ADLINK PacketManager Configuration Guide

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Leading EDGE COMPUTING

Preface

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Revision History

Rev	Date	Description
1.00	22/03/2016	Initial release
1.1	16/08/2017	Add LLDP, SNMP, VRRP, LBG and CMM configuration notes; update for MXN-3610/MXN-4100; removed contents for processor boards.

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1 Scope

1.1 Manual Scope

Administrators and users of the PacketManager software package can manage and monitor the network via a command line interface (CLI), either through a Telnet connection or by direct access through a serial port on the PacketManager equipped system.

This PacketManager Configuration Guide documents the commands used to configure PacketManager for monitoring network traffic and events.

1.2 Audience

This manual is intended for:

- Technical staff responsible for the configuration, provisioning, and management of network devices and services
- Network operations center personnel who manage and monitor PacketManager equipment alarms and events

The document assumes that users of PacketManager equipment are familiar with CLIs in general and particularly with network management software and telecom equipment and terminology.

1.3 Products

This manual is for use with the following ADLINK products and PacketManager versions:

- **aTCA-3430** PacketManager_3430_V1.1_s.729.tar.gz
- **aTCA-3710** PacketManager_3710_V1.1_s.729.tar.gz
- **aTCA-N700** PacketManager_n700_V1.1_s.729.tar.gz
- **cPCI-6X10** PacketManager_6s10_V1.1_s.74.tar
- **CSA-7400** PacketManager_7400_V1.0_s.659.tar.gz (MXN-3610)
- **MXN-0410** PacketManager_0410_V1.1_s.74.tar
- **MXN-4100** PacketManager_4100_V1.0_s.659.tar.gz

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2 Introduction

Due to the exponential growth of data traffic, service operators need increased levels of switching and fast forwarding bandwidth to keep up with rapidly growing operational demands. ADLINK has developed its own network traffic management software, PacketManager, to allow customers to configure, manage and monitor ADLINK switch blades.

Designed to support a variety of hardware architectures, including Broadcom switches and Intel® Red Rock Canyon switch, ADLINK PacketManager provides a common suite of configuration tools and programming interfaces to make transparent the differences in hardware among platforms.

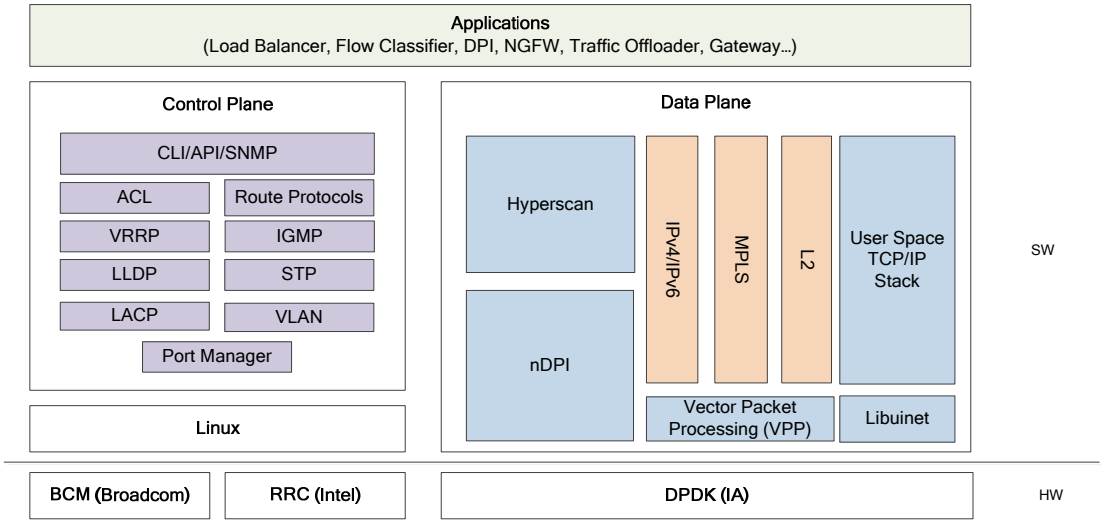


Figure 1: ADLINK PacketManager Software Architecture

2.1 Control Plane Software for Switch Blades

Built using the Linux operating system as a foundation, the PacketManager control plane includes the most commonly used Layer 2/3/4 protocols, including VLAN, LAG, IGMP, STP, RIP, OSPF, ISIS and ACL. By enabling these higher protocols, the control plane also takes ownership of updating the protocol state/information, including port state/statistics, ARP/routing tables, and relative protocols states, and then synchronizes these data with the switch chipsets.

For easy deployment and management, ADLINK PacketManager not only provides a friendly command line interface (CLI), but also includes remote procedure call (RPC) based APIs to allow further customization and integration with the customers' management systems.

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In addition to general monitoring and management, the control plane also allows customers to define their own policies based on pre-defined rules to control actions taken on matched packets, such as drop, mirror, or forwarding.

2.2 Data Plane Software for x86 Blades

In contrast to the control plane, ADLINK has integrated and validated open source data plane software that provides a fast path to process packets on x86 blades with DPDK.

nDPI and Hyperscan can be used to build packet processing applications that need deep packet inspection or application identification functions.

The VPP stack can be used as the basis for a Load Balancer, a Firewall, an IDS, or a Host Stack. At a high level, the software stack provides:

- Fast lookup tables for routes, bridge entries
- Arbitrary n-tuple classifiers
- Out of the box production quality switch/router functionality

If a user-space TCP/IP stack is required on top of DPDK, ADLINK has validated Libuinet, a library version of FreeBSD's TCP/IP stack with additional components.

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3 Command Line Interface (CLI)

ADLINK PacketManager supports a utility program that enables remote network management, including object configuration and service provisioning. The utility program uses a command line interface (CLI) to communicate with the platform.

The CLI is organized into a number of command modes and submodes in which related functions are grouped in a hierarchical tree structure. System maintenance and configuration commands are reserved for users with administrator privileges, while users with lower access levels only have privileges to perform provisioning tasks or view statistics and status information.

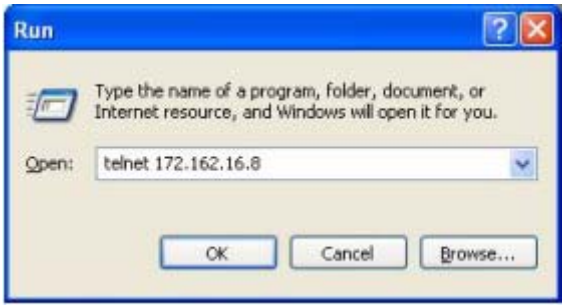
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4 Login

Users can login to the system via Telnet connection to the interface port on the PacketManager software package. During installation of a blade supporting PacketManager, an IP address must be assigned to the IP parameters of the system. Following initial configuration and after connection to the LAN is established, the user can login to the system IP address via Telnet and use the CLI to perform remote platform management and service provisioning.

The following example illustrates a Telnet connection provided by Microsoft Windows. Any Telnet client can be used. To open a CLI session using Telnet:

1. Click the Windows Start button and select Run.
2. Type telnet and the system IP address assigned to the blade.
   For example, “telnet 172.162.16.8”



3. Click OK to open a command line window.
4. Type your user name and password as prompted. If you are logging in for the first time, use the default user name and password (“root” and “root”).

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5 Configuration

This chapter describes PacketManager features for Switch Blades and guides you through the software configuration procedures. Configuration examples are also provided to help you to apply software features in different network scenarios.

5.1 Installation and Upgrade

The following procedure is for PacketManager application installation and upgrade on the PacketManager platform.

1. Transfer the file " PacketManager_xxxx_xxxx.tar.gz " to the blade and extract it.

```
[root@atca-3710:/home]# ls
PacketManager_xxxx_V1.1.0.tar.gz
[root@atca-3710:/homeatca-3710]# tar -xzvf PacketManager_xxxx_V1.1.0.tar.gz
```

2. Run the script “install.sh” to install the PacketManager application.

```
[root@atca-3710:/home]# cd PacketManager_xxxx_V1.1.0

[root@atca-3710:/home/ PacketManager_xxxx_V1.1.0]# ./install.sh
Old start-up config will be cleared. Please make sure that it has been backuped!
Continue to install? (y/n): y
Stopping Broadcom Switch Software .OK
Begin to install...
Starting Broadcom Switch Software ..... OK
```

3. Run the script “uninstall.sh” to remove the PacketManager application. cPCI-6S10 and MXN-0410 can’t support uninstall.

Note:

We can add permissions to the software folder before beginning the installation if the permission denied alarm is raised.

[root@atca-3710:/home]# chmod -R 777 PacketManager_xxxx_V1.1.0

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To enter Configure Mode use the command *enable* and default password *adlink*. The display will not echo the password. After entering Configure Mode successfully, the prompt will change from ">" to "#".

```
ADLINK> enable
Password:
ADLINK#
```

Note: The passwords you enter do NOT echo on the screen.

5.2 View Mode

View Mode provides limited privileges for users. Users can only read system information and version and have no write privileges.

5.2.1 Get Help

Entering a question mark “?” at the system prompt displays a list of commands or subcommands available for the current command mode. You can also type a “?” in the middle of a command line to view the list of valid arguments or parameters needed to complete the command.

Get online help

Description	Type “?” to get online help		
Prerequisite	None		
Syntax	?		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

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Example

Get help after logging in.

```
ADLINK>
  enable   Turn on privileged mode command
  quit     Leave switch manager shell
  show     Show running system information
  who      Display who is on vty
ADLINK>
```

Note: The question mark "?" you enter is a non-display character and will not echo on the command line.

5.2.2 Enter Configure Mode

The following command allows you to enter Configure Mode.

Enter enable configure mode

Description	Enter enable configure mode.		
Prerequisite	None		
Syntax	enable		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

Example

Enter enable configure mode after logging in.

```
ADLINK> enable
Password:
ADLINK#
```

The default password is "adlink".

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5.2.3 Exit PacketManager Shell

The following command allows you to exit PacketManager.

Exit shell

Description	Exit from the PacketManager shell in view mode.		
Prerequisite	None		
Syntax	quit		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

Example

Exit from the shell.

```
ADLINK>
ADLINK> quit
Connection closed by foreign host.
```

5.2.4 Show System Information

The following commands are available for displaying system information.

Show system information

Description	Show brief information about the system.		
Prerequisite	None		
Syntax	show system		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

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Example

Show brief system information on 3710.

```
show system
Device ID                 : 18
Device Revision           : 0
Firmware Revision         : 1.9
IPMI Version              : 1.5
Manufacturer ID           : 24339
Manufacturer Name          : Unknown (0x5F13)
Product ID                : 14096 (0x3710)
Product Name               : Unknown (0x3710)
Device Available          : yes
Provides Device SDRs       : yes
Fabric Port Number        : 1 - 25
```

Show brief system information on 6s10.

```
cpci-6s10> show system
Device ID                 : 18
Manufacturer ID           : 24339
Manufacturer Name          : Unknown (0x5F13)
Product ID                : 21267 (0x5313)
Product Name               : Unknown (0x5313)
Device Available          : yes
Provides Device SDRs       : yes
Fabric Port Number        : 2 - 29
```

Show version information

Description	Show version information of software and firmware.		
Prerequisite	None		
Syntax	show version		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

Example

Show version.

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```
ADLINK> show version
OS version                    : Linux localhost.localdomain 3.10.0-229.el7.x86_64 #1 SMP Fri
Mar 6 11:36:42 UTC 2015 x86_64 x86_64 x86_64 GNU/Linux
ADLINK sdk Version            : PacketManager_7400_V1.0_s.655
Support Board                 : CAS-7400
Build on                      : Oct 20 2016 03:32:53
```

Show history

Description	Show platform information.		
Prerequisite	None		
Syntax	show platform		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

Example

Show platform information

```
ADLINK> show platform
mxn_3610_1610
ADLINK>
```

Show Platform

Description	Show the command line history.		
Prerequisite	None		
Syntax	show history		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

Example

Show the command line history.

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```
ADLINK> show history
   show version
ADLINK> show history
   show version
   show history
ADLINK>
```

5.2.5 Display Who is on VTY

Since multiple users can log into the CLI at the same time, a command is provided to show who is logged in.

Display who is on VTY

Description	Display who is on VTY.		
Prerequisite	None		
Syntax	who		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

Example

Display who is on VTY.

```
ADLINK> who
  vty[9] connected from 127.0.0.1.
ADLINK>
```


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5.3 Configure Mode

Configure Mode provides more privileges than View Mode. Users can configure VLAN, TRUNK, ACL and other functions in Configure Mode to meet their requirements.

The following command allows you to exit the current mode.

Exit current mode

Description	Exit from the current mode and go to the next higher level menu.		
Prerequisite	None		
Syntax	exit		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

Example

Exit from configure mode to view mode.

```
atca-3710# exit
atca-3710>
```

Write

Description	Write the current configuration to the default file.		
Prerequisite	None		
Syntax	write		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

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Example

Write the current configuration to the default file “/etc/vty.conf”.

```
ADLINK# write
Configuration saved.
ADLINK#
```

Restore

Description	Clear the default configuration file.		
Prerequisite	None		
Syntax	restore		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

Example

Clear the default configuration file “/etc/vty.conf”.

```
ADLINK#
ADLINK# restore
ADLINK#
```

Export

Description	Export current configuration to “/home/vty.conf”.		
Prerequisite	None		
Syntax	export current-configure		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

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Example

Export current configuration to “/home/vty.conf”.

```
ADLINK# export current-configure
Export current configure to /home/vty.conf
ADLINK#
```

Import

Description	Import the saved configuration file.		
Prerequisite	None		
Syntax	import FILE_PATH		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	FILE_PATH	The configure file path, e.g.:/home/vty.conf.	

Example

Import the configuration file “/home/vty.conf”.

```
ADLINK# import    /home/vty.conf
Import success, please restart the board to take effect.
ADLINK#
```

5.3.1 Password

Users can enter Configure Mode by inputting the correct password. The default password is “adlink”, and you can change it as below.

The following command allows you to change the password.

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Modify password

Description	Modify the enable password.		
Prerequisite	None		
Syntax	password xxxxx		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	xxxxx	The new password string.	

Example

Modify the password, and login to Configure Mode with the new password.

```
ADLINK # password 123456
ADLINK # exit
ADLINK > enable
Password: <now use 123456 to enter enable node>
ADLINK #
```

Delete password

Description	Delete the enable password.		
Prerequisite	None		
Syntax	delete password		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NA		

Example

delete the password, and login to Configure Mode with no password.

```
ADLINK # delete password
ADLINK # exit
ADLINK > enable
ADLINK #
```


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5.3.2 Port Configuration

The following commands are available for configuring port parameters.

