: **VC4-Path**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

`Valid Data` - {Partial|Yes|No} - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring). In addition **fe** counters are set to No if there is alarm defect in near end.

`Errored Seconds, (es)` - The counter associated with the number of Errored Seconds encountered by an SDH Path.

`Severely Errored Seconds (ses)` - The counter associated with the number of Severely Errored Seconds encountered by an SDH Path.

`Background Block Errors (bbe)` - The counter associated with the number of Background Block Errors encountered by an SDH Path. This is equivalent to RFC 2558 CV (coding violations).

`Unavailable Seconds (uas)` - The counter associated with the number of Unavailable Seconds encountered by an SDH Path.

- `Time since counters last cleared` - Time elapsed since the counters were last cleared.
- `Time since interface configured for counters` - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 m1-1-1
```

show perfmon counters (for VC4:interval)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number>
```

Description

This command is used to display the historic record of 15-minute intervals of performance monitoring values of an SDH VC4 Path. There are a total of 96 intervals. 1 is the most-recently completed 15-minute interval. The value 96 is derived based on collecting the performance monitoring parameters measured over 15 minute intervals for the previous 24 hours (24x4 intervals). These values correspond to the specification *SonetPathIntervalEntry* in IETF RFC 2558 (which uses the SONET terminology for the equivalent SDH functionality).

ne refers to near-end parameters; **fe** refers to far-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default: *None*

Range: 1-96

interface-number - specifies the specific VC4 Path

Default: *None*

Range: **VC4-Path**

See [Appendix A](#), “Addressable entities”

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for VC4:current\)”](#) (p. 7-90).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 1 m1-1-1
```

show perfmon counters (for VC4:day)

Syntax

```
show perfmon counters {ne | fe} day <interval-value> <interface-number>
```

Description

This command is used to display the cumulative performance monitoring values of an SDH VC4 Path. The periods for which the values are displayed are:

- Total measurement value for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to *previous day* - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters *2 days ago* - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne refers to near-end parameters; **fe** refers to far-end parameters.

These values are supported by Alcatel-Lucent. They are not part of RFC 2558.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the total period for which the performance monitoring parameters are displayed. 0 represents current cumulative measurement, 1 represents cumulative measurement for the past 24 hour period, 2 represents cumulative measurement from 2 days ago.

Default: 0

Range: 0-2

interface-number - specifies the specific VC4 Path

Default: none

Range: **VC4-Path**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for VC4:current\)”](#) (p. 7-90).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne day 1 m1-1-1
```

Performance monitoring on VT path

Overview

These commands are only allowed in **t1** mode, beginning in Release 4.1.

show perfmon counters (for VT:current)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number> vt
```

Description

This command is used to display the current performance monitoring values being measured on a SONET VT Path. These values correspond to the *SonetVTCurrentEntry* specification in IETF RFC 2558.

ne refers to near-end parameters; **fe** refers to far-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default: *None*

Range: 0

interface-number - specifies the specific SONET VT on the OC3 interface

Default: *None*

Range: **VTDS1 Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

Valid Data - {Partial|Yes|No} - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring). In addition **fe** counters are set to No if there is alarm defect in near end.

Errorred Seconds (**es**) - The counter associated with the number of Errorred Seconds encountered by a SONET VT.

Severely Errorred Seconds (**ses**) - The counter associated with the number of Severely Errorred Seconds encountered by a SONET VT.

Coding Violations (**cv**) - The counter associated with the number of Coding Violations encountered by a SONET VT.

Unavailable Seconds (**uas**) - The counter associated with the number of Unavailable Seconds encountered by a SONET VT.

- Time since counters last cleared - Time elapsed since the counters were last cleared.
- Time since interface configured for counters - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 m1-1-1-1-1 vt
```

show perfmon counters (for VT:interval)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number> vt
```

Description

This command is used to display the historic record of 15-minute intervals of performance monitoring values of a SONET VT. There are a total of 96 intervals. 1 is the most-recently completed 15-minute interval. The value 96 is derived based on collecting the performance monitoring parameters measured over 15 minute intervals for the previous 24 hours (24x4 intervals). These values correspond to *SonetVTIntervalEntry* IETF RFC 2558.

ne refers to near-end parameters; **fe** refers to far-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default: *None*

Range: 1-96

interface-number - specifies the specific SONET VT

Default: *None*

Range: **VTDS1 Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of [“show perfmon counters \(for VT:current\)”](#) (p. 7-96).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 1 m1-1-1-1-1 vt
```

show perfmon counters (for VT:day)

Syntax

```
show perfmon counters {ne | fe} day <interval-value> <interface-number> vt
```

Description

This command is used to display the cumulative performance monitoring values of a SONET VT. The periods for which the values are displayed are:

- Total measurement value for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to **previous day** - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters **2 days ago** - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne refers to near-end parameters; **fe** refers to far-end parameters.

These values are supported by Alcatel-Lucent. They are not part of RFC 2558.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the total period for which the performance monitoring parameters are displayed. 0 represents current cumulative measurement, 1 represents cumulative measurement for the past 24 hour period, 2 represents cumulative measurement from 2 days ago.

Default: 0

Range: 0-2

interface-number - specifies the specific SONET VT

Default: *None*

Range: **VTDS1 Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of “[show perfmon counters \(for VT:current\)](#)” (p. 7-96).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne day 1 m1-1-1-1-1 vt
```

Performance monitoring on VC12 path

Overview

These commands are only allowed in **e1** mode, beginning in Release 4.1.

show perfmon counters (for VC12:current)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number> vc12
```

Description

This command is used to display the current performance monitoring values being measured on an SDH VC12 Path. These values correspond to the *SonetVTCurrentEntry* specification in IETF RFC 2558 (which uses the SONET terminology for the equivalent SDH functionality).

ne refers to near-end parameters; **fe** refers to far-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the current 15-minute interval for performance monitoring

Default *None*

Range: 0

interface-number - specifies the specific SDH VC12 on the STM1 interface

Default: *None*

Range: **VCE1 Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

The list of output parameters are specified below. The range of all counters is 0 - 4294967295.

`Valid Data` - {Partial|Yes|No} - This field is always Partial for the current 15-min bin. If the measurement successfully completed for 15 minutes it is set to Yes and moved to bin 1. If there was disruption it is set to No and moved to bin 1. (Disruption could be caused due to disabling of performance monitoring). In addition **fe** counters are set to No if there is alarm defect in near end.

`Errored Seconds (es)` - The counter associated with the number of Errored Seconds encountered by an SDH VC12.

`Severely Errored Seconds (ses)` - The counter associated with the number of Severely Errored Seconds encountered by an SDH VC12.

`Background Block Errors (bbe)` - The counter associated with the number of Background Block Errors encountered by an SDH VC12. This is equivalent to RFC 2558 CV (coding violations).

`Unavailable Seconds (uas)` - The counter associated with the number of Unavailable Seconds encountered by an SDH VC12.

- `Time since counters last cleared` - Time elapsed since the counters were last cleared.
- `Time since interface configured for counters` - Time elapsed since the performance monitoring measurement started on the interface. (Approximately within 2 minutes of pack initialization).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 0 m1-1-1-1-1 vc12
```

show perfmon counters (for VC12:interval)

Syntax

```
show perfmon counters {ne | fe} 15min <interval-value> <interface-number> vc12
```

Description

This command is used to display the historic record of 15-minute intervals of performance monitoring values of an SDH VC12. There are a total of 96 intervals. 1 is the most-recently completed 15-minute interval. The value 96 is derived based on collecting the performance monitoring parameters measured over 15 minute intervals for the previous 24 hours (24x4 intervals). These values correspond to *SonetVTIntervalEntry* IETF RFC 2558 (which uses the SONET terminology for the equivalent SDH functionality).

ne refers to near-end parameters; **fe** refers to far-end parameters.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the interval number for which the performance monitoring parameters are displayed.

Default: *None*

Range: 1-96

interface-number - specifies the specific SDH VC12

Default: *None*

Range: **VCE1 Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of “[show perfmon counters \(for VC12:current\)](#)” (p. 7-102).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne 15min 1 m1-1-1-1-1 vc12
```

show perfmon counters (for VC12:day)

Syntax

```
show perfmon counters {ne | fe} day <interval-value> <interface-number> vc12
```

Description

This command is used to display the cumulative performance monitoring values of an SDH VC12. The periods for which the values are displayed are:

- Total measurement value for the 24 hours preceding the current 15-minute measurement interval
- Total count for performance parameters corresponding to *previous day* - sum of measurements for 24 hour period preceding the current 24 hour period
- Total count for performance parameters *2 days ago* - sum of measurements for 24 hour period preceding the latest two 24 hour periods

ne refers to near-end parameters, **fe** refers to far-end parameters.

These values are supported by Alcatel-Lucent. They are not part of RFC 2558.

Mode

Privileged EXEC Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

interval-value - specifies the total period for which the performance monitoring parameters are displayed. 0 represents current cumulative measurement, 1 represents cumulative measurement for the past 24 hour period, 2 represents cumulative measurement from 2 days ago.

Default: 0

Range: 0-2

interface-number - specifies the specific SDH VC12

Default: *None*

Range: **VCE1 Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

For a list of parameters please refer to the **Output Parameters** section of “[show perfmon counters \(for VC12:current\)](#)” (p. 7-102).

Example

```
(ALU 1850TSS-5) # show perfmon counters ne day 1 m1-1-1-1-1 vc12
```

Threshold crossing alerts

Overview

The commands in this section configure and show the threshold crossing alerts for specific performance monitoring parameters.

perfmon tca

Syntax

```
perfmon tca <pmon-parameter> {15min | day} <threshold-value> [{vt | ds1} | {vc12  
| e1} | {section | line} | {rs | ms}]
```

Description

This command specifies the threshold value for Threshold Crossing Alerts for a specific performance monitoring parameter. The threshold value can be specified for the current 15-minute interval or a day interval (the latest 24-hour interval). The threshold applies to all monitored entities of that type on the pack.

Mode

Interface T1 Config Mode

Interface E1 Config Mode beginning in Release 4.1

Interface VTDS1 Config Mode beginning in Release 4.1

Interface VCE1 Config Mode beginning in Release 4.1

Interface STS1 Config Mode beginning in Release 4.1

Interface VC4 Config Mode beginning in Release 4.1

Interface OC3 Config Mode beginning in Release 4.1

Interface STM1 Config Mode beginning in Release 4.1

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

pmon-parameter - specifies the specific pmon-parameter

Default: *None*

Range: As specified below

For T1 interface on VLNC60, {**es** | **ses** | **sefs** | **uas** | **css** | **les** | **pcv** | **lcv**}

Beginning in Release 4.1, for E1 interface on VLNC60, {**les** | **lses** | **bbe** | **es** | **ses** | **uas**}

Beginning in Release 4.1, for DS1 interface on VLNC64, {**es** | **ses** | **sefs** | **uas** | **css** | **pcv**}

Beginning in Release 4.1, for E1 interface on VLNC64, {**bbe** | **es** | **ses** | **uas**}

Beginning in Release 4.1, for VT on VLNC64, {**es** | **ses** | **cv** | **uas**}

Beginning in Release 4.1, for VC12 on VLNC64, {**es** | **ses** | **bbe** | **uas**}

Beginning in Release 4.1, for STS-Path on VLNC64, {**es** | **ses** | **cv** | **uas**}

Beginning in Release 4.1, for VC4 on VLNC64, {**es** | **ses** | **bbe** | **uas**}

Beginning in Release 4.1, for OC3 on VLNC64, {**es** | **ses** | **sefs** | **cv** | **uas**}

Beginning in Release 4.1, for STM1 on VLNC64, {**es** | **ses** | **bbe** | **uas**}

threshold-value -

Default: See [“Performance monitoring threshold provisioning”](#) (p. 7-131)

Range: See [“Performance monitoring threshold provisioning”](#) (p. 7-131)

vt or **ds1** is mandatory in *Interface VTDS1 Config Mode*.

- **vt** refers to the VT signal on the OC3 interface.
- **ds1** refers to the DS1 signal recovered from the SONET network.

vc12 or **e1** is mandatory in *Interface VCE1 Config Mode*.