Show port counters

Description	Show the traffic counters of ports.		
Prerequisite	None		
Syntax	show port PORT_LIST|PORT_ID counters [nozero]		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	nozero	Optional parameter. This parameter is added to hide those zero items.	

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Example

Show port counters .

```
ADLINK(fabric)# show port xe1 counters
Statistics of port xe1 --
RX Octets                    :                410(Byte)
RX Pkts(total)               :                5(packets)
RX Pkts Without Err          :                5(packets)
RX Unicast                   :                0(packets)
RX Bcast                     :                0(packets)
RX Mcast                     :                5(packets)
RX Err                       :                0(packets)
RX Oversize                  :                0(packets)
RX Discards                  :                5(packets)
R64                          :                0(packets)
R65to127                     :                410(packets)
R128-255                     :                0(packets)
R256-511                     :                0(packets)
R512-1023                    :                0(packets)
R1024-1518                   :                0(packets)
TX Octets                    :                3465(Byte)
TX Pkts Without Err          :                36(packets)
TX Unicast                   :                0(packets)
TX Bcast                     :                1(packets)
TX Mcast                     :                35(packets)
TX Discards                  :                0(packets)
Time since last clear        :                2095600(ms)
```

```
ADLINK(fabric)# show port xe1 counters nozero
Statistics of port xe1 --
RX Octets                    :                410(Byte)
RX Pkts(total)               :                5(packets)
RX Pkts Without Err          :                5(packets)
RX Mcast                     :                5(packets)
RX Discards                  :                5(packets)
R65to127                     :                410(packets)
TX Octets                    :                3465(Byte)
TX Pkts Without Err          :                36(packets)
TX Bcast                     :                1(packets)
TX Mcast                     :                35(packets)
Time since last clear        :                2109818(ms)
```


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Clear port counters

Description	Clear the traffic counters of ports.		
Prerequisite	None		
Syntax	clear port PORT_LIST|PORT_ID counters		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	

Example

Clear port counters .

```
ADLINK(fabric)# clear port xe1 counters
ADLINK(fabric)# show port xe1 counters
Statistics of port xe1 --
RX Octets                    :                    0(Byte)
RX Pkts(total)               :                    0(packets)
RX Pkts Without Err          :                    0(packets)
RX Unicast                   :                    0(packets)
RX Bcast                     :                    0(packets)
RX Mcast                     :                    0(packets)
RX Err                       :                    0(packets)
RX Oversize                  :                    0(packets)
RX Discards                  :                    0(packets)
R64                          :                    0(packets)
R65to127                     :                    0(packets)
R128-255                     :                    0(packets)
R256-511                     :                    0(packets)
R512-1023                    :                    0(packets)
R1024-1518                   :                    0(packets)
TX Octets                    :                    0(Byte)
TX Pkts Without Err          :                    0(packets)
TX Unicast                   :                    0(packets)
TX Bcast                     :                    0(packets)
TX Mcast                     :                    0(packets)
TX Discards                  :                    0(packets)
Time since last clear        :                    6073(ms)
```


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Show port

Description	Show the status of ports.		
Prerequisite	None		
Syntax	show port PORT_LIST|PORT_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Optional parameter. If there is no port list, it will show the general status of all ports. Otherwise, it will show the detailed status of the specified ports. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	

Example

Show port status.

```
ADLINK(fabric)# show port
 PORT   LINK   SPEED   DUPLEX   AUTONEG   STP-STATE   PAUSE   MTU
 -----+-----+------+-------+--------+----------+------+-----
   xe1   up      10G      full      No          Forward       TX RX 1536
   xe2   down    0M       full      No          Forward       TX RX 1536
   xe3   down    0M       full      No          Forward       TX RX 1536
   xe4   down    0M       full      No          Forward       TX RX 1536
   xe5   down    0M       full      No          Forward       TX RX 1536
…
```


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Show port status (cont'd).

```
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                : ADLINK-1
Admin status    : Enable                    Link status      : Up
Auto-neg          : Off
Link speed       : 10000M                    Duplex mode      : Full
Vlan filter      : None                      Stp state        : Forward
Default VLAN    : 100                       Default COS      : 0
Untag Vlan Cnt : 1                          Untag Vlan No    : 100
Tagged Vlan Cnt: 0
MTU                 : 1536
Qinq mode         : external
Mac learn         : Enable
Mcast limit      : Disable                   Mcast max rate : 0 Mbps
Bcast limit      : Enable                    Bcast max rate : 89 Mbps
DLF     limit      : Enable                  DLF max rate     : 478 Mbps
TxPause           : Enable
RxPause           : Enable
ADLINK(fabric)#
```


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Port enable/disable

Description	Set the port admin status of ports.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID enable|disable		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	Enable|disable	Set the admin status of ports to be enable or disable.	

Example

Port enable and disable.

```
ADLINK(fabric)# port xe1 enable
ADLINK(fabric)# show port    xe1
Information of port xe1 --
Name                 : xe1
Admin status     : Enable                    Link status       : Up
Auto-neg           : Off
Link speed         : 10000M                    Duplex mode       : Full
…
ADLINK(fabric)# port xe1 disable
ADLINK(fabric)# show port    xe1
Information of port xe1 --
Name                 : xe1
Admin status     : Disable                   Link status       : Down
Auto-neg           : Off
Link speed         : 0M                        Duplex mode       : Full
…
```


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Port autoneg enable/disable

Description	Set the AutoNeg status of ports.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID autoneg enable|disable		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	enable|disable	Set the AutoNeg status of ports to be enable or disable. Note that Enabling autonegotiation is ineffective unless the link partner also has autonegotiation enabled. If autonegotiation is disabled, you must set the line speed of the physical port.	

Example

Set port autoneg status.

```
ADLINK(fabric)# port xe1 autoneg enable
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                : xe1
Admin status    : Enable                  Link status      : Up
Auto-neg          : On
Link speed       : 10000M                  Duplex mode      : Full
….
ADLINK(fabric)# port xe1 autoneg disable
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                : xe1
Admin status    : Enable                  Link status      : Up
Auto-neg          : Off
Link speed       : 10000M                  Duplex mode      : Full
…
```


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Set port default vlan

Description	Set the default vlan id of ports.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID pvlan <1-4094>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	<1-4094>	Default vlan id. 1 to 4094 is legal value. When a packet coming in without vlan, it will be added a vlan. The vlan id is the ingress port's default vlan.	

Example

Set the default vlan id of ports.

```
ADLINK(fabric)# port    xe1 pvlan 100
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                  : xe1
Admin status      : Enable                    Link status       : Down
Auto-neg           : Off
Link speed         : 0M                        Duplex mode       : Full
Vlan filter        : None                    Stp state          : Forward
Default VLAN      : 100                       Default COS       : 0
…
```


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Show port QiniQ mode

Description	Set the QiniQ mode of ports.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID qinq mode STRING		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	STRING	None | internal | external are legal string. None: disable QiniQ. Internal: pvid add to the internal and use internal vid forwarding. External: pvid add to the external and use external vid forwarding.	

Example

Set ports QiniQ mode .

```
DLINK(fabric)# port xe1 qinq mode    external
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                 : xe1
Admin status     : Enable                    Link status       : Down
Auto-neg           : Off
Link speed         : 0M                        Duplex mode       : Full
Vlan filter        : None                    Stp state          : Forward
Default VLAN     : 1                         Default COS       : 0
Untag Vlan Cnt : 0
Tagged Vlan Cnt: 0
MTU                  : 1536
Qinq mode          : external
…
```


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Set port mac_learn status

Description	Set the mac_learn status of ports.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID mac_learn STRING		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	STRING	enbale | disable are legal string. If the status is enable, the source mac of the packets coming in the port will be added into the L2 table. Otherwise, the source mac will not be added into the L2 table.	

Example

Set port mac_learn status.

```
ADLINK(fabric)# port xe1 mac_learn disable
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                : xe1
…
Tagged Vlan Cnt: 0
MTU                 : 1536
Qinq mode           : external
Mac learn           : Disable
…
```


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Set port pause status

Description	Set the pause status of ports.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID txpause | rxpause STRING		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	txpause | rxpause	Tx or rx pause to set.	
	STRING	Enable | disable are legal string.	

Example

Set port pause status.

```
ADLINK(fabric)# port xe1 txpause disable
ADLINK(fabric)# port xe1 rxpause enable
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                : xe1
…
Mcast limit      : Disable              Mcast max rate : 0 Mbps
Bcast limit      : Disable              Bcast max rate : 0 Mbps
DLF    limit     : Disable              DLF max rate   : 0 Mbps
TxPause          : Disable
RxPause          : Enable
ADLINK(fabric)#
```


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Set port storm control

Description	Set the storm control of ports.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID rate bcast| mcast| dlf disable|enable <35-40000>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	bcast| mcast| dlf	Traffic type. DLF mean dest mac address lookup failed.	
	Disable|enable	Disable: disable the storm control function. Enable: enable the storm control function.	
	<35-40000>	Storm control value, the unit is Mbit. Note that the actual value will be the nearest value supported by the hardware. It can be got by the CMD “show port”.	

Example

Set the storm control of ports.

```
ADLINK(fabric)# port xe1 rate dlf enable    100
ADLINK(fabric)# port xe1 rate mcast    enable    200
ADLINK(fabric)# port xe1 rate bcast enable 300
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                  : xe1
Admin status     : Enable                    Link status       : Down
…
Mcast limit       : Enable                  Mcast max rate : 179 Mbps
Bcast limit       : Enable                  Bcast max rate : 299 Mbps
DLF     limit       : Enable                   DLF max rate     : 89 Mbps
…
```


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Set port MTU

Description	Set the MTU of ports.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID mtu <0-15360>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	<0-15360>	The value of MTU. Note that the actual value will be the nearest value can be divided exactly by 4.	

Example

Set port MTU value.

```
ADLINK(fabric)# port xe1 mtu 12345
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                : xe1
…
MTU                 : 12348
…
```


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Set port description

Description	Set the description of a port.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID name STRING | clear		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_ID	Eg: xe1.	
	STRING	Set port description as the string. The max length of the string is 31.	
	clear	Clear the description of the port.	

Example

Set port name.

```
ADLINK(fabric)# port xe1 name uplink_port
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                : uplink_port
…
ADLINK(fabric)# port xe1 name clear
ADLINK(fabric)# show port xe1
Information of port xe1 --
Name                : xe1
…
```


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Set port mirror

Description	Set the mirror of port.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID mirror-to PORT_ID ingress| egress|both		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted. One SrcPort can only be mirrored once.	
	ingress| egress|both	Ingress: mirror the ingress traffic of the SrcPort to the DstPort. Egress: mirror the egress traffic of the SrcPort to the DstPort. Both: mirror both the ingress and egress traffic of the SrcPort to the DstPort.	

Example

Set port mirror.

```
ADLINK(fabric)# port xe1 mirror-to xe2 ingress
ADLINK(fabric)# port xe1 mirror-to xe3 egress
ADLINK(fabric)# show port mirror
SRC_PORT      DST_PORT      MODE
xe1           xe3                    egress
ADLINK(fabric)#
```


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Clear port mirror

Description	clear the mirror of port.		
Prerequisite	None		
Syntax	port PORT_LIST|PORT_ID mirror clear		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. Eg: xe1 or xe1,xe3 or xe1-xe3. Note: for cPCI-6S10 and MXN-0410, only one port id is accepted.	
	Clear	Clear the mirror of the srcport.	

Example

Clear port mirror.

```
ADLINK(fabric)# show port mirror
SRC_PORT      DST_PORT      MODE
xe1           xe2           ingress,
xe2           xe3           ingress,
ADLINK(fabric)# port xe1 mirror clear
ADLINK(fabric)# show port mirror
SRC_PORT      DST_PORT      MODE
xe2           xe3           ingress,
ADLINK(fabric)#
```


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Show port mirror

Description	Show the mirror info of all ports.		
Prerequisite	None		
Syntax	show port mirror		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	None		

Example

Show ports mirror info.

```
ADLINK(fabric)# port xe1 mirror-to xe2 ingress
ADLINK(fabric)# port xe2 mirror-to xe3 egress
ADLINK(fabric)# show port mirror
SRC_PORT      DST_PORT      MODE
xe1           xe2           ingress,
xe2           xe3           egress,
ADLINK(fabric)#
```


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5.3.3 IP Configuration

The switch provides IPv4, IPv6 address and MAC address configuration functions on the physical network interface card and logical vlan-interface.

Set IPv4 vlan-interface

Description	Set a vlan-interface with IPV4 address.		
Prerequisite	Add port(s) to the VLAN		
Syntax	ip vlan-interface VLAN_ID address IP_ADDR_MASK		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VLAN_ID	The vlan id that set vlan-interface ip address.	
	IP_ADDR_MASK	Ipv4 address with mask. Such as 10.10.10.1/24.	

Example

Add some ports to vlan 100 and set the vlan-interface ipv4 address..

```
ADLINK(fabric)# vlan add 100 xe2-xe3 untag
ADLINK(fabric)# ip vlan-interface 100 address 10.10.10.1/24
ADLINK(fabric)# show running-config
#Wrote on Wed Sep 28 05:18:45 2016
!
 fabric
      ##Fabric vlan-config
        vlan add 100 xe2-xe3 untag

      ##Fabric L3_intf-config
        ip vlan-interface 100 address 10.10.10.1/24

!
#End
```


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Set IPv6 vlan-interface

Description	Set a vlan-interface with ipv6 address.		
Prerequisite	Add port(s) to the vlan		
Syntax	ip -6 vlan-interface VLAN_ID address IPV6_ADDR_MASK		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VLAN_ID	The vlan id that set vlan-interface ip address.	
	IPV6_ADDR_MASK	IPv6 address with mask. Such as: 234e:0:4567::3d / 64/	

Example

Add some ports to vlan 100 and set the vlan-interface ipv6 address..

```
ADLINK(fabric)# vlan add 100 xe2-xe3 untag
ADLINK(fabric)# ip -6 vlan-interface 100 address 234e:0:4567::3d/64
ADLINK(fabric)# show running-config
#Wrote on Thu Sep 29 02:12:17 2016
!
 fabric
      ##Fabric vlan-config
        vlan add 100 xe2-xe3 untag

      ##Fabric L3_intf-config
        ip -6 vlan-interface 100 address 234e:0:4567::3d/64
!
#End
ADLINK(fabric)#
```

Note: In order to reduce the CPU load, we have to close the IPv6 by default. So if you need to use IPv6, please enable it first. You can use the script “bin/adlink_ipv6_set.sh” in the Installation package to enable or disable IPv6.

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Delete IP vlan-interface

Description	Delete a vlan-interface.		
Prerequisite	Add port(s) to the vlan and set the vlan-interface IP address		
Syntax	no ip vlan-interface VLAN_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VLAN_ID	The VLAN ID of the -interface to delete.	

Example

Add some ports to VLAN 100 and set the vlan-interface ip address. Then, delete the vlan-interface.

```
ADLINK(fabric)# vlan add 100 xe2-xe3 untag
ADLINK(fabric)# ip vlan-interface 100 address 10.10.10.1/24
ADLINK(fabric)# show running-config
#Wrote on Wed Sep 28 05:18:45 2016
!
 fabric
      ##Fabric vlan-config
        vlan add 100 xe2-xe3 untag

      ##Fabric L3_intf-config
        ip vlan-interface 100 address 10.10.10.1/24

!
#End
ADLINK(fabric)# no ip vlan-interface 100
ADLINK(fabric)# show running-config
#Wrote on Wed Sep 28 05:18:45 2016
!
 fabric
      ##Fabric vlan-config
        vlan add 100 xe2-xe3 untag
!
#End
ADLINK(fabric)#
```


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Show IP vlan-interface

Description	Show the vlan-interface status.		
Prerequisite	Add port(s) to the vlan and set vlan-interface		
Syntax	show ip vlan-interface		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	None		

Example

Add some ports to VLAN 100 and set the vlan-interface ip address. Then, show vlan-interface.

```
ADLINK(fabric)# vlan add 100 xe2-xe3 untag
ADLINK(fabric)# ip vlan-interface 100 address 10.10.10.1/24
ADLINK(fabric)# ADLINK(fabric)# show ip vlan-interface
Interface VLAN-100 : status UP    , IP: 10.10.10.1        , Mask: 255.255.255.0
ADLINK(fabric)#
```

5.3.4 ACL Configuration

Access Control Lists (ACLs) provide an optional control capability that allows or disallows transport from certain source or to certain destination addresses. An access control list (ACL) is a set of rules (or permit or deny statements) for identifying traffic based on criteria such as source IP address, destination IP address, and port number.

ACLs are primarily used for packet filtering. A packet filter drops packets that match a deny rule and permits packets that match a permit rule. The following commands are available for ACL.

ACL add

Description	Add an ACL.		
Prerequisite	None		
Syntax	acl add <0-1> ACTION QUALIFIER …		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410

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Options	<0-1>	ACL rule priority, 0 means high priority, 1 means low priority. If the
	ACTION	<action_type>[=param0][/param1]. Please use “acl list actions” to show the actions supported.
	QUALIFIER	<qualifier_type>[=data][/mask]. There can be 1~8 qualifiers. Please use “acl list qualifiers” to show the qualifiers supported.

Example

Add an ACL rule to make all packets with source IP in the 10.10.10.0 network segment redirect to port xe0.

```
atca-3710# acl add 0 redirectport=xe0 srcip=10.10.10.10/255.255.255.0
atca-3710# show acl
index   priority    action    qualifiers.....
0         0             RedirectPort=xe0 SrcIp=10.10.10.10/255.255.255.0
```

ACL delete

Description	Delete an ACL.		
Prerequisite	None		
Syntax	acl delete <0-1023>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<0-1023>	The acl rule id which will be deleted. It can be got by the CMD “show acl”.	

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Example

Delete an acl.

```
ADLINK(fabric)# acl add 0 redirectport=xe1 srcip=1.2.3.4 dstip=10.1.1.2 inport=xe2
ADLINK(fabric)# show acl
index   priority    action    qualifiers.....
0       0             redirectPort=xe1 SrcIp=1.2.3.4 DstIp=10.1.1.2 InPort=xe2
ADLINK(fabric)# acl delete 0
ADLINK(fabric)# show acl
index   priority    action    qualifiers.....

ADLINK(fabric)#
```

ACL clear

Description	Clear the whole acl table		
Prerequisite	None		
Syntax	acl clear		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	None		

Example

Clear the whole acl table.

```
ADLINK(fabric)# acl add 0 redirectport=xe1 srcip=1.2.3.4 dstip=10.1.1.2 inport=xe2
ADLINK(fabric)# show acl
index   priority    action    qualifiers.....
0       0             redirectPort=xe1 SrcIp=1.2.3.4 DstIp=10.1.1.2 InPort=xe2
ADLINK(fabric)# acl clear
ADLINK(fabric)# show acl
index   priority    action    qualifiers.....

ADLINK(fabric)#
```


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ACL list actions

Description	show the Legal actions supported.		
Prerequisite	None		
Syntax	acl list actions		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	None		

Table 1 Actions Table

Type	Description
drop	Drop the packet.
RedirectPort	Forwarding the packet to the port such as XE x.
RedirectTrunk	Forwarding the packet to the trunk x.
OuterVlanNew	Modify the outer VLAN ID.

Example

ACL list actions.

```
ADLINK(fabric)# acl list actions
Action type              param0/param1,example
redirectPort              redirect packet to a port.eg:redirectPort=xe1
RedirectTrunk             redirect packet to a trunk,eg:redirecttrunk=1
Drop                      drop the packe,eg:drop
OuterVlanNew             modify the outervlan id to a new id.eg:OuterVlanNew=1024
ADLINK(fabric)#
```


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ACL list qualifiers

Description	Show the legal qualifiers supported.		
Prerequisite	None		
Syntax	acl list qualifiers		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	None		

Table 2 Qualifiers Table

Type	Description
INPORTS	Filter for the port ID a packet comes from..
SRCIP	Filter for source IP address of a packet.
DSTIP	Filter for destination IP address of a packet.
IPPROTOCOL	Filter for IP protocol (such as 0x06 for TCP) of a packet.
L4SRCPORT	Filter for L4 source port of a packet.
L4DSTPORT	Filter for L4 destination port of a packet.
SRCMAC	Filter for source MAC address of a packet.
DSTMAC	Filter for destination MAC address of a packet.
ETHERTYPE	Filter for Ethernet type (such as 0x0806 for ARP) of a packet.
INNERVLAN	Filter for the inner VLAN ID of a packet.
OUTERVLAN	Filter for the outer VLAN ID of a packet.

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Example

ACL list qualifiers.

```
ADLINK(fabric)# acl list qualifiers
Qualifier type              data/mask,example
SrcIp                       IPv4 Address/IPv4 Address mask,eg:srcip=10.1.1.0/255.255.255.0
DstIp                       IPv4 Address/IPv4 Address mask,eg:dstip=10.1.1.0/255.255.255.0
InPort                      Ports,eg:inport=xe1
OuterVlan                   16-bit VLAN data/16-bit mask.12-bitmask is used for vlan
id.eg:outervlan=1024/0x0fff
InnerVlan                   16-bit VLAN data/16-bit mask..12-bitmask is used for vlan
id.eg:innervlan=1024/0x0fff
IpProtocol                  IpProtocol/8-bit mask,eg:ipprotocol=6/0xff
L4SrcPort                   TCP/UDP port/16-bit mask,eg:l4srcport=80/0xffff
L4DstPort                   TCP/UDP port/16-bit mask,leg:l4dstport=80/0xffff
SrcMac                      macaddr</mask>,eg:srcmac=0x001122334455/0xffffffffffff
DstMac                      macaddr</mask>,eg:dstmac=0x001122334455/0xffffffffffff
```

Show acl

Description	Show the acl table		
Prerequisite	None		
Syntax	show acl		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	None		

Example

Show the ACL table.

```
ADLINK(fabric)# acl add 0 redirectport=xe1 srcip=1.2.3.4 dstip=10.1.1.2 inport=xe2
ADLINK(fabric)# show acl
index   priority    action     qualifiers.....
0         0              redirectPort=xe1 SrcIp=1.2.3.4 DstIp=10.1.1.2 InPort=xe2
ADLINK(fabric)#
```


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ACL UDF Add

Description	Add an ACL UDF.		
Prerequisite	None		
Syntax	acl udf set <0-5> l4header <OFFSET_LIST> <PROTOCOL>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<0-5>	ACL UDF priority, 5 means the highest priority, 0 means the lowest priority.	
	OFFSET_LIST	Word(4 byte) offset list .eg:0,2-3,14	
	PROTOCOL	L4 protocol . eg: 17 for UDP 6 for TCP	

Example

Add an ACL rule to make all packets with L4 user udp data' the second word is 0x01020304 and source/destination port is 777's packet will redirect to port xe1.

```
ADLINK(fabric)# acl udf set 1 l4header 1 17 777
ADLINK(fabric)# show udf 1
    udf_id   protocol       port     offset
         1         17        777     1
ADLINK(fabric)#  acl add 1 redirectport=xe1 offset1=0x01020304
ADLINK(fabric)# show acl
index  priority   action   qualifiers......
0      1          redirectPort=xe1 offset1=0x04030201/0xffffffff
ADLINK(fabric)#
```

ACL UDF Delete

Description	Delete an ACL UDF.		
Prerequisite	None		
Syntax	acl udf delete <0-5>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<0-5>	ACL UDF priority, 5 means the highest priority, 0 means the lowest priority.	

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Example

Delete an ACL rule

```
ADLINK(fabric)#
ADLINK(fabric)# acl udf set 1 l4header 1 17 777
ADLINK(fabric)# acl udf del 1
ADLINK(fabric)#
```

5.3.5 L2 Configuration

A device maintains a MAC address table for frame forwarding. Each entry in this table indicates the MAC address of a connected device, to which interface this device is connected and to which VLAN the interface belongs. After adding a MAC address into the L2 table, the packets with that MAC address can be forwarded to the destination by the L2 table directly rather than by broadcasting.

Show MAC

Description	Show the MAC address table entries.		
Prerequisite	N/A		
Syntax	show mac		
Applies to	aTCA-3710	aTCA-3710	aTCA-3710
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

Example

```
ADLINK(fabric)# show mac
  MacAddress          vlan port type
  38:22:d6:72:b1:63      1      xe1  Dynamic
  Total: 1 item(s).
```


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l2 init

Description	Initialize the mac address table.		
Prerequisite	N/A		
Syntax	l2 init		
Applies to	aTCA-3710	aTCA-3710	aTCA-3710
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

Example

```
ADLINK(fabric)# l2 init
ADLINK(fabric)# show mac
  Total: 0 item(s).
```

l2 add

Description	add a mac entry to mac address table.		
Prerequisite	N/A		
Syntax	l2 add MAC_ADDR PORT_ID <static/dynamic>		
Applies to	aTCA-3710	aTCA-3710	aTCA-3710
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*MAC_ADDR*	The L2 mac address.	
	PORT_ID	*port id,e.g:xe1*	
	<static/dynamic>	Indicate the mac entry attribute, static or dynamic.	

Example

```
ADLINK(fabric)# l2 add 00:30:64:00:00:99 1 xe1 static
ADLINK(fabric)# show mac
  MacAddress          vlan port type
  00:30:64:00:00:99     1     xe1  Static
  Total: 1 item(s).
```


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L2 delete

Description	delete mac entry from mac address table.		
Prerequisite	there's mac entries in mac address table.		
Syntax	l2 delete MAC_ADDR <1-4094>		
Applies to	aTCA-3710	aTCA-3710	aTCA-3710
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	MAC_ADDR	The L2 mac address.	
	<1-4094>	Vlan id.	

Example

```
ADLINK(fabric)# show mac
   MacAddress          vlan port type
   00:30:64:00:00:99      1      xe1  Static
   Total: 1 item(s).
ADLINK(fabric)# l2 delete 00:30:64:00:00:99 1
ADLINK(fabric)# show mac
   Total: 0 item(s).
```

5.3.6 STP Configuration

The primary goal in using Spanning Tree Protocol (STP) is to prevent loops in a network, where the same packets might be resent to the same recipients. Use of STP is optional depending on the needs of the service provider. STP feature now just applies to cPCI-6S10 and MXN-0410.