- **vc12** refers to the VC12 signal on the STM1 interface.
- **e1** refers to the E1 signal recovered from the SDH network.

Section or line is mandatory in *Interface OC3 Config Mode*.

rs or **ms** is mandatory in *Interface STM1 Config Mode*.

Support for no form

no perfmon tca <pmon-parameter> {15min | day} [{vt | ds1} | {vc12 | e1} | {section | line} | {rs | ms}] resets the performance monitoring parameter (<pmon-parameter>) Threshold value to its default values.

- **15min** specifies the value for current interval.
- **day** specifies the value for day interval (latest 24 hour interval).
- **vt** or **ds1** is mandatory in *Interface VTDS1 Config Mode*
 - **vt** refers to the VT signal on the OC3 interface.
 - **ds1** refers to the DS1 signal recovered from the SONET network.
- **vc12** or **e1** is mandatory in *Interface VCE1 Config Mode*
 - **vc12** refers to the VC12 signal on the STM1 interface.
 - **e1** refers to the E1 signal recovered from the SDH network.
- **section** or **line** is mandatory in *Interface OC3 Config Mode*
- **rs** or **ms** is mandatory in *Interface STM1 Config Mode*

User guidelines

None

Output

None

Example

```
(ALU 1850TSS-5) (Interface a-1-1)# perfmon tca ESs 15min 20
(ALU 1850TSS-5) (Interface a-1-1)# no perfmon tca ESs day
(ALU 1850TSS-5) (Interface main-1-1)# perfmon tca 15min ESs section
```

show perfmon configuration

Syntax

```
show perfmon configuration {15min | day} <interface-number> [{vt | ds1} | {vc12 | e1}] [{section | line} | {rs | ms}]
```

Description

This command displays the performance monitoring state (enabled/disabled) and all TCA parameters on an interface.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-number - specifies the specific interface

Default: *None*

Range: **T1-Port**

E1-Port beginning in Release 4.1

VTDS1-Port beginning in Release 4.1

vt or **ds1** is mandatory for **VTDS1-Port**

- **vt** refers to the VT signal on the OC3 interface.

- **ds1** refers to the DS1 signal recovered from the SONET network.

VCE1-Port beginning in Release 4.1

vc12 or **e1** is mandatory in *Interface VCE1 Config Mode*

- **vc12** refers to the VC12 signal on the STM1 interface.

- **e1** refers to the E1 signal recovered from the SDH network.

STS1-Path beginning in Release 4.1

VC4-Path beginning in Release 4.1

OC3-Port beginning in Release 4.1

section or **line** is mandatory for **OC3-Port**

STM1-Port beginning in Release 4.1

rs or **ms** is mandatory for **STM1-Port**

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Displays the performance monitoring configuration on the interface.

Performance Monitoring state - Enabled or Disabled

<Performance Monitoring Parameter> <TCA 15min value> or <Performance Monitoring Parameter> <TCA day value>

The applicable performance monitoring parameters for each interface type is specified in [“Performance monitoring threshold provisioning” \(p. 7-131\)](#)

Example

```
(ALU 1850TSS-5) # show perfmon configuration 15min a-1-1
(ALU 1850TSS-5) # show perfmon configuration day m1-1-1-1-1 e1
(ALU 1850TSS-5-64) #show perfmon configuration 15min main-1-1 section

INTERFACE NUMBER..... main-1-1
VALID..... yes
TCA ES..... 30
TCA SES..... 30
TCA SEFS..... 10
TCA CV..... 140
```

Fault management commands

Overview

The commands in this section configure and show alarms and support other fault management functions.

show alarm configuration

Syntax

show alarm configuration <entity-value>

Description

This command is used to display the configured status of alarms on Interfaces.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

entity-value - specifies the specific interface.

Default: *None*

Range:

T1-Port

E1-Port, OC3-Port, STM1-Port, STS1-Path, VC4-Path,

beginning in Release 4.1

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

None

Output

Displays alarm configuration, as applicable, for Interfaces:

Interface - Interface value as specified in [Appendix A, “Addressable entities”](#)

SD Soak Time - Configured soak time of the SD alarm.

SD Clear Time - Configured clear time of the SD alarm in sec.

SD Threshold - Configured threshold of the SD alarm.

SF Soak Time - Configured soak time of the SF alarm in sec.

SF Clear Time - Configured clear time of the SF alarm in sec.

SF Threshold - Configured clear time of the SF alarm.

LOS Soak Time - Configured soak time of the LOS alarm in sec.

LOS Clear Time - Configured clear time of the LOS alarm in sec.

(LOS related output is not applicable on STS1-Path and VC4-Path).

Example

```
(ALU 1850TSS-5) #show alarm configuration a-1-1
```

```
INTERFACE NUMBER..... a-1-1
ALARM SD SOAK TIME..... 2 sec.
ALARM SD CLEAR TIME..... 10 sec.
ALARM SD THRESHOLD..... 5e-6
ALARM SF SOAK TIME..... 2 sec.
ALARM SF CLEAR TIME..... 10 sec.
ALARM SF THRESHOLD..... 5e-5
ALARM LOS SOAK TIME..... 2 sec.
ALARM LOS CLEAR TIME..... 0 sec.
```

```
(ALU 1850TSS-5) #show alarm configuration main-1-1
```

```
INTERFACE NUMBER..... main-1-1
ALARM SD SOAK TIME..... 2 sec.
ALARM SD CLEAR TIME..... 10 sec.
ALARM SD THRESHOLD..... 1e-6
ALARM SF SOAK TIME..... 2 sec.
ALARM SF CLEAR TIME..... 10 sec.
ALARM SF THRESHOLD..... 1e-3
ALARM LOS SOAK TIME..... 2 sec.
ALARM LOS CLEAR TIME..... 0 sec.
```

show alarms

Syntax

show alarms <port-number> [{vt | ds1} | {vc12 | e1}]

Description

This command displays the alarms that are currently set on an interface.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interface-number - specifies the specific interface

Default: *None*

Range:

BITS-LIU

Ethernet-Port

T1-Port

E1-Port, **OC3-Port**, **STM1-Port**, beginning in Release 4.1

VTDS1-Port, beginning in Release 4.1

vt or **ds1** is mandatory for *VTDS1-Port*

- **vt** retrieves alarms on the VT signal in the OC3 interface

- **ds1** retrieves alarms on the T1 signal recovered from the SONET network

VCE1-Port, beginning in Release 4.1

vc12 or **e1** is mandatory for *VCE1-Port*

- **vc12** retrieves alarms on the VC12 signal in the STM1 interface

- **e1** retrieves alarms on the E1 signal recovered from the SDH network

STS1-Path, **VC4-Path**, beginning in Release 4.1

See [Appendix A, “Addressable entities”](#)

Support for no form

None

User guidelines

If there are no alarms on the interface the command reports an empty string.

Beginning in Release 4.1, if the *encapsulation* on a T1-port, E1-port, VTDS1-port, or VCE1-port is *none*, the command masks existing alarms (if any) on the interface and reports an empty string for the alarm. In the case of VTDS1-port, the command reports an empty string for both VT and DS1 ports. (For VCE1-port, it reports an empty string for both VC12 and E1 ports)

On the VLNC64, the command implements alarm masking and reports empty string for lower level interfaces in the SONET/SDH hierarchy, if there are existing alarms in the higher level interface. The SONET hierarchy of interfaces (from high to low) is OC3-Port -> STS1-Path-> VT-Port -> DS1-Port. The SDH hierarchy (from high to low) is STM1-Port-> VC4-Path-> VC12-Port->E1-Port.

Output

Interface - Interface Number

Displays one or more of the alarms as applicable on the interface.

LOS - Loss of Signal

LOF - Loss of Frame

EOOF - Excessive Out of Frame

OOL - Out Of Lock

CRCMM - CRC-4 Multiframe Mismatch

LOP - Loss of Pointer

AIS - Alarm Indication Signal

RAI - Remote Alarm Indication

RFI - Remote Failure Indication

SF - Signal Failure

EXC - Excessive errors

SD - Signal Degrade

DEG - Signal Degrade

UNEQ - Unequipped

The alarms are applicable on various interface types as specified below:

Table 7-1 Alarm Types and Applicable Interfaces in Release 4.0

Interface	T1/BITS (VLNC60)
LOS	Applicable
LOF	Applicable N/A when signalformat is UF
EOOF	BITS only
OOL	BITS only
AIS	Applicable
RAI	Applicable N/A for BITS
SF	Applicable
SD	Applicable N/A for BITS

Table 7-2 Alarm Types and Applicable Interfaces in Release 4.1

Interface	T1/E1/BI TS (VLNC60)	T1/E1/BI TS (VLNC64)	OC3/ST M1	STS/V C4	VT/VC 12
LOS	Applicable	BITS only	Applicable	N/A	N/A
LOF	Applicable N/A when signalform at is UF	Applicable N/A when signalform at is UF	Applicable	N/A	N/A
EOOF	T1 BITS only	T1 BITS only	N/A	N/A	N/A
OOL	BITS only	BITS only	N/A	N/A	N/A
CRCMM	E1 CRC4 only	E1 CRC4 only	N/A	N/A	N/A
LOP	N/A	N/A	N/A	Applicable	Applicable
AIS	Applicable	Applicable	Applicable	Applicable	Applicable
RAI	Applicable N/A for BITS	Applicable N/A for BITS	N/A	N/A	N/A
RFI	N/A	N/A	Applicable	Applicable	Applicable
SF (SONET) EXC (SDH)	Applicable	N/A	Applicable	Applicable	N/A
SD (SONET) DEG (SDH)	Applicable N/A for BITS	N/A	Applicable	Applicable	N/A
UNEQ	N/A	N/A	N/A	Applicable	Applicable

Example

```
(ALU 1850TSS-5) # show alarms a-1-1
INTERFACE NUMBER..... a-1-1
ACTIVE ALARMS..... los
```

show alarms all

Syntax

show alarms all

Description

This command displays the alarms that are currently set on all the interfaces. Beginning in Release 4.1, the command additionally reports alarms set on all the PWEs, and all alarms set on the pack level. If there are no alarms on any of these entities, the command displays no output.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

Beginning in Release 4.1, if an interface or a PWE does not have an existing alarm on it, the command suppresses it in the output.

Beginning in Release 4.1, when *encapsulation* on a T1-port, E1-port, VTDS1-port, VCE1-port is *none*, the command suppresses the interface and its alarm in the output, even if there is an existing alarm on it. The command suppresses the output for both VT and DS1 ports in the case of VTDS1-port. (For VCE1-port, it suppresses the output for both VC12 and E1 ports)

On the VLNC64, if there is an existing alarm on a higher level interface in the SONET/SDH hierarchy, the command suppresses all lower level interfaces and their alarms in the output, even if the lower level interfaces have existing alarms. The SONET hierarchy of interfaces (from high to low) is OC3-Port -> STS1-Path-> VT-Port -> DS1-

Port. The SDH hierarchy (from high to low) is STM1-Port-> VC4-Path-> VC12-Port->E1-Port.

Output

`interface-number` - specifies the specific interface

Range:

BITS-LIU

Ethernet-Port

T1-Port

E1-Port, **OC3-Port**, **STM1-Port**, beginning in Release 4.1

VTDS1-Port, beginning in Release 4.1

vt or **ds1** is mandatory for **VTDS1-Port**

- **vt** retrieves alarms on the VT signal in the OC3 interface

- **ds1** retrieves alarms on the T1 signal recovered from the SONET network

VCE1-Port, beginning in Release 4.1

vc12 or **e1** is mandatory for **VCE1-Port**

- **vc12** retrieves alarms on the VC12 signal in the STM1 interface

- **e1** retrieves alarms on the E1 signal recovered from the SDH network

STS1-Path, **VC4-Path**, beginning in Release 4.1

See [Appendix A, "Addressable entities"](#)

Alarms - All applicable alarms as specified in ["show alarms" \(p. 7-116\)](#)

PWE-Name - Specifies the PWE name.

See [Appendix A, "Addressable entities"](#)

Alarms - Specifies alarms on the PWE. Applicable alarms are - malformed packets, stray packets, buffer overrun, buffer underrun, L-bit, R-bit, Loss of Packets State.