STP add-bridge

Description	Add a bridge for the STP system, you can only create just one bridge		
Prerequisite	No bridge exists		
Syntax	stp add-bridge STRING		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	

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STP del-bridge

Description	Delete a bridge from the STP system		
Prerequisite	Bridge exists		
Syntax	stp del-bridge STRING		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	

STP add-interface

Description	Add interface to the existing bridge		
Prerequisite	Bridge exists		
Syntax	stp add-interface STRING PORT_LIST		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	
	PORT_LIST	Specifies the port list	

STP del-interface

Description	Delete interface from the existing bridge		
Prerequisite	Bridge exists		
Syntax	stp del-interface STRING PORT_LIST		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	
	PORT_LIST	Specifies the port list	

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STP set-bridge-priority

Description	Set the bridge priority, default value is 32768		
Prerequisite	Bridge exists		
Syntax	stp set-bridge-priority STRING VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	
	VALUE	Specifies the bridge priority, in step of 4096 within 0~61440	

STP set-forward-delay

Description	Set the bridge forward delay time, default value is 15s		
Prerequisite	Bridge exists		
Syntax	stp set-forward-delay STRING VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	
	VALUE	Specifies the bridge forward delay time within 4~30. The value should follow: (2*(Hello-time +1) <= Max-Age <= 2*(Forward-Delay - 1))	

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STP set-hello-time

Description	Set BPDU hello time, default value is 2s		
Prerequisite	Bridge exists		
Syntax	stp set-hello-time STRING VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	
	VALUE	Specifies the BPDU hello time within 1~10. The value should follow: (2*(Hello-time +1) <= Max-Age <= 2*(Forward-Delay - 1))	

STP set-max-age-time

Description	Set the max message age time, default value is 20s		
Prerequisite	Bridge exists		
Syntax	stp set-max-age-time STRING VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	
	VALUE	Specifies the bridge max age time within 6~40. The value should follow: (2*(Hello-time +1) <= Max-Age <= 2*(Forward-Delay - 1))	

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STP set-path-cost

Description	Set the port's path cost		
Prerequisite	Bridge exists		
Syntax	stp set-path-cost STRING PORT_ID VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	
	PORT_ID	Specifies the port id	
	VALUE	Specifies the port's path cost with 1~100	

STP set-port-priority

Description	Set the port's priority, default value is 32		
Prerequisite	Bridge exists		
Syntax	stp set-port-priority STRING PORT_ID VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	
	PORT_ID	Specifies the port id	
	VALUE	Specifies the port's priority in range 0~48 and a multiply of 16	

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STP set-state

Description	Set the bridge's state		
Prerequisite	Bridge exists		
Syntax	stp set-state STRING (on|off)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Specifies the bridge name	
	on/off	Specifies the bridge state to on/off	

STP show

Description	Show the currents bridge's bridge id ,bridge state and ports		
Prerequisite	Bridge exists		
Syntax	stp show		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options			

STP show-stp

Description	Show the currents bridge's detail information, including the bridge and ports		
Prerequisite	Bridge exists		
Syntax	stp show-stp STRING		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STRING	Bridge name	

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Example

Enable the STP feature for port ge0-ge2 and xe0 .

```
This is example runs at cpci-6s10
cpci-6s10(fabric) # stp add-bridge br0
cpci-6s10(fabric)# stp add-interface br0 ge0-ge2
cpci-6s10(fabric)# stp add-interface br0 xe0
cpci-6s10(fabric)# stp set-state br0 on
cpci-6s10(fabric)# stp show
bridge name     bridge id               STP enabled     interfaces
br0             8000.4e1d212fb2bb       yes             ge0
                                                        ge1
                                                        ge2
                                                        xe0
cpci-6s10(fabric)# stp del-interface    br0 xe0
cpci-6s10(fabric)# stp del-interface    br0 ge1
cpci-6s10(fabric)# stp del-interface    br0 ge2
cpci-6s10(fabric)# stp show
bridge name     bridge id               STP enabled     interfaces
br0             8000.000000200001       yes             ge0

cpci-6s10(fabric)# stp show-stp    br0
br0
 bridge id              8000.000000200001
 designated root        8000.000000200001
 root port                 0                    path cost              0
 max age                  20.00                 bridge max age         20.00
 hello time                2.00                 bridge hello time      2.00
 forward delay            15.00                 bridge forward delay   15.00
 ageing time             300.02
 hello timer               1.58                 tcn timer              0.00
 topology change timer     0.00                 gc timer               73.70
 flags

ge0 (1)
 port id                8001                    state                  disabled
 designated root        8000.000000200001       path cost              100
 designated bridge      8000.000000200001       message age timer      0.00
 designated port        8001                    forward delay timer    0.00
 designated cost           0                    hold timer             0.00
 port priority          32
 flags
```


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5.3.7 RSTP Configuration

Rapid Spanning Tree Protocol (RSTP) is an enhancement to Spanning Tree Protocol (STP). It provides significantly faster spanning tree convergence than STP. RSTP was designed to be backwards-compatible with standard STP. RSTP applies to aTCA-3710, aTCA-n700, aTCA-3430, MXN-3610/MXN-4100.

Spanning-tree

Description	Show the currents bridge's bridge id ,bridge state and ports		
Prerequisite	None		
Syntax	spanning-tree (enable | disable)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	Enable	Enable the RSTP feature. All of the ports will be added to the STP domain automatically.	
	Disable	Disable the RSTP feature.	

Spanning-tree force-version

Description	Force the STP domain works at STP or RSTP mode. The default mode is RSTP.		
Prerequisite	None		
Syntax	spanning-tree force-version (STP | RSTP)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	STP	802.1d STP mode.	
	RSTP	802.1w RSTP mode	

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Spanning-tree forward-delay

Description	Set the forward delay time. Default value is 15s.		
Prerequisite	None		
Syntax	spanning-tree forward-delay VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VALUE	Limit to 2~30 and should follow (2*(Hello-time +1) <= Max-Age <= 2*(Forward-Delay - 1))	

Spanning-tree hello-time

Description	Set the BPDU hello time. Default value is 2s		
Prerequisite	None		
Syntax	spanning-tree hello-time VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VALUE	Limit to 1~10 and should follow (2*(Hello-time +1) <= Max-Age <= 2*(Forward-Delay - 1))	

Spanning-tree max-age

Description	Set the max age time. Default value is 20s		
Prerequisite	None		
Syntax	spanning-tree max-age VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VALUE	Limit to 6~40 and should follow (2*(Hello-time +1) <= Max-Age <= 2*(Forward-Delay - 1))	

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Spanning-tree path-cost

Description	Set the port's path cost		
Prerequisite	None		
Syntax	spanning-tree path-cost port PORT_ID VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_ID	Port identifier like xe1 or xe2	
	VALUE	Path cost value, limit to 1~200000000	

Spanning-tree port-edge

Description	Specific the port is an edge port. This allows the port to transition to Forwarding state without delay. As soon as the STP domain detects a BPDU coming to an edge port, the port becomes a non-edge port.		
Prerequisite	None		
Syntax	spanning-tree port-edge port PORT_ID (yes|no)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_ID	Port identifier like xe1 or xe2	
	Yes	Set the port to be an edge port	
	no	Set the port not to be an edge port	

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Spanning-tree port-mcheck

Description	This command force the specific to send out RSTP BPDUs. This allows for switches that are running RSTP to establish their connection quickly and for switches running 802.1D STP to be identified		
Prerequisite	None		
Syntax	spanning-tree port-mcheck port PORT_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_ID	Port identifier like xe1 or xe2	

Spanning-tree port-stp

Description	Enable or disable the port list for use by spanning tree		
Prerequisite	None		
Syntax	spanning-tree port-stp port PORT_LIST (enable | disable)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST	Port identifier list like xe1 or xe1-xe2	
	Enable	Enable. This is default value.	
	Disable	Disable	

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Spanning-tree port-p2p

Description	This parameter is used to tell the port if it is connected to a point-to-point link, such as to another switch or bridge or to an end node (“yes”). This parameter should be set to “no” for all ports that are connected to a hub, which is a shared LAN segment. You can also set this parameter to “auto” and the switch will automatically set the “no” value on all ports that it detects are not running at full duplex.		
Prerequisite	None		
Syntax	spanning-tree port-p2p port PORT_ID (yes | no|auto)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_ID	Port identifier like xe1 or xe2	
	yes	yes	
	no	no	
	auto	Auto set the port’s P2P status	

Spanning-tree port-priority

Description	Set the port’s priority. Default value is 32		
Prerequisite	None		
Syntax	spanning-tree port-priority port PORT_ID VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_ID	Port identifier like xe1 or xe2	
	VALUE	Port priority within 0~240 and in step of 16	

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Spanning-tree priority

Description	Set the spanning tree bridge priority. Default value is 32768		
Prerequisite	None		
Syntax	spanning-tree priority VALUE		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VALUE	Bridge priority limit to 0~61400 and in step of 4096	

Spanning-tree show

Description	Show spanning tree information		
Prerequisite	None		
Syntax	spanning-tree show		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options			

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Example

Enable the spanning-tree and do some configuration.

```
ADLINK(fabric)# spanning-tree enable
ADLINK(fabric)# spanning-tree priority 4096
ADLINK(fabric)# spanning-tree path-cost port xe1 20
ADLINK(fabric)# spanning-tree port-p2p port xe1 no
ADLINK(fabric)# spanning-tree port-stp port xe2 disable
ADLINK(fabric)#spanning-tree port-priority port xe3 16
ADLINK(fabric)# spanning-tree show
---------------------------SPANNING TREE information in STP domain ------------
Designated Root                    : 00:30:64:2a:56:4b
Designated Root Priority           : 4096
Designated Root Path Cost          : 0
Root Port                          : none
Root Max Age       20     Hello Time    2       Forward Delay    15

Bridge ID Mac Address              : 00:30:64:2a:56:4b
Bridge ID Priority                 : 4096
Bridge ForceVersion                : RSTP
Bridge Max Age    20     Hello Time    2       Forward Delay    15

Time since topology change: 465 seconds
Topology change count: 0
------------------------- All ports information in STP domain ----------------

Name pri cost role span-state link p2p edge Desi-bridge-id Dcost D-port rx_cfg_bpdu rx_rstp_bpdu rx_tcn_bpdu
xe1 128 20     Dis Discarding N    N     N          0          0          0          0          0
xe2 128 2000 None None       N    Y     N          0          0          0          0          0
xe3 16    2000 Dis Discarding N    Y     N          0          0          0          0          0
xe4 128 2000 Dis Discarding N    Y     N          0          0          0          0          0
xe5 128 2000 Dis Discarding N    Y     N          0          0          0          0          0
xe6 128 2000 Dis Discarding N    Y     N          0          0          0          0          0
---------------------------
```


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5.3.8 Route Configuration

Without a default route, a packet with no matching routing entry is discarded and an ICMP destination-unreachable packet is sent to the source. After adding a route into the routing table, the packets can be forwarded to the destination by that route.

The following commands are available for route configuration.

IPv4 route add

Description	Add an IPv4 route entry.		
Prerequisite	Set the vlan interface IP address.		
Syntax	route add IP_ADDR_MASK GATEWAY_IP METRIC		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	IP_ADDR_MASK	IP address with mask length. Eg: 10.10.10.0/24	
	GATEWAY_IP	Gateway ip address. It must be the real ip address in the same subnet of the vlan interface's IP address in an outer server/router.	
	METRIC	The metric number of the route entry.	

Example

Set the vlan interface IP address and add a route entry.

```
ADLINK(fabric)# vlan add 100 xe1 untag
ADLINK(fabric)# ip vlan-interface 100 address 10.10.10.1/24
ADLINK(fabric)# route add 100.1.1.0/24 10.10.10.2 100
ADLINK(fabric)# show route
Index   Dstip        Mask            Gateway    Metric    type        Iface       Status
0    100.1.1.0    255.255.255.0    10.10.10.2    100       Static    sw0.vlan.100       Chip
1    10.10.10.0   255.255.255.0    *             0         Direct    sw0.vlan.100       Chip
ADLINK(fabric)#
```


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IPv4 route delete

Description	delete an IPv4 route entry.		
Prerequisite	Add an IPv4 route entry.		
Syntax	route delete IP_ADDR_MASK GATEWAY_IP METRIC		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	IP_ADDR_MASK	IP address with mask length. Eg: 10.10.10.0/24	
	GATEWAY_IP	Gateway ip address.	
	METRIC	The metric number of the route entry.	

Example

Delete a route entry.

```
ADLINK(fabric)# vlan add 100 xe1 untag
ADLINK(fabric)# ip vlan-interface 100 address 10.10.10.1/24
ADLINK(fabric)# route add 100.1.1.0/24 10.10.10.2 100
ADLINK(fabric)# show route
Index   Dstip        Mask            Gateway    Metric    type          Iface       Status
0    100.1.1.0    255.255.255.0    10.10.10.2    100        Static    sw0.vlan.100        Chip
1    10.10.10.0    255.255.255.0    *             0          Direct    sw0.vlan.100        Chip
ADLINK(fabric)# route delete 100.1.1.0/24 10.10.10.2 100
ADLINK(fabric)# show route
Index   Dstip        Mask            Gateway    Metric    type          Iface       Status
0    100.1.1.0    255.255.255.0    10.10.10.2    100        Static    sw0.vlan.100        Chip
```


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IPv4 route show

Description	show the IPv4 route table.		
Prerequisite	Set the vlan interface IP address.		
Syntax	show route		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

Example

Set the vlan interface IP address and add a route entry.

```
ADLINK(fabric)# vlan add 100 xe1 untag
ADLINK(fabric)# ip vlan-interface 100 address 10.10.10.1/24
ADLINK(fabric)# route add 100.1.1.0/24 10.10.10.2 100
ADLINK(fabric)# show route
Index   Dstip        Mask            Gateway    Metric    type        Iface       Status
0   100.1.1.0   255.255.255.0   10.10.10.2   100       Static   sw0.vlan.100       Chip
1   10.10.10.0   255.255.255.0    *           0         Direct   sw0.vlan.100       Chip
ADLINK(fabric)#
```

IPv6 route add

Description	Add an IPv6 route entry.		
Prerequisite	Set the vlan interface IP address.		
Syntax	route -6 add IP6_ADDR_MASK GATEWAY_IP_6 METRIC		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	IP6_ADDR_MASK_6	IPV6 address with mask length. Eg: 10.10.10.0/24	
	GATEWAY_IP_6	Gateway ip6 address. It must be the real ip6 address in the same subnet of the vlan interface's IP address in an outer server/router.	
	METRIC	The metric number of the route entry.	

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Example

Show route table.

```
ADLINK(fabric)# ip -6 vlan-interface 100 address 2001:0db8:0:f101::1/64
ADLINK(fabric)# route -6 add 2000::/3 2001:0db8:0:f101::2 100
ADLINK(fabric)# show route -6
Index Dstip/Mask_len                  Gateway              Metric   type      Iface          Satus
0     ffff:fe3f:1f1::/64              ::                   256      Direct    sw0.vlan.100   Kernel
1     b80d:120:1f1::/64               ::                   256      Direct    sw0.vlan.100   Kernel
2     0:80fe::ff66:3002:3422:11fe/128 ::                   256      Direct    sw0.vlan.100   Kernel
3     0:20::/3                        b80d:120:1f1::200:0  100      Static    sw0.vlan.100   Kernel
ADLINK(fabric)#
```

IPv6 route delete

Description	Delete an IPv6 route entry.		
Prerequisite	Add an IPv6 route entry.		
Syntax	route delete IP6_ADDR_MASK GATEWAY_IP METRIC		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	IP6_ADDR_MASK_6	IPV6 address with mask length. Eg: 10.10.10.0/24	
	GATEWAY_IP_6	Gateway ip6 address. It must be the real ip6 address in the same subnet of the vlan interface's IP address in an outer server/router.	
	METRIC	The metric number of the route entry.	

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Example

Delete a route entry.

```
ADLINK(fabric)# route -6 add 2000::/3 2001:0db8:0:f101::2 100
ADLINK(fabric)# show route -6
Index Dstip/Mask_len                Gateway          Metric   type      Iface          Satus
0   ffff:fe3f:1f1::/64              ::               256      Direct    sw0.vlan.100   Kernel
1   b80d:120:1f1::/64               ::               256      Direct    sw0.vlan.100   Kernel
2   0:80fe::ff66:3002:3422:11fe/128 ::               256      Direct    sw0.vlan.100   Kernel
3   0:20::/3                        b80d:120:1f1::200:0 100   Static    sw0.vlan.100   Kernel
ADLINK(fabric)# route -6 del 2000::/3 2001:0db8:0:f101::2 100
ADLINK(fabric)# show route -6
Index Dstip/Mask_len                Gateway          Metric   type      Iface          Satus
0   ffff:fe3f:1f1::/64              ::               256      Direct    sw0.vlan.100   Kernel
1   b80d:120:1f1::/64               ::               256      Direct    sw0.vlan.100   Kernel
2   0:80fe::ff66:3002:3422:11fe/128 ::               256      Direct    sw0.vlan.100   Kernel
3   0:20::/3                        b80d:120:1f1::200:0 100   Static    sw0.vlan.100   Kernel
ADLINK(fabric)#
```

IPv6 route show

Description	Show the IPv6 route table.		
Prerequisite	Set the vlan interface IP6 address.		
Syntax	show route -6		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

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Example

Set the vlan interface IP address and add a route entry.

```
ADLINK(fabric)# ip -6 vlan-interface 100 address 2001:0db8:0:f101::1/64
ADLINK(fabric)# route -6 add 2000::/3 2001:0db8:0:f101::2 100
ADLINK(fabric)# show route -6
Index Dstip/Mask_len                  Gateway              Metric   type      Iface            Satus
0   ffff:fe3f:1f1::/64                ::                   256      Direct    sw0.vlan.100     Kernel
1   b80d:120:1f1::/64                 ::                   256      Direct    sw0.vlan.100     Kernel
2   0:80fe::ff66:3002:3422:11fe/128   ::                   256      Direct    sw0.vlan.100     Kernel
3   0:20::/3                          b80d:120:1f1::200:0  100      Static    sw0.vlan.100     Kernel
ADLINK(fabric)#
```

5.3.9 Trunk Configuration

Trunks, which are also known as link aggregation groups (LAGs), allow you to combine multiple full-duplex Ethernet links into a single logical link. Network devices treat the aggregation as if it is a single link, which increases fault tolerance and provides load sharing.

Link Aggregation Control Protocol (LACP) is part of an IEEE specification (802.3ad) that allows you to bundle several physical ports together to form a single logical channel. LACP allows a switch to negotiate an automatic bundle by sending LACP packets to the peer.

Note:

The following commands should be performed before creating LACP configuration.

acl add 0 redirectport=cpu0 etherType=0x8809
acl add 0 redirectport=cpu0 etherType=0x86dd

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Add a new trunk

Description	Add a new trunk.		
Prerequisite	NULL		
Syntax	trunk add lacp|manual <1-8>|<0-7> [<0-65535>]		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	lacp|manual	Indicate the trunk mode, manual or lacp. Note:cPCI-6S10 and MXN-0410, only manual is accepted.	
	<1-8>|<0-7>	For MXN-3610/MXN-4100, the ID is <1-8>. For others, the ID is <0-7>.	
	[<0-65535>]	Trunk priority. It is only used for LACP trunk. For MXN-3610/MXN-4100, the priority is a global value.	

Example

Delete a route entry.

```
ADLINK(fabric)# trunk add manual 1
Trunk 1 added.
ADLINK(fabric)# trunk add lacp 8
Trunk 8 added.
```

Remove an existing trunk

Description	Remove a trunk		
Prerequisite	The trunk exists.		
Syntax	trunk delete <1-8>|<0-7>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<1-8>|<0-7>	For MXN-3610/MXN-4100, the ID is <1-8>. For others, the ID is <0-7>.	

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Example

Delete a trunk.

```
ADLINK(fabric)# trunk 1 delete
```

Remove all trunks

Description	Remove all trunks.		
Prerequisite	The trunk exists.		
Syntax	trunk destroy		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	NULL		

Example

Delete all trunks.

```
ADLINK(fabric)# trunk destroy
```

Add port into a trunk

Description	Add port into a specified trunk		
Prerequisite	The trunk exists.		
Syntax	trunk <1-8>|<0-7> add PORT_ID (|pri <0-255>)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<1-8>|<0-7>	For MXN-3610/MXN-4100, the ID is <1-8>. For others, the ID is <0-7>.	
	PORT_ID	a single port name.eg:xe1	
	<0-255>	port priority only for LACP mode, the default priority is 0x7f.	

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Example

Add port into a trunk.

```
ADLINK(fabric)# trunk 3 add xe1
```

Remove port from a trunk

Description	Remove port from a trunk.		
Prerequisite	The trunk exist with ports in it		
Syntax	trunk <1-8>|<0-7> del PORT_ID (|pri <0-255>)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<1-8>|<0-7>	For MXN-3610/MXN-4100, the ID is <1-8>. For others, the ID is <0-7>.	
	PORT_ID	a single port name.eg:xe1	

Example

Delete port from a trunk.

```
ADLINK(fabric)# trunk 3 delete xe1
```

Set m+n mode on a lacp trunk

Description	set a max active link num. for a lacp trunk.		
Prerequisite	The lacp trunk exist.		
Syntax	trunk <1-8>|<0-7> set-active <1-8>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<1-8>|<0-7>	For MXN-3610/MXN-4100, the ID is <1-8>. For others, the ID is <0-7>.	
	<1-8>	the max active link num. of a lacp trunk.	

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Example

set a max active link num. for a lacp trunk.

```
ADLINK(fabric)# trunk 3 set active 4
operation succeed.
```

Set trunk balance type

Description	Set trunk balance type.		
Prerequisite	The trunk exist.		
Syntax	trunk <1-8>|<0-7> balance-type <0-7>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<1-8>|<0-7>	For MXN-3610/MXN-4100, the ID is <1-8>. For others, the ID is <0-7>.	
	<0-7>	Specifies a trunk balance type.	

Example

set the balance-type of a trunk.

```
ADLINK(fabric)# Trunk 1 balance-type 7
operation succeed.
```

Set trunk L4port attribute

Description	Set l4port protocol hash on/off.		
Prerequisite	The trunk exist.		
Syntax	trunk l4port <enable|disable>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<enable|disable>	on/off the specified protocal for hash calculation.	

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Example

Set l4port protocol hash on/off.

```
ADLINK(fabric)# trunk l4port enable
operation succeed.
```

Set trunk balance config

Description	Set trunk balance type.		
Prerequisite	The trunk exist.		
Syntax	trunk balance-config set (src-mac|dst-mac|ether-type|vlan-id| src-ip|dst-ip|protocol|tcp-udp-src-port|tcp-udp-dst-port) (on|off)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	(src-mac|dst-mac|ether-type|vlan-id|src-ip|dst-ip|protocol|tcp-udp-src-port|tcp-udp-dst-port)	Specifies the packet field used as a trunk balance hash key.	
	(on|off)	enable or disable. All of the field is enabled by default.	

Example

set a max active link num. for a lacp trunk.

```
ADLINK(fabric)# trunk balance-config set src-mac on
operation succeed.
```


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Show trunk balance config

Description	show trunk balance config.		
Prerequisite	The trunk exist.		
Syntax	1.show trunk balance-config 2.trunk balance-config show		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	(src-mac|dst-mac|ether-type|vlan-id|src-ip|dst-ip|protocol|tcp-udp-src-port|tcp-udp-dst-port)	Specifies the packet field used as a trunk balance hash key.	
	(on|off)	enable or disable. All of the field is enabled by default.	

Example

Show the trunk balance-config status.

```
ADLINK(fabric)# trunk balance-config show
field                    status
src-mac                    on
dst-mac                    off
ether-type                 off
vlan-id                    off
vlan-pri                   off
src-ip                     on
dst-ip                     on
protocol                   on
tcp-udp-src-port         on
tcp-udp-dst-port         on
cp-udp-dst-port            on
ADLINK(fabric)#
```


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Set LACP system priority

Description	Set the LACP trunk system priority.		
Prerequisite	The trunk exist.		
Syntax	trunk lacp-sys-pri <1-127>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<1-127>	Specifies the LACP system priority value. 1 is the highest.	

Example
Set the lacp trunk system priority.

```
ADLINK(fabric)# trunk lacp-sys-pri 2
```

5.3.10 LBG Configuration

Load balancing group provides a more flexible way to dispatch traffic than trunk; any logical port can be added, like VF on the PEP port.
As of now, Packet Manager only supports equal distribution, layer 3, 4 header hash.
Port failover is handled automatically.

Add a new LBG

Description	Create a new load balancing group.		
Prerequisite	NULL		
Syntax	lbg add <Group Number> <Hash Bin Number>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<Group Number>	Group number to create. <1-65535>	
	<Hash Bin Number>	Total hash bin number, can be 0-16, 32, 64, 128, 256, 512, 1024, 2048, 4096, if 0, default value 128 will be used.	

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Example

Add a new LBG.

```
ADLINK(fabric)# lbg add 1 16
LBG 1 added.
ADLINK(fabric)#
```

Delete a LBG

Description	Delete a load-balancing group.		
Prerequisite	Target LBG should exist.		
Syntax	lbg del <Group Number>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<Group Number>	Group number to delete. <1-65535>	

Example

Delete an LBG.

```
ADLINK(fabric)# lbg del 1
LBG 1 deleted.
ADLINK(fabric)#
```

Add a port to LBG

Description	Add a port to existing load balancing group.		
Prerequisite	Target LBG should exist.		
Syntax	lbg port add <LBG index> <Logical port number><active/backup >		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<LBG index>	Target LBG index. <1-65535>	
	<Logical port number>	Logical port number to be added into the LBG. Such as 1, 4141.	
	<active/backup >	<active/backup >	

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Example

Add a port to some LBG.

```
ADLINK(fabric)# lbg port add 1 4141 active
Added port 4141 to LBG 1. active
ADLINK(fabric)#
```

Delete a port from LBG

Description	Delete a port from load balancing group.		
Prerequisite	Target LBG should exist; Target port should belong to the LBG.		
Syntax	lbg port del <LBG index> <Logical port number>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<LBG index>	Target LBG index. <1-65535>	
	<Logical port number>	Logical port number to be deleted from the LBG.	

Example

Add a port to some LBG.

```
ADLINK(fabric)# lbg port del 1 4141
Deleted port 4141 from LBG 1.
ADLINK(fabric)#
```


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Set hashing properties for all LBGs

Description	Set L34 hashing properties for all load balancing groups.		
Prerequisite	NULL		
Syntax	lbg hash34 set <Field> <on/off>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<Field>	Hash calculation field to set, including use_sip Include SIP in hash computation use_dip Include DIP in hash computation use_l4src Use L4SRC if L4 protocol is enabled use_l4dst Use L4DST if L4 protocol is enabled use_prot Enable L4 protocol in hash computation symmetric SIP/DIP and L4SRC/L4DST fields are symmetrized prior to hashing use_tcp Use L4SRC/L4DST when L4 protocol is TCP use_udp Use L4SRC/L4DST when L4 protocol is UDP	
	<on/off>	If corresponding field is included in hash calculation.	

Example

Enable symmetric hash for all LBGs.

```
ADLINK(fabric)# lbg hash34 set symmetric on
LBG hash field is set.
ADLINK(fabric)#
```

lbg show

Description	Show lbg group info		
Prerequisite	NULL		
Syntax	lbg show		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<null>	<null>	

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Example
Show lbg info

```
ADLINK(fabric)# lbg show
LBG NUMBER    PORT    PORTMODE    STATE
----------------------+----------+------------------+------
 1                    18          active              up
LBG list end.....
```

5.3.11 VLAN Configuration

Ethernet is a network technology based on the Carrier Sense Multiple Access/Collision Detect (CSMA/CD) mechanism. Because the medium is shared, collisions and excessive broadcasts are common on Ethernet networks. To address the issue, virtual LAN (VLAN) was introduced to break a LAN down into separate VLANs.

Virtual LAN (VLAN) support to a Layer 2 switch offers some of the benefits of both bridging and routing. Like a bridge, a VLAN switch forwards traffic based on the Layer 2 header, which is fast, and like a router, it partitions the network into logical segments, which provides better administration, security and management of multicast traffic. Virtual Local Area Networks (VLANs) are used to provide connectivity between ports and other entities in the Switch System and across Ethernet Virtual Connections across Ethernet Networks.

Note: Since of historical reasons, our VLAN module has a different command format in cPCI-6s10 and MXN-0410.

VLAN enable

Description	enable a vlan		
Prerequisite	None		
Syntax	vlan VID (enable|disable)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VID	Specifies the VLAN id	
	enable	Create the specific VLAN	
	disable	Delete the specific VLAN	

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Add Associate-MAC address to a VLAN

Description	Associate a MAC address to a VLAN		
Prerequisite	None		
Syntax	vlan associate-mac add VID MAC_ADDRESS prio cos_value vlan associate-mac add VID MAC_ADDRESS		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VID	Specifies the VLAN id	
	MAC_ADDRESS	Specifies the MAC address in format xx:xx:xx:xx:xx:xx.	
	cos_value	Specifies the cos value for the matched packet	

Delete Associate-MAC address to a VLAN

Description	Delete the association of a MAC address from a VLAN		
Prerequisite	None		
Syntax	vlan associate-mac del MAC_ADDRESS		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	MAC_ADDRESS	Specifies the MAC address	

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Set VLAN name

Description	Name a VLAN		
Prerequisite	None		
Syntax	vlan name set VID STRING		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VID	Specifies the VLAN id	
	STRING	Specifies the VLAN name.	

Clear VLAN name

Description	Remove the name of a VLAN. The name will be set to “null”		
Prerequisite	None		
Syntax	vlan name clear VID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VID	Specifies the VLAN id	

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Add port to a VLAN

Description	Add port or port list to a VLAN in tag or untag mode		
Prerequisite	None		
Syntax	vlan add VID PORT_LIST|PORT_ID (tag|untag)		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VID	Specifies the VLAN id, if the VLAN ID not exists, you should enable the vlan first on cPCI-6S10 and MXN-0410. For other platforms, it will be created automatically on.	
	PORT_LIST|PORTID	Specifies the port or port list that want to add to VLAN. For PCI-6S10 and MXN-0410, only one port id is accepted.	
	(tag|untag)	tag or untag mode for the port list.	

Delete ports from VLAN

Description	Delete port or port list from a VLAN		
Prerequisite	None		
Syntax	vlan del VID PORT_LIST|PORT_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VID	Specifies the VLAN id	
	PORT_LIST|PORTID	Specifies the port or port list that want to add to VLAN. For PCI-6S10 and MXN-0410, only one port id is accepted.	