Pack Level Alarms - Pack level alarms are reported as specified in [Table 7-3, "Pack Alarm Details" \(p. 7-122\)](#). These alarms are detected based on fault conditions on one of the internal devices of the pack.c

Table 7-3 Pack Alarm Details

Alarm Type	Severity	Error
Pack Failure	Critical	One of the following error codes:
		0x0101 to 0x0107
		0x0201
		0x0301
		0x0603, 0x0604, 0x0605, 0x0609, 0x060a, 0x0610
Pack Error	Non-Service Impacting	0x0701, 0x0702
		0x0602, 0x0606, 0x0607, 0x0608, 0x060b, 0x060c, 0x060e, 0x060f, 0x0611
		0x0703 to 0x0711
Power Failure	Non-Service Impacting	0x0501
Fan Failure	Non-Service Impacting	0x0502

Example

```
(ALU 1850TSS-5) # show alarms all
```

alarm

Syntax

alarm {threshold | soak | clear} {sd | sf | los} <alarm-parameter-value>

Description

This command specifies the threshold/soak/clear value of BER Signal Fail and Signal Degrade alarms on various TDM ports. Starting in Release 4.1, it is also used to specify the soak/clear value of LOS.

sd - specifies that the threshold/soak/clear value corresponds to Signal Degrade. This is also known as Bit Error Rate (BER) Minor alarm, or DEG.

sf - specifies that the threshold/soak/clear value corresponds to Signal Fail. This is also known as BER Major alarm, or EXC.

los - specifies that the soak/clear value corresponds to Loss of Signal, LOS.

threshold - specifies a threshold value for the BER for the alarm. This is not applicable for LOS.

soak - specifies a time interval to wait before declaring the Alarm. For sd, sf the BER should be above the threshold for this period of time.

clear - time interval to wait before clearing the Alarm. For sd, sf the BER should be below the threshold for this period of time.

Mode

Interface T1 Config Mode

Interface E1 Config Mode beginning in Release 4.1

Interface STS1 Config Mode beginning in Release 4.1 (n/a for LOS)

Interface VC4 Config Mode beginning in Release 4.1 (n/a for LOS)

Interface OC3 Config Mode beginning in Release 4.1

Interface STM1 Config Mode beginning in Release 4.1

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

alarm-parameter-value - If you specify threshold, the value corresponds to threshold values of the alarm.

For **sd** -

Default: As per [Table 7-4, “SD threshold values” \(p. 7-124\)](#)

Range: As per [Table 7-4, “SD threshold values” \(p. 7-124\)](#)

For **sf** -

Default: As per [Table 7-5, “SF Threshold Values” \(p. 7-125\)](#)

Range: As per [Table 7-5, “SF Threshold Values” \(p. 7-125\)](#)

If you specify **soak**, the value corresponds to the time interval to wait before declaring the Alarm. For sd, sf the BER should be above the threshold for this period of time.

Default: 2

Range: {0-100}, in steps of 1 sec

If you specify **clear**, the value corresponds to time interval to wait before clearing the Alarm. For sd, sf the BER should be below the threshold for this period of time.

Default: 10 (0 for LOS only)

Range: {0-100}, in steps of 1 sec

Table 7-4 SD threshold values

Port	SD threshold value (Default)	SD threshold value (Range)
T1/E1 (VLNC60)	5e-6	1e-4, 5e-4, 5e-5, 1e-6, 5e-6, 1e-7, 1e-8
T1/E1 (VLNC64)	Not supported	Not supported
VT/VC12	Not supported	Not supported
STS-1/VC4		
(feasibility under investigation)	1e-6	1e-5, 1e-6, 1e-7, 1e-8, 1e-9
OC3/STM1	1e-6	1e-5, 1e-6, 1e-7, 1e-8, 1e-9

Table 7-5 SF Threshold Values

Port	SF threshold value (Default)	SF threshold value (Range)
T1/E1 (VLNC60)	5e-5	1e-3, 1e-4, 5e-4, 5e-5, 1e-5, 5e-6
T1/E1 (VLNC64)	Not supported	Not supported
VT/VC12	Not supported	Not supported
STS-1/VC4		
(feasibility under investigation)	1e-3	1e-3, 1e-4, 1e-5
OC3/STM1	1e-3	1e-3, 1e-4, 1e-5

Support for no form

no alarm {threshold | soak | clear} {sd | sf | los} resets the SD or SF alarm's threshold value, soak time, or clear time to the default. Beginning in Release 4.1, it resets the LOS alarm's soak time, or clear time to the default.

User guidelines

The SF threshold value configured must be lower than the SD value. If they are both same, only SF (EXC) alarms are generated.

For T1/E1, the set and clear thresholds are the same. For other entities, the clear threshold is an order of magnitude better than the fail threshold, e.g. if the fail threshold is 10^{-5} , the clear threshold is 10^{-6} .

Output

None

Example

```
(ALU 1850TSS-5) (Interface a-1-1)# alarm threshold sf 1e-4
(ALU 1850TSS-5) (Interface main-1-1)# alarm soak sd 10
(ALU 1850TSS-5) (Interface main-1-1)# alarm clear sf 10
```

perfmon shutdown

Syntax

perfmon shutdown [{**vt** | **ds1**} | {**vc12** | **e1**}]

Description

This command disables the performance monitoring measurements as well as reporting of Threshold Crossing alerts on a specific interface of the circuit pack. It resets the performance monitoring counters on current interval bins. In addition, you cannot access any of the performance monitoring counters.

Mode

Interface T1 Config Mode

Interface E1 Config Mode beginning in Release 4.1

Interface VTDS1 Config Mode beginning in Release 4.1

Interface VCE1 Config Mode beginning in Release 4.1

Interface STS1 Config Mode beginning in Release 4.1

Interface VC4 Config Mode beginning in Release 4.1

Interface OC3 Config Mode beginning in Release 4.1

Interface STM1 Config Mode beginning in Release 4.1

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Support for no form

no perfmon shutdown [{**vt** | **ds1**} | {**vc12** | **e1**}] enables the performance monitoring measurements on the interface.

User guidelines

vt or **ds1** is mandatory for *Interface VTDS1 Config Mode*

- **vt** refers to the VT signal in the OC3 interface
- **ds1** refers to the T1 signal recovered from the SONET network

vc12 or **e1** is mandatory for *Interface VCE1 Config Mode*

- **vc12** refers to the VC12 signal in the STM1 interface
- **e1** refers to the E1 signal recovered from the SDH network

For *Interface OC3 Config Mode*, performance monitoring is disabled for both Section and Line levels of the OC3 hierarchy.

For *Interface STM1 Config Mode*, performance monitoring is disabled for both RS and MS levels of the STM1 hierarchy.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# perfmon shutdown

(ALU 1850TSS-5) (Config)# interface m1-1-1-1-1
(ALU 1850TSS-5) (Interface a-1-1)# perfmon shutdown ds1

(ALU 1850TSS-5) (Config)# interface main-1-1
(ALU 1850TSS-5) (Interface a-1-1)# perfmon shutdown
```

traps shutdown

Syntax

traps shutdown {t1 | e1 | oc3 | stm1 | sts1 | vc4 | vt | vc12 | ds1 | pwe | psn | ppp | all}

Description

This command disables the reporting of Traps for events on a type of Interface, Pseudowire or PSN Tunnel, PPP.

If all is specified the traps are shut down for all possible entities on the pack (t1, e1, oc3, stm1, sts1, vc4, vt, vc12, ds1, pwe, psn, ppp).

For T1, E1, OC3, or STM1 this command does not shut down Link Traps. For these interfaces, this command is applicable only for traps generated due to Alarms.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: *None*

Range: PWE, PSN, e1, all, - apply to both VLNC60 and VLNC64 circuit packs.

T1 - applies only to VLNC60 circuit pack

OC3, STM1, STS1, VC4, VT, VC12, DS1 - apply only to VLNC64 circuit pack

Support for no form

no traps shutdown {t1 | e1 | oc3 | stm1 | sts1 | vc4 | vt | vc12 | ds1 | pwe | psn | ppp | all} enables the reporting of Traps.

User guidelines

For T1, E1, OC3, and STM1 this command does not shut down Link Traps. For these interfaces, this command is applicable only for traps generated due to Alarms.

By default the traps are enabled

Output

None

Example

```
(ALU 1850TSS-5) (Config)# traps shutdown
```

show traps configuration

Syntax

interface <interface-number>

Description

This command displays the configured trap reporting status for different types of Interfaces, Pseudowire or PSN Tunnel and PPP.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

Type - The applicable types are t1, e1, oc3, stm1, sts1, vc4, vt, vc12, ds1, pwe, psn, ppp.

Trap reporting status - Enabled/Disabled.

Example

```
(ALU 1850TSS-5) (Config)# show traps configuration (on VLNC60)

T1 TRAPS..... enabled
PWE TRAPS..... enabled
PSNTUNNEL TRAPS..... enabled
PPP TRAPS..... enabled
```

Performance monitoring threshold provisioning

Overview

The table below contains the various threshold values provisionable for Threshold Crossing Alerts on the VLNC60, VLNC64. A value of 0 means that the TCA for the parameter is disabled.

Table 7-6 Performance Monitoring Thresholds (cont 1 of 3)

Performance Monitoring Parameter	Current (15 min) Range [Default]	Day Range [Default]
t1-Mode Parameters		
T1/DS1		
line (VLNC60 only)		
LCVs	1-16383 [13340]	1-1048575 [133400]
LEs	1-900 [65]	1-65535 [648]
path (single threshold {ne fe})		
ESs	1-900 [65]	1-65535 [648]
SEs	1-900 [10]	1-65535 [100]
SEFSs	1-900 [10]	1-65535 [100]
UASs	1-900 [10]	1-65535 [100]
CSSs	1-900 [10]	1-65535 [100]
PCVs (SF format)	1-16383 [72]	1-1048575 [691]
PCVs (ESF format)	1-16383 [13296]	1-1048575 [132960]
STS Path on VLNC64		
ESs	1-16383 [15]	1-1048575 [125]
SEs	1-900 [3]	1-65535 [7]
CVs	1-16383 [15]	1-1048575 [125]
UASs	1-900 [10]	1-65535 [10]
VT on VLNC64		
ESs	1-900 [40]	1-65535 [900]
SEs	1-900 [40]	1-65535 [900]
CVs	1-16383 [75]	1-1048575 [750]
UASs	1-900 [40]	1-65535 [900]
OC3 on VLNC64		
section		

Table 7-6 Performance Monitoring Thresholds (cont 2 of 3)

Performance Monitoring Parameter	Current (15 min) Range [Default]	Day Range [Default]
CVs	1-16383 [140]	1-1048575 [1344]
ESs	1-900 [30]	1-65535 [90]
SEsSs	1-900 [30]	1-65535 [90]
SEFSs	1-900 [10]	1-65535 [30]
line		
CVs	1-16383 [140]	1-1048575 [1344]
ESs	1-900 [40]	1-65535 [900]
SEsSs	1-900 [30]	1-65535 [90]
UASs	1-900 [30]	1-65535 [90]
e1-Mode Parameters		
E1		
line (VLNC60 only)		
SES	1-900 [10]	1-65535 [90]
LES	1-900 [65]	1-65535 [648]
path (single threshold)		
BBEs	1-16383 [13296]	1-1048575 [132960]
ESs	1-900 [65]	1-65535 [648]
SEsSs	1-900 [10]	1-65535 [100]
UASs	1-900 [10]	1-65535 [10]
VC4 Path on VLNC64		
BBEs	1-16383 [25]	1-1048575 [250]
ESs	1-900 [20]	1-65536 [200]
SEsSs	1-900 [3]	1-65535 [7]
UASs	1-900 [10]	1-65535 [10]
VC12 Path on VLNC64		
BBEs	1-16484 [75]	1-1048575 [750]
ESs	1-900 [40]	1-65535 [900]
SEsSs	1-900 [40]	1-65535 [900]
UASs	1-900 [40]	1-65535 [900]
STM1 on VLNC64		
Regenerator Section		
ESs	1-900 [180]	1-86400 [1500]
SEsSs	1-810 [15]	1-77760 [20]
BBEs	1-7199100 [9000]	1-691113600 [48000]

Table 7-6 Performance Monitoring Thresholds (cont 3 of 3)

Performance Monitoring Parameter	Current (15 min) Range [Default]	Day Range [Default]
UASs	1-900 [15]	1-86400 [20]
Multiplex Section		
BBEs	1-1727999100 [228000]	1-4294967295 [432000]
ESs	1-900 [50]	1-86400 [150]
SEsSs	1-810 [10]	1-77760 [15]
UASs	1-911 [15]	1-86400 [20]

8 Timing commands

Overview

This section contains various commands related to timing commands.

Contents

This chapter covers these topics.

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System timing

Overview

The commands in this section configure the system timing options.

system-timing-source

Syntax

```
system-timing-source {bits [alternate-source line] | ptp-1588 | free-running | line}
```

Description

This command specifies a common timing source for all the devices on the VLNC60/64. This is defined as system timing.

The sources for this timing are:

- a. BITS - Building Integrated Timing Supply
 - This is a timing supply traceable to a common Primary Reference Clock in the network. The shelf has a special T1/E1 input interface associated with each main slot for receiving this timing.
 - On the VLNC64, when the System Timing is BITS, an alternate source of timing, *Line*, can be specified, which derives timing from the OC3/STM1 interface on the pack. Specifying an alternate source for System Timing is optional.
- b. ptp-1588 - Precision Timing Protocol-1588
 - This option specifies IEEE 1588 version 2, as a choice to drive the system timing. This is useful for remote locations where no high-quality reference clock signal is available.
- c. (c) free-running
 - This option specifies that the System clock is in free-running mode. Here, the clock on the pack is derived from a local oscillator.
 - This option is recommended to be used only on VLNC60
 - This option is recommended to be used only when all T1/E1 interfaces offer MLPPP service

- d. `line` - (Applicable on the VLNC64 circuit pack only)
 - This option specifies that the System clock is derived from optical line (OC3/STM1 interface) on the VLNC64 pack. This is also known as the *Line timing*.

By default, VLNC60 and VLNC64 circuit packs have their System Timing source as *Free Running*. In the other modes, when a specified system timing source fails, the System Timing goes into Holdover mode; the only exception to this is when the pack is configured to BITS plus an alternate source, and the alternate-source input is good.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: Free-Running

Support for no form

no system-timing-source resets the timing source to **free-running**.

User guidelines

On the VLNC60, Free-Running is recommended to be used only when all of the T1/E1 interfaces have MLPPP service.

You can configure a hierarchy of system timing sources on the VLNC64. This can be BITS with Line (OC3/STM1) as an alternate timing source. When both the BITS input and the Line input fail, the System timing goes into Holdover mode.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# system-timing-source bits
(ALU 1850TSS-5) (Config)# system-timing-source bits alternate-source
Line (on VLNC64 only)
(ALU 1850TSS-5) (Config)# system-timing-source line (on VLNC64 only)
(ALU 1850TSS-5) (Config)# system-timing-source free-running
(ALU 1850TSS-5) (Config)# system-timing-source ptp-1588
```

show system-timing-source

Syntax

show system-timing-source

Description

This command displays the timing source for the pack. This refers to the *System Timing* configured using [“system-timing-source”](#) (p. 8-3).

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

None

Output

The output for this command is displayed as follows. All details within "<>" are either configured values or state information:

Provisioned Source - <value>, where <value> can be **bits**, **bits alternate-source**, **line**, **line**, **ptp-1588**, or **free-running**

Active Source - <value>, where <value> can be the provisioned source value, or **holdover**

On the VLNC64 only:

Line <OC3-Line or STM1-Line> SSM in - <value>, SSM out - <value>, where <value> can be:

in SONET: PRS, STU, ST2, TNC, ST3E, ST3, SMC, ST4, DUS, PNO

in SDH: SSM0, PRC, SSU_A, SSU_B, SEC, DUS

Example

```
(ALU 1850TSS-5) # show system-timing-source
                  Provisioned Source - bits
                  Active Source - holdover
                  Line - main-1-1 SSM in - ST2, SSM out - ST3
(ALU 1850TSS-5) # show system-timing-source
                  Provisioned Source - ptp-1588
                  Active Source - ptp-1588
(ALU 1850TSS-5) # show system-timing-source
                  Provisioned Source - line (VLNC64 only)
                  Active Source - line
                  Line - main-1-1 SSM in - ST2, SSM out - DUS
(ALU 1850TSS-5) # show system-timing-source
                  Provisioned Source - free-running
                  Active Source - free-running
                  Line - main-1-1 SSM in - ST2, SSM out - DUS
```

Interface timing

Overview

The commands in this section configure the timing for T1/E1 interfaces.

timing-source

Syntax

```
timing-source {system | loop | differential}
```

Description

This command specifies the timing source for the T1/E1 interface.

system - The source of timing is derived from system timing configured using “[system-timing-source](#)” (p. 8-3).

loop - The clocking information recovered from the received signal of the T1/E1 interface is used to drive the transmit side of the same T1/E1 interface.

differential - The clock is recovered from the RTP differential timestamps on the incoming Pseudowire packet for the T1/E1. The reference timing for recovery of this clock is **system**.

Mode

Interface T1 Config Mode

Interface E1 Config Mode beginning in Release 4.1

Interface VTDS1 Config Mode

Interface VCE1 Config Mode beginning in Release 4.1

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default - **system**

Support for no form

None

User guidelines

If the **system** option is chosen, the system timing source is specified using “[system-timing-source](#)” (p. 8-3).

When encapsulation on the interface is SAToP, you cannot change the configuration from **differential** to either **system** or **loop** (and vice versa). Encapsulation must be set to **none** to perform the configuration.

When encapsulation on the interface is PPP, you cannot choose differential mode.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# timing-source loop
(ALU 1850TSS-5) (Interface a-1-1)# timing-source differential
```

differential-timing-domain

Syntax

differential-timing-domain <domain-value>

Description

This command specifies the differential timing domain being used to *generate* and *recover* the differential timestamps on the VLNC64.

- The VLNC64 pack has internal resources to ***generate*** and ***recover*** RTP differential timestamps. These timestamps are carried in the SAToP-encapsulated data traffic. The information contained in this timestamp is used to recover timing information from the embedded TDM signal in the data frame, when it reaches the other end of the packet network.
- On VLNC64 there are up to 28 internal resources which can generate/recover the RTP differential timestamps. This means that up to 28 TDM timing domains can be generated/recovered from these data frames.
- The VLNC64 supports up to 84 DS1 or 63 E1 signals. Since there can be only 28 distinct TDM timing domains, these DS1/E1 signals must be grouped into 28 timing domains. In each group, one of the DS1/E1 signals will serve as the source of timing for all other DS1s/E1s in the group.
- This command specifies which specific timing domain (*domain-value*) that a specific DS1/E1 will be grouped into.
- You need not explicitly specify which specific DS1/E1 inside a group will serve as the timing domain source for other DS1s/E1s in the group. This is controlled internally by the VLNC64 pack.

Note that the same *domain-value* is used on a DS1/E1 interface to specify the timing domain to *generate* as well as *recover* the differential timestamps. Internally the pack allocates separate resources to *generate* as well as *recover* the differential timestamp.

Although differential timestamps are applicable to the VLNC60 pack, the number of timing domains is more than the number of T1/E1 interfaces on it. The system internally manages the *domain-value* allocation. Hence, you cannot explicitly configure this parameter on VLNC60.

Mode

Interface VTDS1 Config Mode

Interface VCE1 Config Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

domain-value - specifies the differential timing domain used to generate and recover RTP timestamps

Default: *None*

Range: 1-28

Support for no form

None

User guidelines

If this parameter is not configured, then timing recovery behavior is undefined.

Output

None

Example

```
(ALU 1850TSS-5) (Interface m1-1-1-1-1)#differential -timing-domain 1
```

timing-source system

Syntax

timing-source system

Description

This command sets the timing source of the OC3/STM1 interface.

Mode

Interface OC3 Config Mode

Interface STM1 Config Mode

Release and pack information

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

User guidelines

This command need not be explicitly specified as system is the only option allowed.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# interface main-1-1
(ALU 1850TSS-5) (Interface main-1-1)# timing-source system
```

Configuration of precision timing protocol - 1588ver2

Overview

The IEEE 1588 protocol distributes time and frequency via Ethernet with expected end-point time-alignment time precision measured in nanoseconds. The protocol is designed to synchronize real-time clocks on the nodes of a distributed system that communicate using a network.

The protocol uses a master/slave relationship to distribute timestamps from one device to the others. The protocol traffic is an Ethernet frame with a special Ethertype field to indicate 1588.

ptp-1588-protocol

Syntax

ptp-1588-protocol

Description

This command enables or disables the IEEE 1588 Precision Timing Protocol on the system.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

no ptp-1588-protocol disables the IEEE 1588 Precision Timing Protocol on the system.

User guidelines

By default, ptp-1588 is disabled on the system.

This protocol must be enabled on the system:

- if clock synchronization across the network is required for circuit emulation.
- if the application requires access to a high quality clock, and one is not physically available.

Output

None

Example

```
(ALU 1850TSS-5) (Config) # ptp-1588-protocol
```


ptp-1588 mode

Syntax

ptp-1588 mode {master | slave}

Description

This command enables the specified mode, master or slave, on the system.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: **slave** on VLNC60, master on VLNC64

Support for no form

None

User guidelines

The master mode must be enabled on the system that has access to a high-precision clock. The 1588 component derives timing from the system clock that is configured in [“system-timing-source”](#) (p. 8-3).

The slave mode should be used on a remote system that does not have access to high-precision clock source.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588-mode master
```

ptp-1588 vlan

Syntax

ptp-1588 vlan <vlan-id>

Description

This command specifies the VLAN id over which the 1588 protocol packets are transmitted.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

vlan-id -

Default: *None*

Range: 1-3965

Support for no form

None

User guidelines

Configuring this is optional.

If VLAN is configured, the priority value of the VLAN tag is set to 7.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 vlan 20
```

ptp-1588 port

Syntax

ptp-1588 port primary <primary-port> backup <backup-port>

Description

This command specifies the ports over which 1588 protocol packets are transmitted and received.

There are 2 ports specified for the 1588 packet transmission/reception. These are the **primary** and **backup** ports. When the primary port fails, the packets are transmitted/received on the backup port. When the Primary port recovers after a failure, the 1588 protocol packets transmission/reception is not reverted to the Primary port.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

primary-port - initial port used to send/receive 1588 packets

Default: *No default value*

Range: **Ethernet-port** as specified in [Appendix A, “Addressable entities”](#) or **none**. The value **none** is allowed to be configured only from Release 4.1.

backup-port - backup port used to send/receive 1588 packets

Default: *No default value*

Range: **Ethernet-port** as specified in [Appendix A, “Addressable entities”](#) or **none**. The value **none** is allowed to be configured only from Release 4.1.

Support for no form

None

User guidelines

Configuring this is mandatory. Only when it is configured in both directions are 1588 protocol messages exchanged. Starting Release 4.1, the 1588 protocol can be enabled only when Primary port is configured to be a value other than **none**.

primary-port and **backup-port** may be the same port.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 port txrx primary d2-1 backup d2-1
```

ptp-1588 associate

This command is not supported on the VLNC60, or the VLNC64.

ptp-1588 priority1

Syntax

ptp-1588 priority1 <priority>

Description

This command specifies the **priority1** parameter of the 1588 protocol. It is used only in the Master mode while sending the 1588 protocol messages.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

priority -

Default: 255

Range: 0-255

Support for no form

no ptp-1588 priority1 resets the Priority1 value to its default.

User guidelines

This parameter is relevant only in Master mode. If you specify this parameter in Slave mode the value is stored internally but does not take effect. If the 1588 mode is changed to Master the stored value will be used.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 priority1 10
```

ptp-1588 priority2

Syntax

ptp-1588 priority2 <priority>

Description

This command specifies the **priority2** parameter of the 1588 protocol. It is used only in the Master mode while sending the 1588 protocol messages.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

priority -

Default: 255

Range: 0-255

Support for no form

no ptp-1588 priority2 resets the Priority2 value to its default.