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Remove VLAN

Description	Delete an existing VLAN		
Prerequisite	None		
Syntax	vlan remove VID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VID	Specifies the VLAN id	

Show VLAN

Description	Show an existing VLAN		
Prerequisite	None		
Syntax	show vlan [VID]		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VID	Specifies the VLAN id. If there is no VID, all VLANs created will be shown.	

Show VLAN associated MAC

Description	Show an existing VLAN associate-MAC		
Prerequisite	None		
Syntax	show vlan associate-mac [VID]		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VID	Specifies the VLAN id. If there is no VID, all VLANs created will be shown.	

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Example

1) Create a VLAN with VLAN ID of 2. Set port xe2 and xe3 as untag port and add them into VLAN.

```
This is example runs at aTCA-3710
ADLINK (fabric)# vlan add 2 xe2 untag
ADLINK (fabric)# vlan add 2 xe3 untag
ADLINK (fabric)# vlan name set 2 hello
ADLINK (fabric)# show vlan 2
vlan 2, name hello, ports xe2-xe3, untagged xe2-xe3.
ADLINK (fabric)# vlan del 2 xe2
ADLINK (fabric)# show vlan 2
vlan 2, name hello, ports xe3, untagged xe3.
ADLINK (fabric)# vlan remove 2
ADLINK (fabric)# show vlan 2
vlan 2 ports NULL, untagged NULL.
```

```
This is example runs at cpci-6s10
cpci-6s10(fabric)# vlan 2 enable
cpci-6s10(fabric)# vlan 2 port xe2 untag
cpci-6s10(fabric)# vlan 2 port xe3 untag
cpci-6s10(fabric)# show vlan 2
Name                        : VLAN 2
Administrative State: enabled
Member ports             : xe2-xe3
Untagged ports          : xe2-xe3
cpci-6s10(fabric)# no vlan 2 port xe2
cpci-6s10(fabric)# show vlan 2
Name                        : VLAN 2
Administrative State: enabled
Member ports             : xe3
Untagged ports          : xe3
```


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2) Associate MAC with a VLAN.

```
This is example runs at aTCA-3710
ADLINK(fabric)# vlan associate mac 2 00:11:22:33:44:55 prio 1
ADLINK(fabric)# vlan associate mac 2 00:11:22:33:44:66
ADLINK(fabric)# show vlan associate mac
MAC 00:11:22:33:44:55 -- vlan:       2, pri: 1
MAC 00:11:22:33:44:66 -- vlan:       2, pri: 0
ADLINK(fabric)# no vlan associate mac 00:11:22:33:44:55
ADLINK(fabric)# show vlan associate mac
MAC 00:11:22:33:44:66 -- vlan:       2, pri: 0
```

5.3.12 IGMP Snooping Configuration

IGMP snooping is the process of listening to Internet Group Management Protocol (IGMP) network traffic. The feature allows a network switch to listen in on the IGMP conversation between hosts and routers. By listening to these conversations the switch maintains a map of which links need which IP multicast streams. Multicasts may be filtered from the links which do not need them and thus controls which ports receive specific multicast traffic.

The following commands are available for IGMP Snooping configuration.

IGMP snooping enable

Description	Enable IGMP snooping protocol.		
Prerequisite	None		
Syntax	igmp-snooping enable		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

Example

Enable the IGMP snooping protocol.

```
ADLINK(fabric)#
ADLINK(fabric)# igmp-snooping enable
ADLINK(fabric)#
```

Note: Cannot start IGMP snooping and proxy simultaneously!

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IGMP snooping disable

Description	Disable IGMP snooping protocol.		
Prerequisite	None		
Syntax	igmp-snooping disable		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

Example

Disable the IGMP snooping protocol.

```
ADLINK(fabric)#
ADLINK(fabric)# igmp-snooping disable
ADLINK(fabric)#
```

IGMP snooping add-query-port

Description	Add IGMP snooping query port		
Prerequisite	IGMP snooping is enable.		
Syntax	igmp-snooping add-query-port port PORT_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_ID	Port id, eg: xe1.	

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Example

IGMP snooping add query port.

```
ADLINK(fabric)# igmp-snooping add-query-port port   xe1
ADLINK(fabric)# igmp-snooping del-query-port xe12
ADLINK(fabric)# igmp-snooping show query-port-config
Configured query portList:
                    xe1
                    xe12
ADLINK(fabric)# ADLINK(fabric)#
```

IGMP snooping del-query-port

Description	Delete IGMP snooping query port		
Prerequisite	IGMP snooping is enable.		
Syntax	igmp-snooping del-query-port port PORT_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_ID	Port id, eg: xe1.	

Example

IGMP snooping add query port.

```
ADLINK(fabric)# igmp-snooping show query-port-config
Configured query portList:
                    xe1
                    xe12
ADLINK(fabric)# ADLINK(fabric)#
ADLINK(fabric)# igmp-snooping del-query-port xe12
ADLINK(fabric)# igmp-snooping show query-port-config
Configured query portList:
                    xe1
ADLINK(fabric)# ADLINK(fabric)#
```


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IGMP snooping add-router-port

Description	Add IGMP snooping query port		
Prerequisite	IGMP snooping is enable. Add port to the VLAN.		
Syntax	igmp-snooping add-router-port vlan VLAN_ID port PORT_ID < multicast-group-address IP_ADDR>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VLAN_ID	Vlan id, eg: 100.	
	PORT_ID	Port id, eg:xe1.	
	IP_ADDR	IP address. This is an optional parameters.	

Example

Add IGMP snooping router port.

```
ADLINK(fabric)# igmp-snooping add-router-port vlan 100 port xe1
multicast-group-address 239.1.1.1
ADLINK(fabric)# igmp-snooping add-router-port vlan 100 port xe1
ADLINK(fabric)# ADLINK(fabric)# igmp-snooping show router-port-config
VLAN router port
100 xe1
ADLINK(fabric)#
```


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IGMP snooping del-router-port

Description	Delete IGMP snooping query port.		
Prerequisite	None		
Syntax	igmp-snooping del-router-port vlan VLAN_ID port PORT_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VLAN_ID	Vlan id, eg: 100.	
	PORT_ID	Port id, eg:xe1.	

Example

Delete IGMP router port.

```
ADLINK(fabric)# igmp-snooping del-router-port vlan 100    port xe1
ADLINK(fabric)# igmp-snooping show    router-port-config
VLAN                    router port
ADLINK(fabric)#
```

IGMP snooping group-life

Description	Set IGMP snooping group-life		
Prerequisite	IGMP snooping is enable.		
Syntax	igmp-snooping group-life <10-1000>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<10-1000>	Group life time value.<10-1000> seconds	

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Example

Set IGMP snooping group life.

```
ADLINK(fabric)# igmp-snooping group-life 100
ADLINK(fabric)# igmp-snooping show config
GROUP LIFE:                 100
QUERY INTERVAL:              125
…
ADLINK(fabric)#
```

IGMP snooping query-interval

Description	Set IGMP snooping query-interval value.		
Prerequisite	IGMP snooping is enable		
Syntax	igmp-snooping query-interval <10-300>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<10-300>	Query interval value <10-300> seconds\n"	

Example

Set IGMP snooping query-interval value..

```
ADLINK(fabric)# igmp-snooping query-interval 100
ADLINK(fabric)# igmp-snooping show config
GROUP LIFE:                 100
QUERY INTERVAL:              100
RESPONSE TIME:               10
```


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IGMP snooping response-time

Description	Set IGMP snooping response time value.		
Prerequisite	IGMP snooping is enable		
Syntax	igmp-snooping response-time <10-25>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<10-25>	Host response timeout value, <10-25> seconds.	

Example

Set IGMP snooping response time value.

```
ADLINK(fabric)# igmp-snooping response-time 15
ADLINK(fabric)# igmp-snooping show config
GROUP LIFE:                 100
QUERY INTERVAL:             100
RESPONSE TIME:              15
ROBUSTNESS:                 2
ADLINK(fabric)#
```

IGMP snooping robustness

Description	Set IGMP snooping robustness value.		
Prerequisite	IGMP snooping is enable		
Syntax	igmp-snooping robustness <1-100>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<1-100>	Robustness variable value <1-100>	

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Example

Set IGMP snooping robustness value.

```
ADLINK(fabric)# igmp-snooping robustness 50
ADLINK(fabric)# igmp-snooping show config
GROUP LIFE:                 100
QUERY INTERVAL:             100
RESPONSE TIME:              15
ROBUSTNESS:                 50
ADLINK(fabric)#
```

IGMP snooping set-mc-flood-mode

Description	Set IGMP snooping mc-flood-mode		
Prerequisite	IGMP snooping is enable		
Syntax	igmp-snooping set-mc-flood-mode VLAN_ID mode " <0-2>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VLAN_ID	Vlan id, eg:100.	
	<0-2>	0:Flood all multicast pakcets; 1:Flood unknown multicast packets.; 2:Drop unknown multicast packets.	

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Example

Set IGMP snooping mc-flood-mode.

```
ADLINK(fabric)# igmp-snooping set-mc-flood-mode 100 mode   0
ADLINK(fabric)# igmp-snooping set-mc-flood-mode 200 mode   1
ADLINK(fabric)# igmp-snooping set-mc-flood-mode 300 mode   2
ADLINK(fabric)# igmp-snooping show mc-flood-mode
Configured vlan mc flood mode list:
   vlan multicast flood mode   0, Broadcast all multicast packets.
    100

   vlan multicast flood mode   1, Broadcast unknown multicast packets.
    200

   vlan multicast flood mode   2, Drop unknown multicast packets.
    300
ADLINK(fabric)#
```

IGMP snooping show

Description	Show IGMP snooping configuration.		
Prerequisite	IGMP snooping is enable		
Syntax	igmp-snooping show config|query-port-config|router-port-config|mc-flood-mode		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	config	Show the value of GROUP LIFE,QUERY INTERVAL, RESPONSE TIME and ROBUSTNESS.	
	query-port-config	Show the query-port configuration.	
	router-port-config	Show the router-port configuration.	
	mc-flood-mode	Show the multicast flood mode configuration.	

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Example

Show IGMP snooping configuration..

```
ADLINK(fabric)# igmp-snooping show config
GROUP LIFE:                    100
QUERY INTERVAL:                 100
RESPONSE TIME:                  15
ROBUSTNESS:                     50
ADLINK(fabric)# igmp-snooping    show query-port-config
Configured query portList:
                        xe1
ADLINK(fabric)# igmp-snooping show router-port-config
VLAN                      router port
    100                     xe1
ADLINK(fabric)# igmp-snooping show mc-flood-mode
Configured vlan mc flood mode list:
   vlan multicast flood mode    0, Broadcast all multicast packets.
    100

   vlan multicast flood mode    1, Broadcast unknown multicast packets.
    200

   vlan multicast flood mode    2, Drop unknown multicast packets.
    300
ADLINK(fabric)#
```

IGMP snooping show group

Description	Show IGMP snooping group information.		
Prerequisite	IGMP snooping is enable		
Syntax	igmp-snooping show group		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

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Example

Show IGMP snooping group information

```
ADLINK(fabric)#
ADLINK(fabric)#
ADLINK(fabric)# igmp-snooping show group
  VLAN    GROUP               PORT LIST
  --------+------------------+----------------------
  1       239.1.1.10           xe1  xe3
ADLINK(fabric)#
ADLINK(fabric)#
```

5.3.13 IGMP Proxy Configuration

The Switch Platform supports multicast forwarding as a bandwidth-efficient method to provide point-to-multipoint broadcast video. Thesimple Internet Group Management Protocol (IGMP) is sufficient to control the multicast forwarding. In brief, IGMP builds a per-group forwarding tree. With this multicast forwarding tree, a single copy of any IP multicast packet from a particular sender will pass through port regardless of how many receivers are on the tree.

To connect to a wider multicast network, a multicast router interface can be explicitly configured using the proxy command. In most cases, it is through a WAN port on OLC, but this need not be the case. When a switch is IGMP-enabled, it acts as a proxy client on the router interface by performing the host portion of the IGMP protocol.

IGMP proxy enable

Description	Enable IGMP proxy protocol.		
Prerequisite	None		
Syntax	igmp-proxy enable		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

Example

Enable the IGMP proxy protocol.

```
ADLINK(fabric)#
ADLINK(fabric)# igmp-proxy enable
ADLINK(fabric)#
```


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Note: Cannot start IGMP snooping and proxy simultaneously!

IGMP proxy disable

Description	Disable IGMP proxy protocol.		
Prerequisite	None		
Syntax	igmp-proxy disable		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

Example

Disable the IGMP proxy protocol.

```
ADLINK(fabric)#
ADLINK(fabric)# igmp-proxy disable
ADLINK(fabric)#
```

Note: Cannot start IGMP snooping and proxy simultaneously!

IGMP proxy fast leave enable

Description	Enable IGMP proxy fast leave.		
Prerequisite	IGMP proxy is enable		
Syntax	igmp-proxy fast-leave enable		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

Example

Set IGMP proxy fast leave enable..

```
ADLINK(fabric)# igmp-proxy fast-leave enable
ADLINK(fabric)#
```


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IGMP proxy fast leave disable

Description	Disable IGMP proxy fast leave.		
Prerequisite	IGMP proxy is enable		
Syntax	igmp-proxy fast-leave disable		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		

Example

Set IGMP proxy fast leave disable.

```
ADLINK(fabric)# igmp-proxy fast-leave disable
ADLINK(fabric)#
```

IGMP proxy robust count set

Description	Set IGMP proxy robust count number.		
Prerequisite	IGMP proxy is enable		
Syntax	igmp-proxy robust-count <1-10>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<1-10>	Count value (Default: 2).	

Example

Set IGMP proxy robust count number..

```
ADLINK(fabric)#
ADLINK(fabric)# igmp-proxy robust-count    3
ADLINK(fabric)#
```


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IGMP proxy up link port set

Description	Set IGMP proxy uplink port.		
Prerequisite	IGMP proxy is enable		
Syntax	igmp-proxy uplink-port PORT_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_ID	Port id, eg:xe1.	

Example

Set IGMP proxy uplink port.

```
ADLINK(fabric)#
ADLINK(fabric)# igmp-proxy uplink-port xe1
ADLINK(fabric)# ADLINK(fabric)# igmp-proxy show uplink
IGMP proxy uplink port: xe1.
IGMP proxy uplink VLAN: 1.
ADLINK(fabric)#
```

IGMP proxy uplink vlan set

Description	Set IGMP proxy uplink vlan id.		
Prerequisite	IGMP proxy is enable		
Syntax	igmp-proxy uplink-vlan VLAN_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VLAN_ID	VLAN ID, eg:100.	