User guidelines

This parameter is relevant only in Master mode. If you specify this parameter in Slave mode the value is stored internally but does not take effect. If the 1588 mode is changed to Master the stored value will be used.

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 priority2 10
```

ptp-1588 domain

Syntax

ptp-1588 domain <domain-number>

Description

This command specifies the PTP domain value of the 1588 protocol.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

domain-number -

Default: 0

Range: 0-127

Support for no form

no ptp-1588 domain resets the PTP domain value to its default.

User guidelines

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 domain 10
```


ptp-1588 log-mean-sync-interval

Syntax

ptp-1588 log-mean-sync-interval <mean-sync-interval-value>

Description

This command specifies the **log-mean-sync-interval** parameter of the 1588 protocol.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

mean-sync-interval-value -

Default: 0

Range: -7 to 7 in Release 4.0, -6 to 7 starting in Release 4.1

Support for no form

no ptp-1588 log-mean-sync-interval resets the log-mean-sync-interval value to its default.

User guidelines

Output

```
(ALU 1850TSS-5) (Config)# ptp-1588 log-mean-sync-interval 1
```

ptp-1588 log-min-mean-delay-req-interval

Syntax

ptp-1588 log-min-mean-delay-req-interval <interval>

Description

This command specifies the log-min-mean-delay-req-interval parameter of the 1588 protocol.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interval -

Default: 4 in Release 4.0, 0 starting in Release 4.1

Range: -1 to 6 in Release 4.0, 0 to 5 starting in Release 4.1

Support for no form

no ptp-1588 log-min-mean-delay-req-interval resets the log-min-mean-delay-req-interval value to its default.

User guidelines

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 log-min-mean-delay-req-interval 1
```

ptp-1588 log-mean-announce-interval

Syntax

ptp-1588 log-mean-announce-interval <interval>

Description

This command specifies the log-mean-announce-interval parameter of the 1588 protocol.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

interval -

Default: 1

Range: 0-4

Support for no form

no ptp-1588 log-mean-announce-interval resets the log-mean-announce-interval value to its default.

User guidelines

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 log-mean-announce-interval 2
```

ptp-1588 announce-receipt-timeout

Syntax

ptp-1588 announce-receipt-timeout <timeout-value>

Description

This command specifies the announce-receipt-timeout parameter of the 1588 protocol.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

timeout-value-

Default: 3

Range: 2-10

Support for no form

no ptp-1588 announce-receipt-timeout resets the announce-receipt-timeout value to its default.

User guidelines

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 announce-receipt-timeout 2
```

ptp-1588 time-switch-mode

Syntax

ptp-1588 time-switch-mode {auto | manual}

Description

This command specifies if the switchover of master clock selection is controlled by 1588 protocol's master clock selection algorithm or by the system. The system has more information about when to switchover the clock source and so may override the 1588 protocol component algorithm to switchover the clock source. **auto** allows the 1588 algorithm to choose a clock. **manual** allows the system to make this decision.

The pack supports only **auto** mode.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

Enumeration as per Syntax

Default: **auto**

Support for no form

no ptp-1588 time-switch-mode resets the switchover of master clock selection to its default.

User guidelines

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 time-switch-mode manual
```

ptp-1588 multicast

Syntax

ptp-1588 multicast <MAC-address>

Description

This command specifies the Multicast MAC address on which to send/receive the 1588 protocol messages.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

MAC-address -

Default: 01:1B:19:00:00:00

Range: Six 2-digit case insensitive hexadecimal characters separated by colon

Support for no form

None

User guidelines

Output

None

Example

```
(ALU 1850TSS-5) (Config)# ptp-1588 multicast 01:1B:19:00:00:aa
```

show ptp-1588

Syntax

show ptp-1588

Description

This command displays the 1588 related information on the circuit pack.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

None

Support for no form

None

Output

The output is displayed as follows. All details specified within "<>" are either configured values or state information.

Output of Local system's 1588 parameters:

Version - <version 2>

State - <enabled | disabled>

Mode - <master | slave>

Timing Source - <system>

VLAN - <value configured in [“ptp-1588 vlan” \(p. 8-16\)](#)>

Primary Port - <value configured in [“ptp-1588 port” \(p. 8-17\)](#)>

Backup Port - <value configured in [“ptp-1588 port” \(p. 8-17\)](#)>

Active Port - <value of actual Ethernet port>

Clock ID - <local clock id of the 1588 protocol>

Clock Quality - class - <value of 1588 clock class>

Clock Accuracy - <value of clock accuracy of the 1588 protocol>

Priority 1 - <value configured in “[ptp-1588 priority1](#)” (p. 8-20)>

Priority 2 - <value configured in “[ptp-1588 priority2](#)” (p. 8-21)>

Domain - <value configured in “[ptp-1588 domain](#)” (p. 8-22)>

Slave-Only - TRUE or FALSE

log-mean-sync-interval - <value configured in “[ptp-1588 log-mean-sync-interval](#)” (p. 8-23)>

log-min-mean-delay-req-interval - <value configured in “[ptp-1588 log-min-mean-delay-req-interval](#)” (p. 8-24)>

log-mean-announce-interval - <value configured in “[ptp-1588 log-mean-announce-interval](#)” (p. 8-25)>

announce-receipt-timeout - <value configured in “[ptp-1588 announce-receipt-timeout](#)” (p. 8-26)>

Multicast Address - <value configured in “[ptp-1588 multicast](#)” (p. 8-28)>

Clock Time Switch Mode - <value configured in “[ptp-1588 time-switch-mode](#)” (p. 8-27)>

For the slave mode, the system also displays the following for each 1588 master from which it receives the 1588 messages:

Master Port - <value of Ethernet port from which messages for 1588 Master are received>

Clock ID, Clock Class - as specified before

Clock Accuracy - <value of accuracy of the clock source>

Current Master - <TRUE or FALSE>

Current Calculated Master - <TRUE or FALSE>, whether this 1588 master is the internally calculated master source. This could be different from Current Master, when clock switch mode is manual.

Last Clock Quality Change - <time since clock quality changed on the master>

Example

```
(ALU 1850TSS-5) # show ptp-1588

Local System Parameters.....
Version..... Version 2

State..... enabled
Mode..... slave
Timing source..... system
VLAN..... 0
Primary port..... d2-1
Backup port..... d2-2
Active port..... d2-1
Clock ID.....
    00:60:1D:FF:FF:E8:02:EE:33:CC
Clock Quality Class..... slave
Priority1..... 255
Priority2..... 255
Domain..... 0
Slave Only..... true
Log Mean Sync Interval..... -4
Log Min Mean Delay Req Interval..... 0
Log Mean Announce Interval..... 1
Announce Receipt Timeout..... 3
Multicast Address..... 01:1B:19:00:00:00
Clock Time Switch Mode..... Auto
--More-- or (q)uit
Parameters for Master 1.....
Based On Incoming 1588 Messages on port..... d2-1
Clock ID.....
    00:60:1D:FF:FF:E8:05:B4:00:01
Clock Quality Class..... good
Clock Quality Accuracy..... within 25 nano
    seconds
Current Master..... true
Current Calculated Master..... true
Last Clock Quality Change at..... 0 day 0 hr 5 min 9
    sec
```


9 MLPPP configuration commands

Overview

This section contains various commands related to MLPPP commands.

Contents

This chapter covers these topics.

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Multilink group configuration commands

interface multilink

Syntax

```
interface multilink <multilink-number>
```

Description

This command creates the multilink group interface and enters the configuration mode corresponding to it. If the interface already exists, it just enters the configuration mode.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

multilink-number - This parameter specifies the number of the multilink interface

Default: *None*

Range: 1-8

Support for no form

no interface multilink <number> deletes the multilink interface.

User guidelines

If you want to delete the multilink interface, you must remove all associations with member ports.

Changes CLI context to *Multilink Config Mode*.

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# interface multilink 1
(ALU 1850TSS-5) (Interface multilink-1)#
```

ip address (for MLG)

Syntax

ip address <ip-address> <mask>

Description

This command specifies the IP address of the multilink interface.

Mode

Multilink Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

ip-address - Specifies the IP address of the interface

Default: *None*

Range: Standard IP address range

mask - Specifies the subnet mask of the IP address

Default: *None*

Range: 0.0.0.0 - 255.255.255.255

Support for no form

None

User guidelines

This parameter is mandatory.

The multilink interface cannot be enabled without this parameter.

The multilink interface must be administratively down to modify this parameter, so that new option information can be negotiated from scratch.

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# interface multilink 1
(ALU 1850TSS-5) (Interface multilink-1)# ip address 152.148.10.10
255.255.255.0
```


remote-ip-address-offset

Syntax

remote-ip-address-offset {**add** | **subtract**} <**ip-address-offset**>

Description

This command specifies the offset value, in a dotted address format, from the Local IP address/mask, to be used to generate the Remote IP address of the multilink interface. This remote IP address is assigned using the IPCP Address option.

Mode

Multilink Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

{**add** | **subtract**} - Operation to perform with offset-value to calculate remote IP address

ip-address-offset - Offset value to generate Remote IP address of multilink interface

Default: 0.0.0.1

Range: 0.0.0.0 - 255.255.255.255

Support for no form

no remote-ip-address-offset will reset the remote-ip-address-offset to the default.

User guidelines

Although the offset allows full range of 32 bit unsigned number (size of an IP address), the offset value must be chosen such that, the resulting value of - *{Local IP address/subnet mask (add/subtract) offset}* value must result in an IP address in the same subnet. Add/Subtract operation depends on what was specified in the command line.

The multilink interface must be administratively down to modify this parameter, so that new option information can be negotiated from scratch.

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# interface multilink 1
(ALU 1850TSS-5) (Interface multilink-1)# ip address 152.148.10.10
255.255.255.0
(ALU 1850TSS-5) (Interface multilink-1)# remote-ip-address-offset add
0.0.0.2
```

assign-fragment-map

Syntax

assign-fragment-map <fragment-map-name>

Description

This command assigns a pre-configured fragment map to the multilink interface. This fragment map defines the maximum fragment size (per class).

Mode

Multilink Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

fragment-map-name - name of the fragment map

Default: *None*

Range: 1-31 case sensitive alphanumeric character string

Support for no form

None

User guidelines

This parameter is mandatory. The multilink interface cannot be enabled without this parameter.

The fragment map profile should be configured prior to this command.

The multilink interface must be administratively down to modify this parameter.

Output

None

Examples

```
(ALU 1850TSS-5) (Interface multilink-1)# assign-fragment-map  
fragment-map-1
```

multilink bundle-name endpoint

Syntax

multilink bundle-name endpoint

Description

This command configures name endpoint discriminator negotiation on the multilink interface.

Mode

Multilink Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

None

Support for no form

no multilink bundle-name endpoint disables the endpoint discriminator negotiation

User guidelines

This parameter is optional. If it is not specified, all links join the same bundle.

The multilink interface must be administratively down to modify this parameter.

Output

None

Examples

```
(ALU 1850TSS-5) (Interface multilink-1)# multilink bundle-name  
endpoint
```

service-vlan (for MLG)

Syntax

service-vlan <vlan-number>

Description

This command configures a VLAN for traffic towards Ethernet links.

Mode

Multilink Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

vlan-number - specifies the VLAN value

Default: *None*

Range: 1-4094

Support for no form

no service-vlan <vlan-number> disassociates the multilink interface from the VLAN.

User guidelines

This parameter is optional. If it is not specified, there will be no VLAN for the traffic from the multilink interface.

Output

None

Examples

```
(ALU 1850TSS-5) (Interface multilink-1)# service-vlan 10
```

multilink short-sequence

Syntax

multilink short-sequence

Description

This command enables the short-sequence option on the multilink interface. It provides a method to negotiate the Sequence field of Multilink Protocol header to be 12 bits instead of 28 bits. By default it is enabled.

Mode

Multilink Config Mode

Release and pack information

VLNC60, starting Release 4.1

Parameters

None

Support for no form

no multilink short-sequence disables the short-sequence option on the interface.

User guidelines

If you want to modify this option, you must first disable the Multilink interface using the command [“shutdown \(for MLG\)” \(p. 9-13\)](#).

Output

None

Examples

```
(ALU 1850TSS-5) (Interface multilink-1)# multilink short-sequence
```

shutdown (for MLG)

Syntax

shutdown

Description

This command disables the multilink interface.

Mode

Multilink Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

None

Support for no form

no shutdown enables the interface administratively.

User guidelines

By default the multilink interface is disabled. You must enable the multilink interface using the no form of this command.

Output

None

Examples

```
(ALU 1850TSS-5) (Interface multilink-1)# no shutdown
```

PPP configuration commands

ppp restart-timer

Syntax

ppp restart-timer <retries>

Description

This command specifies the LCP restart-timer which is the general timer used to time-out transmissions of LCP Control packets.

Mode

Interface T1 Config Mode

Interface E1 Config Mode starting Release 4.1

Release and pack information

VLNC60, starting Release 4.0

Parameters

retries - This parameter specifies the timer value in seconds

Default: 3

Range: {0-214783647}

Support for no form

no ppp restart-timer resets the LCP restart timer value to its default.

User guidelines

The encapsulation must be PPP on this interface.

This parameter is optional. If you do not specify it, the restart-timer value will be 3 seconds.

If you set this value to 0, the restart timer is disabled.

Output

None

Examples

```
interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# ppp restart-timer 5
```

ppp max-terminate

Syntax

ppp max-terminate <retries>

Description

This command specifies the maximum terminate value, which indicates the number of Terminate-Request packets that can be sent without receiving a valid Terminate-Ack.

Mode

Interface T1 Config Mode

Interface E1 Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

retries -

Default: 2

Range: {0-214783647}

Support for no form

no ppp max-terminate resets the maximum-terminate value to its default.

User guidelines

The encapsulation must be PPP on this interface.

This parameter is optional. If you do not specify it, the Maximum terminate value is 2 packet transmissions.

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# ppp max-terminate 5
```

ppp max-configure

Syntax

ppp max-configure <retries>

Description

This command specifies the maximum configure value, which indicates the number of Configure-Request packets that can be sent without receiving a valid Config-Ack, Config-Nak, or Config-Reject.

Mode

Interface T1 Config Mode

Interface E1 Config Mode starting Release 4.1

Release and pack information

VLNC60, starting Release 4.0

Parameters

retries -

Default: 10

Range: {0-214783647}

Support for no form

no ppp max-configure resets the maximum configure value to its default.

User guidelines

The encapsulation must be PPP on this interface.

This parameter is optional. If you do not specify it, the Maximum configure value is 10 packet transmissions.

If you set this value to 0, the system will send one Configure-Request packet during PPP initialization.

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# ppp max-configure 5
```

ppp max-failure

Syntax

ppp max-failure <retries>

Description

This command specifies the maximum failure value which indicates the number of Configure-NAK packets that can be sent without receiving a valid Config-Ack.

Mode

Interface T1 Config Mode

Interface E1 Config Mode starting Release 4.1

Release and pack information

VLNC60, starting Release 4.0

Parameters

retries -

Default: 5

Range: {0-214783647}

Support for no form

no ppp max-failure resets the maximum failure value to its default.

User guidelines

The encapsulation must be PPP on this interface.

This parameter is optional. If you do not specify it, the Maximum failure value will be 5 packet transmissions.

If you specify 0, the system will send one Configure-Reject when the received Configuration-Request packet is not acceptable.

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# interface a-1-1  
(ALU 1850TSS-5) (Interface a-1-1)# ppp max-failure 5
```

ppp pfc

Syntax

ppp pfc

Description

This command enables the Protocol Field Compression on the interface. This configuration option allows a method to negotiate the compression of the PPP Protocol field as specified in section 6.5 of RFC 1661. By default Protocol Field Compression is enabled on the interface.

Mode

Interface T1 Config Mode

Interface E1 Config Mode starting Release 4.1

Release and pack information

VLNC60, starting Release 4.1

Parameters

None

Support for no form

no ppp pfc disables the Protocol Field Compression on the interface

User guidelines

If you want to modify this option, you must first disable the ppp interface using the command [“ppp shutdown”](#) (p. 9-25).

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# ppp pfc
```

ppp acfc

Syntax

ppp acfc

Description

This command enables the Address and Control Field Compression on the interface. This option allows a method to negotiate the compression of the Data Link Layer Address and Control fields as specified in section 6.6 of RFC 1661. By default this option is enabled on the interface.

Mode

Interface T1 Config Mode

Interface E1 Config Mode starting Release 4.1

Release and pack information

VLNC60, starting Release 4.1

Parameters

None

Support for no form

no ppp acfc disables the Address and Control Field Compression on the interface

User guidelines

If you want to modify this option, you must first disable the ppp interface using the command [“ppp shutdown”](#) (p. 9-25).

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# ppp acfc
```


assign-multilink-group

Syntax

assign-multilink-group <group-number>

Description

This command specifies the multilink interface (MLG) with which this interface is associated.

Mode

Interface T1 Config Mode

Interface E1 Config Mode starting Release 4.1

Release and pack information

VLNC60, starting Release 4.0

Parameters

group-number -

Default: *None*

Range: {1-8}

Support for no form

None

User guidelines

The encapsulation must be PPP on this interface.

The Multilink Interface must be configured previously.

The Multilink Interface group association is changed by providing a different multilink interface value. This is service impacting.

In order to reassign a T1/E1 interface from one MLG to another, disable PPP on both ends of the interface. After reassigning the interface to the desired MLG (on both ends of the link) enable PPP on it. On the VLNC60 you can enable/disable PPP using the command [“ppp shutdown”](#) (p. 9-25). If the other end of the link is not a VLNC60, you must enable/disable PPP on it using the equivalent command of the system.

Output

None

Examples

```
interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# multilink-group 5
```

ppp shutdown

Syntax

ppp shutdown

Description

This command administratively disables PPP on the interface.

Mode

Interface T1 Config Mode

Interface E1 Config Mode starting Release 4.1

Release and pack information

VLNC60, starting Release 4.0

Parameters

None

Support for no form

no ppp shutdown administratively enables PPP on the interface

User guidelines

The encapsulation must be PPP on this interface.

The traffic will be disrupted when running this command.

The no form of this command is only allowed after the **multilink-group** command has been configured. Standalone PPP, without multilink, is not supported in the first release.

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# interface a-1-1
(ALU 1850TSS-5) (Interface a-1-1)# ppp shutdown
```

Fragment map profiles

Overview

The commands in this section configure fragment map profile names and sizes.

fragment-map-profile

Syntax

fragment-map-profile <fragment-map-name>

Description

This command specifies the name of a fragment map profile. This profile is used to configure the size of fragments per class of an multilink interface.

If the fragment map profile does not exist already it is created and the CLI context is changed to *Fragment Map Profile Mode*. If it exists already the CLI context is just changed to *Fragment Map Profile Mode*.

Mode

Global Config Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

fragment-map-name -

Default: *None*

Range: 1-31 case sensitive alphanumeric character string

Support for no form

no fragment-map-profile <fragment-map-name> removes the fragment map profile.

User guidelines

A maximum of 8 profiles are allowed.

Use the no form of this command to check that there are no interfaces associated with a profile.

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# fragment-map-profile FMProfile1
(ALU 1850TSS-5) (Config - fragmentmap)#
```

fragment-size1

Syntax

fragment-size1 <**fragment-size**>

Description

This command specifies the first of up to four sizes of fragments for the fragment map profile.

This **fragment-size1** corresponds to multiclass 0.

Mode

Fragment Map Profile Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

fragment-size - in number of bytes

Default: 1500

Range: 64-1500

Support for no form

no fragment-size1 resets the first fragment size for the fragment map profile to its default value.

User guidelines

The configured fragment size is used for the whole bundle.

Output

None

Examples

```
(ALU 1850TSS-5) (Config)# fragment-map-profile FMProfile1
(ALU 1850TSS-5) (Config - fragmentmap)# fragment-size1 128
```

Display COS statistics

show queue-scheduler-profile

Syntax

show queue-scheduler-profile [<queue-scheduler-name>]

Description

This command displays the information for a Queue Scheduler profile. 2 default Queue Schedulers are configured on the VLNC60. These are DEFAULT_ETH and DEFAULT_MLG. These profiles set up the minimum QoS configuration required on the system.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

VLNC64, starting Release 4.1

Parameters

queue-scheduler-name -

Default: *None*

Range: 1-31 case sensitive alphanumeric character string

Support for no form

None

User guidelines

None

Output

Displays the following information:

Queue-scheduler-name - The name of the queue scheduler profile

Per priority-queue (up to 4)

Priority-queue-id

- Mode
- Number of queue-channel
- Per queue-channel (within priority-queue) (up to 8)
 - queue-channel-id
 - max-transmit-rate
 - weight
 - wred-weight-factor
- Ces-channel enable/disable, max-threshold

If the Queue Scheduler name is not specified, the output is displayed for each of the profile names.

Examples

```
(ALU 1850TSS-5) # show queue-scheduler QueueSchedulerProfile1
```


Display ML-PPP statistics

show ppp multilink

Syntax

show ppp multilink [<multilink-number>]

Description

This command displays the statistics of ML-PPP bundle.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

multilink-number -

Default: *None*

Range: 1-8

Support for no form

None

User guidelines

None

Output

Displays the following information. If multilink-number is not specified, the output is displayed for each of the multilink groups.

- Configured Parameters:
 - Format of MP Header (short sequence or long sequence)
 - Bundle Class Type (Endpoint Discriminator)

- Bundle Address (Endpoint Discriminator)
- Negotiation Flag for Multiclass Support
- Multilink Code Value
- Suspendable Classes
- MRRU
- Fragment Profile Name
- Negotiated Parameters:
 - Negotiated Flag for Multiclass Support
 - Negotiated Header Format Code
 - Negotiated Suspendable Classes
- time that the bundle has been up
- state of bundle interface
- IP address assigned to the bundle
- number of member links
- list of member links and time each member link has been up and its state (enabled/disabled)
- number of classes
- Last clearing of data plane statistics on this interface

For each class:

- number of good packets received
- number of good packets received by the interworking system
- number of good packets transmitted
- number of errored frames exceeding mrru received by the host
- number of errored frames exceeding mrru received by the interworking system
- number of buffer overrun errors
- number of errored frames exceeding mrru that have been transmitted
- number of frames not received due to unavailable free buffer pool
- number of fragments flushed
- last processed sequence number
- last sent sequence

For each member link, per class:

- last received sequence

The following might be displayed if supported on Wintegra:

- number of fragments/bytes in reassembly list
- number of lost fragments, number of reordered fragments
- number of discarded fragments/bytes
- fragment time-out (time that VLNC60 will wait for expected sequence number to arrive)

Examples

```
(ALU 1850TSS-5) # show ppp multilink 1
```

show ppp interface

Syntax

show ppp interface [<interface>]

Description

This command displays the statistics of ML-PPP at interface level.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

interface -

Default: *None*

Range: T1-port, or E1-port starting Release 4.1, as per [Appendix A, “Addressable entities”](#).

Support for no form

None

User guidelines

None

Output

Displays the following information. If interface is not specified, the output is displayed for each of the PPP interfaces.