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Example

Set IGMP proxy uplink vlan id.

```
ADLINK(fabric)# igmp-proxy uplink-vlan 100
ADLINK(fabric)# ADLINK(fabric)# igmp-proxy show uplink
IGMP proxy uplink port: xe1.
IGMP proxy uplink VLAN: 100.
ADLINK(fabric)#
```

IGMP proxy VLAN interface add

Description	Add IGMP vlan interface.		
Prerequisite	IGMP proxy is enable. VLAN interface is set.		
Syntax	igmp-proxy vlan-interface add VLAN_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	VLAN_ID	VLAN ID, eg:100	

Example

Add IGMP vlan interface.

```
ADLINK(fabric)# vlan add 100 xe1 untag
ADLINK(fabric)# ip vlan-interface 100 address 10.1.1.1/24
ADLINK(fabric)# igmp-proxy vlan-interface add 100
ADLINK(fabric)# igmp-proxy show vlan-interface
IGMP proxy Service VLANs : 100
ADLINK(fabric)#
```


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IGMP proxy show

Description	show IGMP proxy configuration..		
Prerequisite	IGMP proxy is enable		
Syntax	igmp-proxy show group|uplink|vlan-interface		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	group	Show the Multicast group information.	
	uplink	Show the uplink port and uplink vlan.	
	vlan-interface	Show the VLAN interface.	

Example

Show IGMP proxy configuration.

```
ADLINK(fabric)# igmp-proxy show group
    Group       Expire      VID         PORT
ADLINK(fabric)# ADLINK(fabric)# igmp-proxy show uplink
IGMP proxy uplink port: xe1.
IGMP proxy uplink VLAN: 100.
ADLINK(fabric)# igmp-proxy show vlan-interface
IGMP proxy Service VLANs : 100
ADLINK(fabric)#
```

Notes:

The following rules should be followed when using IGMP proxy configuration.

1. IGMP-Proxy service should be enabled on each vlan-interface;
2. Both host-side & router-side vlan-interfaces have to enable IGMP proxy;
3. Support only one uplink port & one uplink vlan;
4. IGMP proxy & IGMP snooping cannot be enabled at the same time;
5. TTL of ingress multicast flow should be bigger than 1 (2 or larger);

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Example

Set the VLAN ID and port for the proxy.

```
atca-3710(fabric)# ip igmp proxy
atca-3710(fabric)# ip igmp-proxy uplink-port xe0
atca-3710(fabric)# ip igmp-proxy uplink-vlan 10
atca-3710(fabric)# ip igmp-proxy vlan-interface 10
atca-3710(fabric)#
atca-3710(fabric)# show ip igmp-proxy
  group                Multicast group information
  uplink               Proxy uplink information
  vlan-interface   Proxy service VLAN information
atca-3710(fabric)# show ip igmp-proxy uplink
IGMP proxy uplink port: xe0.
IGMP proxy uplink VLAN: 10.
```

5.3.14 Quality of Service (QoS) Configuration

Quality of Service (QoS) is no longer supported by PacketManager.

5.3.15 VRRP Configuration

VRRP specifies an election protocol that dynamically assigns responsibility for a virtual router to one of the VRRP routers on a LAN. The VRRP router controlling the IP address(es) associated with a virtual router is called the Master, and forwards packets sent to these IP addresses.

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Add a virtual router

Description	Add a virtual route on a specified VLAN interface.		
Prerequisite	The target VLAN and its IP have been built.		
Syntax	vrrp add vrid <1-255> vlan <1-4094> vrip A.B.C.D		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*<1-255>* Specifies the virtual router id. *<1-4094>* Specifies the vlan id. *A.B.C.D* Specifies the virtual router ip address.		
Output	Information about operation result.		

Example

```
ADLINK(fabric)# vrrp add vrid 1 vlan 22 vrip 160.1.1.101
add virtual route succeed!
ADLINK(fabric)# show vrrp
--------------------
      virtual route id:   1
      ip address:           160.1.1.101
      mac address:          00:00:5e:00:01:01
      current state:       master
      priority:             100
      preempt:                on
      adver_int:            1s
      auth mode:             none
```


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Remove a virtual router

Description	Remove a virtual route on a specified VLAN interface.		
Prerequisite	A virtual router has been built.		
Syntax	vrrp del vrid <1-255>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*<1-255>* Specifies the virtual router id.		
Output	Information about operation result.		

Example

```
ADLINK(fabric)# vrrp del vrid 1
rmv virtual route succeed!
```

Set virtual router priority

Description	Set a virtual router priority value.		
Prerequisite	A virtual router has been built.		
Syntax	vrrp vrid <1-255> priority <1-254>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*<1-255>* Specifies the virtual router id. *<1-254>* Specifies the virtual router priority value.		
Output	Information about operation result.		

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Example

```
ADLINK(fabric)# vrrp vrid 1 priority 99
set virtual route priority succeed!
ADLINK(fabric)# show vrrp
--------------------
      virtual route id:   1
      ip address:           160.1.1.101
      mac address:          00:00:5e:00:01:01
      current state:       master
      priority:             99
      preempt:                on
      adver_int:            1s
      auth mode:             none
```

Set virtual router preemption on/off

Description	Set a virtual router preemption switch on/off		
Prerequisite	A virtual router has been built.		
Syntax	vrrp vrid <1-255> preemption <on/off>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*<1-255>* Specifies the virtual router id. <on/off> Specifies the virtual router preemption switch state on/off.		
Output	Information about operation result.		

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Example

```
ADLINK(fabric)# vrrp vrid 1 preemption off
set virtual preemption off succeed!
ADLINK(fabric)# show vrrp
-------------------
      virtual route id:   1
      ip address:           160.1.1.101
      mac address:          00:00:5e:00:01:01
      current state:       master
      priority:             99
      preempt:               off
      adver_int:            1s
      auth mode:            none
ADLINK(fabric)#
```

5.3.16 LLDP configuration

lldp show

Description	Display LLDP info about local or neighbors.		
Prerequisite	LLDP has been resumed.		
Syntax	lldp show <local/neighbor>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*<local/neighbor>* *indicate the target.*		
Output	information about the target chassis.		

Example

```
ADLINK(fabric)# lldp show local
LOCAL CHASSIS:
  ------------------------------------------------
CHASSISID: 00:30:64:43:eb:9d
SYSNAME: localhost
SYSDESC: Linux 3.10.0-229.el7.x86_64 #1 SMP Fri Mar 6 11:36:42 UTC 2015 x86_64
MGMTIP: fe80::230:64ff:fe13:3383
------------------------------------------------
```


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lldp pause

Description	To stop LLDP feature with no more lldp PDU receive or send.		
Prerequisite	LLDP has been resumed.		
Syntax	lldp resume		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*N/A*		
Output	N/A		

lldp resume

Description	To start receiving and sending LLDP PDU again.		
Prerequisite	LLDP has been paused		
Syntax	lldp resume		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*N/A*		
Output	N/A		

lldp txinterval

Description	To set LLDP txinterval value.		
Prerequisite	LLDP has been resumed.		
Syntax	lldp txinterval <5-32768>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*<5-32768>* *indicate the txinterval value.*		
Output	operation result		

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Example

```
ADLINK(fabric)# lldp txinterval 6
set lldp tx_interval successfully!
```

lldp txhold

Description	To set LLDP txhold value.		
Prerequisite	LLDP has been resumed.		
Syntax	vrrp txhold <2-10>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	*<2-10>* indicate the lldp txhold value.		
Output	operation result.		

Example

```
ADLINK(fabric)# lldp txhold 3
set lldp tx_hold successfully!
```

lldp update

Description	To refresh neighbor information by sending a LLDP PDU immediately.		
Prerequisite	lldp has been resumed.		
Syntax	lldp update		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		
Output	N/A		

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5.3.17 SNMP Configuration

SNMP is an application-layer protocol that provides a message format for communication between managers and agents. The SNMP system consists of an SNMP manager, an SNMP agent, and a MIB.
The SNMP manager can be part of a network management system (NMS). The agent and MIB reside on the switch. To configure SNMP on the switch, you define the relationship between the manager and the agent.
The SNMP agent contains MIB variables whose values the SNMP manager can request or change. A manager can get a value from an agent or store a value into the agent. The agent gathers data from the MIB, the repository for information about device parameters and network data. The agent can also respond to a manager's requests to get or set data.
An agent can send unsolicited traps to the manager. Traps are messages alerting the SNMP manager to a condition on the network. Traps can mean improper user authentication, restarts, link status (up or down), MAC address tracking, closing of a TCP connection, loss of connection to a neighbor, or other significant events.

SNMP Versions

This software release supports these SNMP versions:

- SNMPv1—The Simple Network Management Protocol, a Full Internet Standard, defined in
- RFC 1157.
- SNMPv2C replaces the Party-based Administrative and Security Framework of SNMPv2Classic with the community-string-based Administrative Framework of SNMPv2C while retaining the bulk retrieval and improved error handling of SNMPv2Classic. It has these features:
- SNMPv2—Version 2 of the Simple Network Management Protocol, a Draft Internet Standard,
- defined in RFCs 1902 through 1907.
- SNMPv2C—The community-string-based Administrative Framework for SNMPv2, an Experimental Internet Protocol defined in RFC 1901.
- SNMPv3—Version 3 of the SNMP is an interoperable standards-based protocol defined in RFCs 2273 to 2275. SNMPv3 provides secure access to devices by authenticating and encrypting packets over the network and includes these security features:
  - Message integrity—ensuring that a packet was not tampered with in transit
  - Authentication—determining that the message is from a valid source
  - Encryption—mixing the contents of a package to prevent it from being read by an unauthorized source.

Both SNMPv1 and SNMPv2C use a community-based form of security. The community of managers able to access the agent's MIB is defined by an IP address access control list and password.

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SNMPv2C includes a bulk retrieval mechanism and more detailed error message reporting to management stations. The bulk retrieval mechanism retrieves tables and large quantities of information, minimizing the number of round-trips required. The SNMPv2C improved error-handling includes expanded error codes that distinguish different kinds of error conditions; these conditions are reported through a single error code in SNMPv1. Error return codes in SNMPv2C report the error type.

SNMPv3 provides for both security models and security levels. A security model is an authentication strategy set up for a user and the group within which the user resides. A security level is the permitted level of security within a security model. A combination of the security level and the security model determine which security mechanism is used when handling an SNMP packet. Available security models are SNMPv1, SNMPv2C, and SNMPv3.

Using SNMP to Access MIB Variables

An example of an NMS is the MibBrowser as network management software. MibBrowser software uses the switch MIB variables to set device variables and to poll devices on the network for specific information. The results of a poll can be displayed as a graph and analyzed to troubleshoot internetworking problems, increase network performance, verify the configuration of devices, monitor traffic loads, and more.

As shown in Figure 25-1, the SNMP agent gathers data from the MIB. The agent can send traps, or notification of certain events, to the SNMP manager, which receives and processes the traps. Traps alert the SNMP manager to a condition on the network such as improper user authentication, restarts, link status (up or down), MAC address tracking, and so forth. The SNMP agent also responds to MIB-related queries sent by the SNMP manager in get-request, get-next-request, and set-request format.

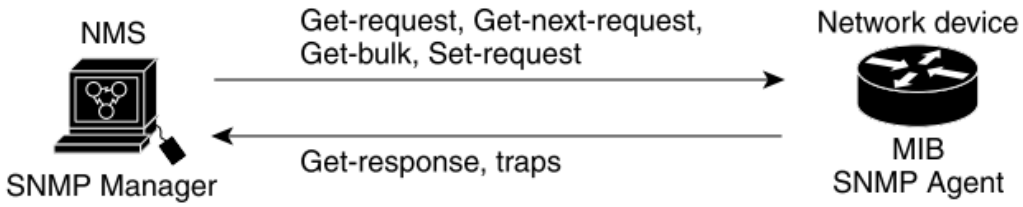


Figure 25-1 SNMP Network

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This example shows how to configure SNMP characteristics.

```
Set SNMP trap receiver address as below:

Vi /usr/share/snmp/snmpd.conf
…
####
#notification configuration
trap2sink 172.99.1.251:162  public
informsink 172.99.1.251:162  public
…
```

5.3.18 Event log configuration

The event log can support remote logging via Linux syslog mechanism. The local logging can be retained when the remote logging is enabled. The remote logging debug level configuration is independent of the local debugging level, which means the user can configure different debug levels for local logging and remote logging respectively.