- LCP State: Operational, Administrative
- LCP Configured Parameters:
 - keepalive interval, keepalive failures
 - initial MRU
 - receive ACC Map
 - transmit ACC Map

- magic number option
- FCS size (in bits)
- Restart Timer (in seconds)
- Max Retransmits
- Max Config Transmits
- Max Terminate Transmits
- Max Failures
- Passive Option
- Transmit ACFC
- Receive ACFC
- Transmit PFC
- Receive PFC
- MLG Group
- LCP Negotiated Options:
 - Local MRU
 - Remote MRU
 - Local To Peer ACC Map
 - Peer To Local ACC Map
 - Local Protocol Compression
 - Remote Protocol Compression
 - Local AC Compression
 - Remote AC Compression
 - Transmit FCS Size
 - Receive FCS Size
- IPCP State: Operational
- IPCP Configured:
 - Local IP Address
 - Remote IP Address
 - Address Negotiated Option (enabled/disabled)
 - Allow Peer to Negotiate Address
 - Primary DNS Address assigned to Peer
 - Secondary DNS Address assigned to Peer
 - Local Primary DNS Address Negotiated Option (enable/disabled)

- Local Secondary DNS Address Negotiated Option (enable/disabled)
- Allow IP Header Compression Flag
- General Configured:
 - Service-policy name
 - Fragment-map policy name
 - Access-list number
- Last clearing of data plane statistics on this interface:
- number of fragments sent on the link
- number of fillers sent on the link
- number of fragments received on the link
- number of fillers received on the link
- number of received fragments that had overrun
- number of received fragments that resulted in error

Examples

```
(ALU 1850TSS-5) # show interface multilink a-1-1
```

show fragment-map-profile

Syntax

show fragment-map-profile [<fragment-map-name>]

Description

This command displays the configured values of a fragment map profile.

Mode

Privileged EXEC Mode

Release and pack information

VLNC60, starting Release 4.0

Parameters

fragment-map-name -

Default: *None*

Range: 1-31 case sensitive alphanumeric character string

Support for no form

None

User guidelines

None

Output

Displays the following information. If the fragment-map-name is not specified, the output is displayed for each of the profile names:

Fragment-map-name - The name of the fragment map profile

Fragment-size1 - The first of up to four sizes of fragments for the fragment map profile

Examples

```
(ALU 1850TSS-5) # show fragment-map-profile FragmentProfile1
```


Appendix A: Addressable entities

Addressable entities

This section describes the entities on the Alcatel-Lucent 1850 TSS-5 VLNC40, VLNC60, and VLNC64 circuit packs.

Entity	Reference Name in this document	Addressable value range	Comment	Starting Release/pack
Ethernet ports on the Circuit Pack	Ethernet-Port	d{2}-{1-4} for VLNC40	Represents d{slot}-{port number} for the Ethernet faceplate ports on the pack.	R3.0/VLNC40
		a{9-28} for VLNC40	Represents a{port number} for the Ethernet backplane ports on the pack.	R3.0/VLNC40
		d{1-2}-{1-2} for VLNC60, VLNC64	Represents d{slot}-{port number} for the Ethernet faceplate ports on the pack	R4.0/VLNC60 R4.1/VLNC64
Generic	all	all	Refers to all instances of an addressable entity specified above.	R3.0/VLNC40 R4.0/VLNC60 R4.1/VLNC64
Link Aggregation Groups	LAG	lag{1-30} for VLNC40	Represents LAG within a pack.	R3.0/VLNC40
Pseudowires	PWE	1 to 31 character string	Represents a user-defined name.	R4.0/VLNC60 R4.1/VLNC64
Packet Switched Network Tunnel	PSN	1 to 31 character string	Represents a user-defined name.	R4.0/VLNC60 R4.1/VLNC64

Entity	Reference Name in this document	Addressable value range	Comment	Starting Release/pack
BITS Line Interface Unit (LIU) External Timing Reference	BITS-LIU	ref- {1-2}	ref- {slot}	R4.0/VLNC60 R4.1/VLNC64
t1-mode-entities				
T1 ports for VLNC60	T1-Port	a- {1-2}- {1-4}	a- {VTG}- {port} Addressing convention consistent with VLNC50	R4.0/VLNC60
OC3 port for VLNC64	OC3-Port	main- {1-2}- 1	main- {slot}- {line}	R4.1/VLNC64
OC3 Socket for VLNC64	OC3-SC	main- {1-2}- sc1	main- slot- sc {line}	R4.1/VLNC64
VT, DS1 on OC3 port for VLNC64	VTDS1-Port	m {1-2}- {1}- {1-3}- {1-7}- {1-4}	m {slot}- {line}- {STS}- {VTG}- {VT or DS1}	R4.1/VLNC64
STS1-Path for VLNC64	STS1-Path	m {1-2}- {1}- {1-3}	m {slot}- {line}- {STS}	R4.1/VLNC64
e1-Mode Entities				
E1 ports for VLNC60	E1-Port	a- {1-2}- {1-3} a- {3}- {1-2} for VLNC60	a- {TUG2}- {port}	R4.1/VLNC64
STM1 port for VLNC64	STM1-Port	main- {1-2}- 1	main- {slot}- {line}	R4.1/VLNC64
STM1 Socket for VLNC64	STM1-SC	main- {1-2}- sc1	main- {slot}- sc {line}	R4.1/VLNC64
VC12, E1 on STM1 port for VLNC64	VCE1-Port	m {1-2}- {1}- {1-3}- {1-7}- {1-3}	m {slot}- {line}- {TUG3}- {TUG2}- {VC12 or E1}	R4.1/VLNC64
VC4-Path for VLNC64	VC4-Path	m {1-2}- {1}- {1}	m {slot}- {line}- {VC4}	R4.1/VLNC64

Appendix B: Commands

Command listing

This section lists the CLI commands that appear in the user interface in alphabetical order. It also identifies their support in this release and the page where they are described in detail.

Command	Current Status	Page
access-list	Supported	3-94
acl-trapflags	Supported	3-99
addport	Supported	1-144
alarm	Supported	7-123
alarm-pwe	Supported	6-76
arp	Supported	2-3
arp cachesize	Supported	2-5
arp dynamicrenew	Supported	2-6
arp purge	Supported	2-7
arp resptime	Supported	2-8
arp retries	Supported	2-9
arp timeout	Supported	2-10
assign-fragment-map	Supported	9-9
assign-multilink-group	Supported	9-23
assign-queue	Supported	3-54
auto-negotiate	Supported	1-9

Command	Current Status	Page
auto-negotiate all	Supported	1-10
backplane port	Supported	1-31
bfd	Supported	6-23
boot system	Supported	4-6
bridge aging-time	Supported	1-183
class	Supported	3-59
class-map	Supported	3-26
class-map rename	Supported	3-28
classofservice dot1p-mapping	Supported	3-4
classofservice ip-dscp-mapping	Supported	3-8
classofservice ip-precedence-mapping	Supported	3-6
classofservice trust	Supported	3-9
clear arp-cache	Supported	2-11
clear config	Supported	4-61
clear counters	Supported	4-62
clear counters all	Supported	4-66
clear counters (for PDH/SONET/SDH)	Supported	4-64
clear pass	Supported	4-67
clear port-channel	Supported	4-68
clear traplog	Supported	4-69
clear vlan	Supported	4-70
configure	Supported	5-22
conform-color	Supported	3-58
connect-interface	Supported	6-54
connect-psntunnel	Supported	6-42
copy	Supported	4-78
copy (pre-login banner)	Supported	5-113
cos-queue min-bandwidth	Supported	3-10
cos-queue strict	Supported	3-12

Command	Current Status	Page
delete	Supported	4-4
deleteport (global level)	Supported	1-146
deleteport (interface level)	Supported	1-145
deny permit	Supported	3-87
description (for OC3/STM1)	Supported	7-29
description (for E1)	Supported	7-21
description (for Ethernet)	Supported	1-11
description (for T1)	Supported	7-10
differential-timing-domain	Supported	8-10
diffserv	Supported	3-24
disconnect	Supported	5-39
dns-server	Supported	2-41
dos-control <*>	Not supported	1-181
drop	Supported	3-55
dvlan-tunnel ethertype	Supported	1-109
enable (Privileged EXEC access)	Supported	5-5
enable passwd	Supported	4-71
encapsulation (for E1)	Supported	7-23
encapsulation (for Ethernet)	Supported	2-29
encapsulation (for T1)	Supported	7-15
exp (for PSN-Tunnel)	Supported	6-11
exp (for PWE)	Supported	6-53
filedescr	Supported	4-9
fragment-map-profile	Supported	9-26
fragment-size1	Supported	9-28
inbandlpbkdsx	Supported	7-33
initial-delay	Supported	6-49
inlabel	Supported	6-38
insegment	Supported	6-9

Command	Current Status	Page
inssrc	Not Supported	6-58
interface (for E1)	Supported	7-19
interface (for Ethernet)	Supported	1-7
interface (for OC3/STM1)	Supported	7-27
interface (for STS-1/VC4)	Supported	7-32
interface (for T1)	Supported	7-8
interface multilink	Supported	9-3
interface-mode	Supported	7-5
ip access-group	Supported	3-97
ip address	Supported	2-20
ip address (for MLG)	Supported	9-5
ip dhcp pool	Supported	2-39
ip http java	Supported	5-55
ip http server	Supported	5-53
ip mtu	Supported	2-28
ip route	Supported	2-22
ip route default	Supported	2-24
ip route distance	Supported	2-26
ip routing	Supported	2-19
ip ssh	Supported	5-44
ip ssh protocol	Supported	5-46
ip ssh server enable	Supported	5-47
ip telnet server enable	Supported	5-28
jitter-buffer-size	Supported	6-46
linebuildout	Supported	7-14
linecode	Supported	7-13
lineconfig	Supported	5-23
local-discriminator	Supported	6-27
logging buffered	Supported	4-42

Command	Current Status	Page
logging buffered wrap	Supported	4-44
logging cli-command	Supported	4-45
logging console	Supported	4-46
logging host	Not supported	4-47
logging host remove	Not supported	4-48
logging port	Not supported	4-49
logging syslog	Not supported	4-50
logout	Supported	4-72
loopback	Supported	7-35
mac access-group	Supported	3-90
mac access-list extended	Supported	3-84
mac access-list extended rename	Supported	3-86
macfilter	Not supported	1-164
macfilter addsrc	Not supported	1-165
macfilter addsrc all	Not supported	1-166
mark cos	Supported	3-61
mark ip-dscp	Supported	3-62
mark ip-precedence	Supported	3-63
match any	Supported	3-31
match class-map	Supported	3-32
match cos	Supported	3-34
match destination-address mac	Supported	3-36
match dstip	Supported	3-38
match dstl4port	Supported	3-40
match ethertype	Supported	3-30
match ip dscp	Supported	3-41
match ip precedence	Supported	3-42
match ip tos	Supported	3-43
match protocol	Supported	3-45

Command	Current Status	Page
match secondary-cos	Supported	3-35
match secondary-vlan	Supported	3-52
match source-address mac	Supported	3-47
match srcip	Supported	3-49
match srcl4port	Supported	3-50
match vlan	Supported	3-51
min-rx-interval	Supported	6-30
min-tx-interval	Supported	6-31
mirror	Supported	3-56
mode dot1q-tunnel	Not supported	1-111
mode dvlan-tunnel	Supported	1-112
monitor session	Supported	1-159
mtu	Supported	1-12
multilink bundle-name endpoint	Supported	9-10
multilink short-sequence	Supported	9-12
multiplier	Supported	6-32
network javamode	Supported	5-17
network mac-address	Supported	5-15
network mac-type	Supported	5-16
network mgmt_vlan	Supported	1-74
network parms	Supported	5-11
network protocol	Supported	5-13
no monitor	Supported	1-161
outlabel	Supported	6-39
outsegment	Supported	6-6
outssrc	Not Supported	6-59
payload-frame-count	Supported	6-44
perfmon shutdown	Supported	7-126
perfmon tca	Supported	7-108

Command	Current Status	Page
ping	Supported	4-73
pkt-filler	Supported	6-51
police-simple	Supported	3-64
policy-map	Supported	3-66
policy-map rename	Supported	3-67
port lacpmode	Supported	1-148
port lacpmode all	Supported	1-149
port lacptimeout (global level)	Supported	1-151
port lacptimeout (interface level)	Supported	1-150
port-channel	Supported	1-142
port-channel adminmode all	Supported	1-152
port-channel linktrap	Supported	1-153
port-channel name	Supported	1-154
port-channel static	Supported	1-147
port-security	Supported	1-169
port-security mac-address	Supported	1-173
port-security mac-address move	Supported	1-175
port-security max-dynamic	Supported	1-171
port-security max-static	Supported	1-172
ppp acfc	Supported	9-22
ppp max-configure	Supported	9-17
ppp max-failure	Supported	9-19
ppp max-terminate	Supported	9-16
ppp pfc	Supported	9-21
ppp restart-timer	Supported	9-14
ppp shutdown	Supported	9-25
protectionmode	Supported	6-56
protocol group	Not supported	1-93
protocol vlan group	Not supported	1-94

Command	Current Status	Page
protocol vlan group all	Not supported	1-95
pseudowire	Supported	6-36
psntunnel	Supported	6-4
psn-tunnel-protect	Supported	6-71
ptp-1588 announce-receipt-timeout	Supported	8-26
ptp-1588 domain	Supported	8-22
ptp-1588 log-mean-announce-interval	Supported	8-25
ptp-1588 log-mean-sync-interval	Supported	8-23
ptp-1588 log-min-mean-delay-req-interval	Supported	8-24
ptp-1588 mode	Supported	8-15
ptp-1588 multicast	Supported	8-28
ptp-1588 port	Supported	8-17
ptp-1588 priority1	Supported	8-20
ptp-1588 priority2	Supported	8-21
ptp-1588 time-switch-mode	Supported	8-27
ptp-1588 vlan	Supported	8-16
ptp-1588-protocol	Supported	8-13
quit	Supported	4-75
redirect	Supported	3-57
reload {warm}	Supported	4-76
remote-discriminator	Supported	6-28
remote-ip-address-offset	Supported	9-7
routing	Supported	2-17
sl-ssm	Supported	7-30
script apply	Supported	5-104
script delete	Supported	5-106
script list	Supported	5-107
script show	Supported	5-109
script validate	Supported	5-111

Command	Current Status	Page
serial baudrate	Supported	5-24
serial timeout	Supported	5-25
service-policy in	Supported	3-68
serviceport ip	Supported	5-7
serviceport protocol	Supported	5-9
service-vlan (for PSN-Tunnel)	Supported	6-14
service-vlan (for PWE)	Supported	6-40
service-vlan (for MLG)	Supported	9-11
session-limit	Supported	5-34
session-timeout	Supported	5-35
set prompt	Supported	5-115
sfp-unequip	Supported	1-20
show access-lists interface	Supported	3-102
show alarm configuration	Supported	7-113
show alarm-pwe configuration	Supported	6-73
show alarms	Supported	7-116
show alarms all	Supported	7-120
show arp-cache	Supported	2-12
show arp switch	Supported	2-16
show arp switch	Supported	4-11
show backplane port	Supported	1-33
show bfd	Supported	6-33
show bootvar	Supported	4-7
show class-map	Supported	3-70
show classofservice dot1p-mapping	Supported	3-14
show classofservice ip-dscp-mapping	Not supported	3-18
show classofservice ip-precedence-mapping	Supported	3-16
show classofservice trust	Supported	3-19
show diffserv	Supported	3-72

Command	Current Status	Page
show diffserv service	Supported	3-77
show diffserv service brief	Supported	3-79
show dos-control	Not supported	1-182
show dot1q-tunnel	Not supported	1-113
show dvlan-tunnel	Supported	1-114
show eventlog	Supported	4-13
show forwardingdb agetime	Supported	1-185
show fragment-map-profile	Supported	9-37
show hardware	Supported	4-15
show interface	Supported	4-20
show interface configuration (for E1)	Supported	7-25
show interface configuration (for OC3/STM1)	Supported	7-31
show interface configuration (for T1)	Supported	7-17
show interface ethernet	Supported	4-23
show interface-mode	Supported	7-7
show interfaces cos-queue	Supported	3-21
show interfaces switchport	Supported	1-124
show ip access-lists	Supported	3-100
show ip brief	Supported	2-30
show ip dhcp pool configuration	Supported	2-42
show ip http	Supported	5-56
show ip interface	Supported	2-31
show ip interface brief	Supported	2-30
show ip route	Supported	2-35
show ip route summary	Supported	2-37
show ip ssh	Supported	5-51
show ip stats	Not Supported	2-38
show logging	Supported	4-51
show logging buffered	Supported	4-53

Command	Current Status	Page
show logging hosts	Supported	4-55
show logging traplogs	Supported	4-57
show login session	Supported	5-68
show loopback	Supported	7-39
show mac access-lists	Supported	3-92
show mac-address-table multicast <mac-address>	Not supported	1-186
show mac-address-table static	Not supported	1-167
show mac-address-table staticfiltering	Not supported	1-168
show mac-address-table stats	Not supported	1-187
show mac-addr-table	Supported	4-33
show monitor session	Supported	1-162
show network	Supported	5-18
show perfmon configuration	Supported	7-111
show perfmon counters (for E1:day)	Supported	7-55
show perfmon counters (for E1:interval)	Supported	7-53
show perfmon counters (for OC3:day)	Supported	7-75
show perfmon counters (for OC3:interval)	Supported	7-73
show perfmon counters (for STM1:day)	Supported	7-82
show perfmon counters (for STM1:interval)	Supported	7-80
show perfmon counters (for STS-1:day)	Supported	7-88
show perfmon counters (for STS-1:interval)	Supported	7-86
show perfmon counters (for T1:day)	Supported	7-48
show perfmon counters (for T1:interval)	Supported	7-46
show perfmon counters (for VC4:day)	Supported	7-94
show perfmon counters (for VC4:interval)	Supported	7-92
show perfmon counters (for VC12:day)	Supported	7-106
show perfmon counters (for VC12:interval)	Supported	7-104
show perfmon counters (for VT:day)	Supported	7-100
show perfmon counters (for VT:interval)	Supported	7-98

Command	Current Status	Page
show perfmon counters (for VLNC64 DS1:day)	Supported	7-62
show perfmon counters (for VLNC64 DS1:interval)	Supported	7-60
show perfmon counters (for VLNC64 E1:day)	Supported	7-68
show perfmon counters (for VLNC64 E1:interval)	Supported	7-66
show policy-map	Supported	3-74
show policy-map interface	Supported	3-81
show port	Supported	1-21
show port (for all ports of same type)	Supported	1-26
show port description	Supported	1-28
show port protocol	Not supported	1-30
show port-channel	Supported	1-157
show port-channel brief	Supported	1-155
show port-security	Supported	1-176
show port-security dynamic	Supported	1-178
show port-security static	Supported	1-179
show port-security violation	Supported	1-180
show ppp interface	Supported	9-34
show ppp multilink	Supported	9-31
show psntunnel	Supported	6-16
show psntunnel all	Supported	6-21
show psntunnel brief	Supported	6-19
show ptp-1588	Supported	8-29
show pwe	Supported	6-60
show pwe all	Supported	6-66
show pwe brief	Supported	6-64
show pwe (for snapshot)	Supported	6-68
show queue-scheduler-profile	Supported	9-29
show running-config	Supported	4-36
show serial	Supported	5-26

Command	Current Status	Page
show service-policy in	Supported	3-83
show serviceport	Supported	5-20
show snmpcommunity	Supported	5-98
show snmptrap	Supported	5-100
show spanning-tree	Supported	1-56
show spanning-tree brief	Supported	1-59
show spanning-tree interface	Supported	1-61
show spanning-tree mst port detailed	Supported	1-63
show spanning-tree mst port summary	Supported	1-66
show spanning-tree mst summary	Supported	1-68
show spanning-tree summary	Supported	1-70
show spanning-tree vlan	Supported	1-72
show storm-control	Supported	1-140
show switchport protected	Supported	1-122
show sysinfo	Supported	4-38
show system-timing-source	Supported	8-6
show tech-support	Supported	4-40
show telnet	Supported	5-40
show telnetcon	Supported	5-42
show trapflags	Supported	5-102
show traps configuration	Supported	7-130
show users	Supported	5-70
show version	Supported	4-17
show vlan	Supported	1-100
show vlan association mac	Not supported	1-108
show vlan association subnet	Not supported	1-107
show vlan brief	Supported	1-103
show vlan port	Supported	1-105
shutdown	Supported	1-13

Command	Current Status	Page
shutdown all	Supported	1-14
shutdown (for MLG)	Supported	9-13
shutdown (for PSN-Tunnel)	Supported	6-12
shutdown (for PWE)	Supported	6-55
signalformat (for E1)	Supported	7-22
signalformat (for T1)	Supported	7-11
snmp trap link-status	Supported	5-96
snmp trap link-status all	Supported	5-97
snmp-server	Supported	5-72
snmp-server community	Supported	5-74
snmp-server community ipaddr	Supported	5-76
snmp-server community ipmask	Supported	5-78
snmp-server community mode	Supported	5-80
snmp-server community ro	Supported	5-82
snmp-server community rw	Supported	5-83
snmp-server enable traps	Supported	5-85
snmp-server enable traps linkmode	Supported	5-86
snmp-server enable traps multiusers	Supported	5-87
snmp-server enable traps stpmode	Supported	5-88
snmp-server enable traps violation	Supported	5-84
snmptrap	Supported	5-89
snmptrap ipaddr	Supported	5-93
snmptrap mode	Supported	5-95
snmptrap snmpversion	Supported	5-91
spanning-tree	Supported	1-35
spanning-tree bpdumigrationcheck	Supported	1-37
spanning-tree configuration name	Supported	1-38
spanning-tree configuration revision	Supported	1-39
spanning-tree edgeport	Supported	1-40

Command	Current Status	Page
spanning-tree forceversion	Supported	1-41
spanning-tree forward-time	Supported	1-42
spanning-tree hello-time	Supported	1-43
spanning-tree max-age	Supported	1-44
spanning-tree max-hops	Supported	1-45
spanning-tree mst	Supported	1-46
spanning-tree mst instance	Supported	1-49
spanning-tree mst priority	Supported	1-50
spanning-tree mst vlan	Supported	1-52
spanning-tree port mode	Supported	1-54
spanning-tree port mode all	Supported	1-55
speed	Supported	1-15
speed all	Supported	1-17
speed all (VLNC60 and VLNC64)	Supported	1-19
sshcon maxsessions	Supported	5-48
sshcon timeout	Supported	5-49
storm-control broadcast	Supported	1-126
storm-control broadcast all	Supported	1-129
storm-control broadcast all level	Supported	1-130
storm-control broadcast level	Supported	1-128
storm-control flowcontrol	Supported	1-139
storm-control multicast	Supported	1-131
storm-control multicast all	Supported	1-133
storm-control multicast all level	Supported	1-134
storm-control multicast level	Supported	1-132
storm-control unicast	Supported	1-135
storm-control unicast all	Supported	1-137
storm-control unicast all level	Supported	1-138
storm-control unicast level	Supported	1-136

Command	Current Status	Page
switchport protected (global level)	Supported	1-119
switchport protected (interface level)	Supported	1-121
system-timing-source	Supported	8-3
telnet	Supported	5-30
telnetcon maxsessions	Supported	5-36
telnetcon timeout	Supported	5-37
timing-source	Supported	8-8
timing-source system	Supported	8-12
traceroute	Supported	4-59
traffic-shape	Supported	3-13
transport input telnet	Supported	5-32
transport output telnet	Supported	5-33
traps shutdown	Supported	7-128
ttl (for PWE)	Supported	6-52
udp	Supported	6-25
update bootcode	Supported	4-10
users name	Supported	5-58
users passwd	Supported	5-60
users snmpv3 accessmode	Supported	5-62
users snmpv3 authentication	Supported	5-64
users snmpv3 encryption	Supported	5-66
vlan	Supported	1-75
vlan acceptframe	Supported	1-76
vlan association mac	Not supported	1-99
vlan association subnet	Not supported	1-98
vlan database	Supported	1-73
vlan ingressfilter	Supported	1-77
vlan makestatic	Supported	1-78
vlan name	Supported	1-79

Command	Current Status	Page
vlan participation	Supported	1-81
vlan participation all	Supported	1-83
vlan port acceptframe all	Supported	1-85
vlan port ingressfilter all	Supported	1-87
vlan port priority all	Supported	1-116
vlan port pvid all	Supported	1-88
vlan port tagging all	Supported	1-89
vlan priority	Supported	1-118
vlan protocol group	Not supported	1-90
vlan protocol group add group	Not supported	1-91
vlan protocol group remove	Not supported	1-92
vlan pvid	Supported	1-96
vlan tagging	Supported	1-97
write memory	Supported	4-81