Log local

Description	Local log enable or disable		
Prerequisite	none		
Syntax	log local enable		
Option	Enable : enable local log Disable : disable local log		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410

Example

```
ADLINK(fabric)# log local enable
Local log can be saved in below files:
root@aTCA-3710:/usr/local# ls -l
-rw-r----- 1 root root 532064390 Apr 23 00:33 adlink_sx_app.log
-rw-r--r-- 1 root root 146706717 Apr 23 00:33 adlink_sx_chassis.log
```


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Log remote

Description	remote log set		
Prerequisite	none		
Syntax	log remote <debuglevel|hostip|enable|disable>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	debuglevel	Specifies the remote debug level	
	hostip	Receiving host ip setting	
	enable/disable	Enable /disable remote log	

Example

1. For remote log setting:
   1) Login the receiving host and enter log configuration file.(e.g, syslog.conf)
   2) Create a file name and file path for remote log receiving.
   3) Run Linux syslog process.
      For example:
      The receiver machine is a Red hat Linux server 192.168.25.213

```
---------------------------------------------------------------------------
 root@aTCA-receiver:/etc# vi syslog.conf
 ….
 local7.debug                          -/home/root/z0506.log
  ….
  root@aTCA-receiver:/etc# syslogd -r
---------------------------------------------------------------------------
```

   4) Login the log sender card and specify the hostip and debug level on which to collect event logs, and enter remote log enable mode.

```
ADLINK# log remote debuglevel 7
ADLINK# log remote hostip 192.168.25.213
ADLINK# log remote enable
```

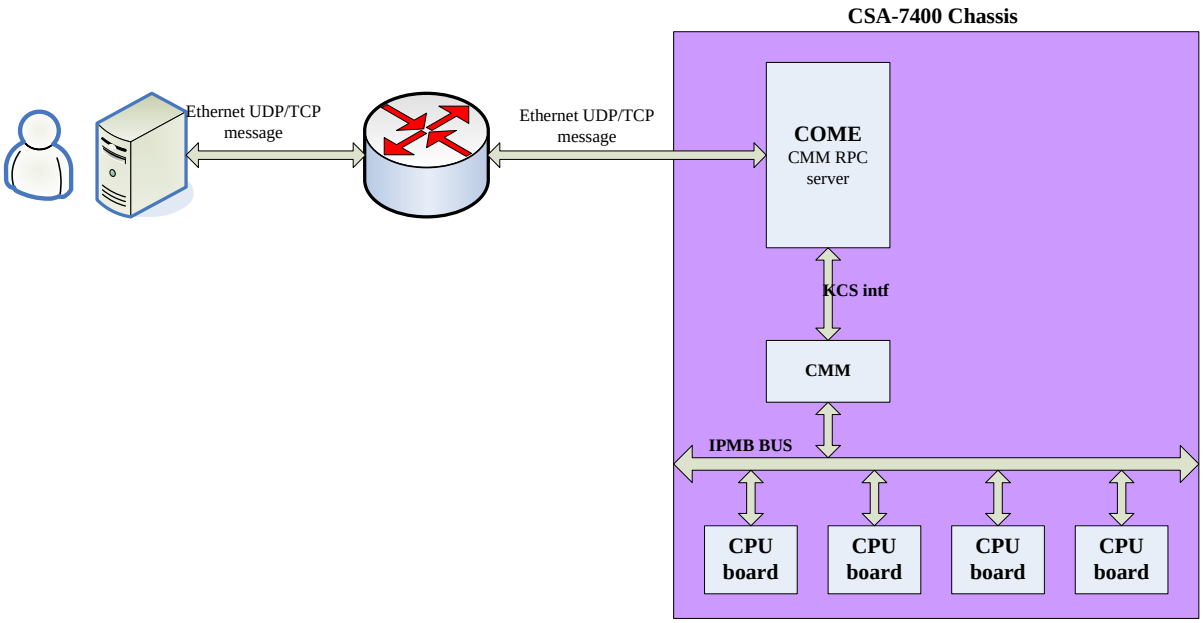
   5) View the event log successfully in the receiver machine.

```
root@aTCA-receiver:/etc# cat /home/root/z0506.log
May   9 18:17:53 aTCA-3710 SX_Controller: unit=1,port=11
May   9 18:17:53 aTCA-3710 SX_Controller: Link status : Up
May   9 18:29:03aTCA-3710 SX_Controller: USER:127.0.0.1
COMMAND:show vlan
```


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5.3.19 RPC CMM Configuration

RPC CMM (chassis manage module) is an application running on CSA-7400 switch COME, which enable user to manage the CSA-7400 chassis (Ex: reset / reading sensor / hot-plug, etc.) remotely by providing RPC APIs; It will transfer the RPC CMM APIs to IPMI message, and forward the IPMI message to CSA-7400 CMM through KCS interface.



Enable the CMM function

To enable the RPC CMM function， it needs to meet below conditions

- Hardware requirement
  The switch board must be MXN-3610/MXN-4100 A2;
- Software requirement
  COME BIOS: must be v0.92 or above;
  COME OS: must be Centos 7.1;
  Package manage:must be version v638 or above;
  CMM FW: must be version v3.0 or above;

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IPMI raw send command

Description	Send IPMI raw command to miniBMC of CPU board or CMM of Switch board.		
Prerequisite	See above section “Enable the CMM function”.		
Syntax	raw <target module> <ipmi raw cmd>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<target module>	shelf =>to CMM, board_x=>to CPU board, for example, board_0 means CPU board plugged in slot 0;	
	<ipmi raw cmd>	Standard ipmi message in hex format	

Example

Read the CMM board’s id.

```
ADLINK(cmm)# raw shelf 0x06 0x01
20 01 03 01 02 bf 13 5f 00 10 36 dd 0b 01 00.
ADLINK(cmm)#
```

Set RRC hotplug state

Description	This function is used to send ipmi command to tell CMM its hotswap state by CPU board.		
Prerequisite	See above section “Enable the CMM function”.		
Syntax	set_hotplug_state <state> <cpu_node>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<msg_type>	0x0 =>RRC ready, 0x1=>RRC is requested to hotplug, 0x3=>CPU board handle hotplug request success, 0x4=>CPU board handle hotplug failed;	
	<cpu_node>	1~4 for 7400 chassis	

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Example

CPU board_1 tells it has handle the hotplug request done success.

```
ADLINK(cmm)# set_hotplug_state 0x3 0x1
Set hotswap sate: CPU node 1, msg_type 3.
ADLINK(cmm)#
```

Get RRC hotplug state

Description	This function is used to send ipmi command to get CMM's hotswap state by CPU board.		
Prerequisite	See above section “Enable the CMM function”.		
Syntax	get_hotplug_state		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		
Response	Msg_type	0x0 =>RRC ready, 0x1=>RRC is requested to hotplug, 0x3=>CPU board handle hotplug request success, 0x4=>CPU board handle hotplug failed;	

Example

Read the hotplug state from CMM.

```
ADLINK(cmm)# get_hotplug_state
Get hotswap sate: msg_type 3.
ADLINK(cmm)#
```


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Reset payload

Description	This function is used to send ipmit raw command to BMC of CPU board or Switch board.		
Prerequisite	See above section “Enable the CMM function”.		
Syntax	reset <target_board> <reset_type>		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	<target_board>	shelf =>to CMM, board_x=>to CPU board, for example, board_0 means CPU board plugged in slot 0	
	<reset_type>	0 - power down; 1 - power up; 2 - powercycle; 3 - hard reset; 5 - soft shutdown	
Response	N/A		

Example

Reset CPU board on slot 1.

```
ADLINK(cmm)# reset board_1

ADLINK(cmm)#
```

Get payload slot mask

Description	This function is used to tell how may CPU boards are plugin in, and in which slot.		
Prerequisite	See above section “Enable the CMM function”.		
Syntax	chassis slot		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		
Response	N/A		

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Example

Read the information of how many CPU boards plugged in chaiss .

```
ADLINK(cmm)# chassis slot
Slot 1 is empty
Slot 2 is empty
Slot 3 is occupied
Slot 4 is empty
Slot 5 is empty
Slot 6 is empty
Slot 7 is empty
Slot 8 is empty.
Chassis'Total Slots:      8
CPU Board Inserted:       1
Empty Slot:               7
ADLINK(cmm)#
```

Get switch board number

Description	This function is used to tell how may Switch board was plugin.		
Prerequisite	See above section “Enable the CMM function”.		
Syntax	chassis switch		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		
Response	N/A		

Example

Read the information of how many switch boards plugged in chaiss .

```
ADLINK(cmm)# chassis switch
Chassis' Switch Number:      2
ADLINK(cmm)#
```


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Get chassis ID

Description	This function is used to read the chassis ID, such as the serial number of the chassis.		
Prerequisite	See above section “Enable the CMM function”.		
Syntax	chassis id		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		
Response	N/A		

Example

Read the CSA-7400 chassis id.

```
ADLINK(cmm)# chassis switch
This Chassis ID:    55 66
ADLINK(cmm)#
```

Get CMM state and slot ID

Description	This function is used to tell which SW slot current Switch is plugin, and whether the CMM is main or standalone.		
Prerequisite	See above section “Enable the CMM function”.		
Syntax	shelf state		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	N/A		
Response	N/A		

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Example

Read the CSA-7400 chassis id.

```
ADLINK(cmm)# shelf state
Slot ID          :      Slot-1
Shelf state      :      Main
```

5.3.20 Transceiver module configuration

The following commands are available for configuring port parameters.

Show Transceiver module

Description	Show Transceiver module information.		
Prerequisite	None		
Syntax	show transceiver module PORT_LIST|PORT_ID		
Applies to	aTCA-3710	aTCA-N700	aTCA-3430
	MXN-3610/MXN-4100	cPCI-6S10	MXN-0410
Options	PORT_LIST|PORT_ID	Port id list or port id. eg: xe1 or xe1,xe3 or xe1-xe3.	

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Example

```
ADLINK(fabric)# show transceiver module xe1,xe2-xe3
------------Module xe1 Information------------
Name                : xe1
Install             : YES
Identifier          : SFP
Connector Type      : LC
Transceiver Type    : Multiple Module
Vendor Name         : FINISAR CORP.
Vendor PN           : FTLX8571D3BCL
Vendor SN           : MTL1J31
Vendor Rev          : A
Vendor DateCode     : 150522
Vendor OUI          : 0x009065
Temperature         : 27.1C
VCC                 : 3.31V
Tx Bias Current     : 7.60mA
Tx Output Power     : 575.1uW
Rx Power            : 485.4uW
------------Module xe2 Information------------
Name                : xe2
Install             : NO
Identifier          : Unknown
Connector Type      : Unknown
Transceiver Type    : UnKnown
Vendor Name         :
Vendor PN           :
Vendor SN           :
Vendor Rev          :
Vendor DateCode     :
Vendor OUI          : 0x000000
Temperature         : 0.0C
VCC                 : 0.00V
Tx Bias Current     : 0.00mA
Tx Output Power     : 0.0uW
Rx Power            : 0.0uW
------------Module xe3 Information------------
Name                : xe3
Install             : YES
Identifier          : SFP
Connector Type      : LC
Transceiver Type    : Single Module
Vendor Name         : FINISAR CORP.
Vendor PN           : FTLF1318P2BCL
Vendor SN           : PRR44BT
Vendor Rev          : A
Vendor DateCode     : 140624
Vendor OUI          : 0x009065
Temperature         : 0.0C
VCC                 : 0.00V
Tx Bias Current     : 0.00mA
Tx Output Power     : 0.0uW
Rx Power            : 0.0uW
ADLINK(fabric)#
```


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6 DHCP

This chapter describes switch blades how to configure the DHCP server /relay features using dhcpd/dhcrelay procedure and PacketManager. The switch blades have provided the dhcpd/dhcrelay service already. we can use the dhcpd/dhcrelay command directly.

6.1 DHCP SEVER CONFIG

6.1.1 Server Configuration

Create VLAN interface

We configure the DHCP server to IP address range192.168.1.0/24 as an example.

```
##Fabric vlan-config
vlan add 1 cpu0 tag
##Fabric L3_intf-config
 ip vlan-interface 1 address 192.168.1.110/24
##Fabric route-config ( NOTE :this is for the dhcp relay example)
 route add 192.168.2.1/24 192.168.1.10 1
```


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Edit the dhcpd.conf file

We need to edit the dhcpd.conf file to configure the port. The file is under the directory /etc/.

```
class "ge0" {
      match if substring (option dhcp-client-identifier, 0, 3) = "ge0";
}

class "ge1" {
      match if substring (option dhcp-client-identifier, 0, 3) = "ge1";
}

class "ge2" {
      match if substring (option dhcp-client-identifier, 0, 3) = "ge2";
}

class "xe0" {
      match if substring (option dhcp-client-identifier, 0, 3) = "xe0";
}

class "xe1" {
      match if substring (option dhcp-client-identifier, 0, 3) = "xe1";
}
shared-network hostname {
   subnet 192.168.1.0 netmask 255.255.255.0 {
      option domain-name "rrc.org";
      option domain-name-servers 192.168.2.22, 192.168.2.21;
      option routers 192.168.1.1;
      option subnet-mask 255.255.255.0;
      default-lease-time 21600;
      max-lease-time 43200;
   }
```


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```
    pool {
        allow members of "ge0";
        range 192.168.1.11 192.168.1.20;
    }

        pool {
        allow members of "ge1";
        range 192.168.1.21 192.168.1.30;
    }

        pool {
        allow members of "ge2";
        range 192.168.1.31 192.168.1.31;
    }

        pool {
        allow members of "xe0";
        range 192.168.1.41 192.168.1.42;
    }

        pool {
        allow members of "xe1";
        range 192.168.1.51 192.168.1.52;
    }
}
```

Note : The class "ge0" is the name of the switch port ID.

Start DHCP service

```
[root@cpci-6s10 home]#dhcpd
Internet Systems Consortium DHCP Server 4.2.6
Copyright 2004-2014 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/
Wrote 0 class decls to leases file.
Wrote 0 leases to leases file.
Listening on LPF/f.vlan.1/00:30:64:06:a5:1b/hostname
Sending on      LPF/f.vlan.1/00:30:64:06:a5:1b/hostname
…
[root@cpci-6s10 home]#
```


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6.1.2 Client configuration

It is assumed that the port “eth0” of the CPU blade is connected to the port “ge0” of the switch blade.

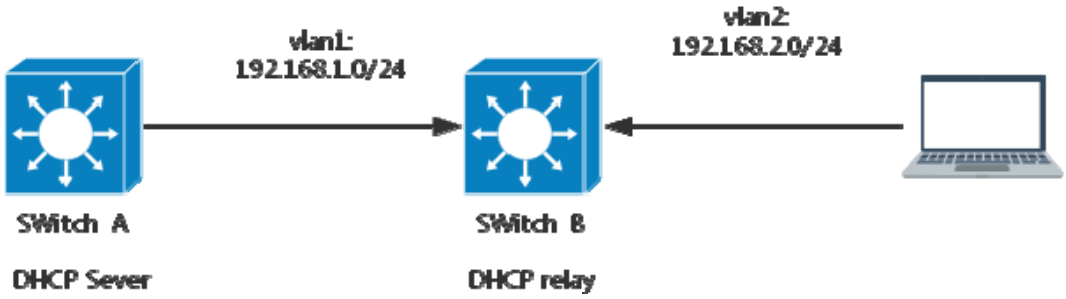
```
[root@localhost ~]# dhclient –I ge0 eth0
[root@cpci-6s10 ~]#ifconfig
eth0        Link encap:Ethernet  HWaddr 00:30:64:2B:1B:27
            inet addr:192.168.1.11  Bcast:0.0.0.0  Mask:255.255.255.0
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:1347 errors:0 dropped:0 overruns:0 frame:0
            TX packets:191 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            Interrupt:234 Base address:0x2000
[root@cpci-6s10 ~]
```

The eth0 of cpu blade has got the ip 192.168.1.11.

6.2 DHCP RELAY CONFIG

6.2.1 Network topology

we can connect the switches topology as blew:



6.2.2 Server Configuration

Start the DHCP server service on switch A using the commands in the above chapter(7.1.1), and modify the dhcpd.conf file :

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```
class "ge0" {
        match if substring (option dhcp-client-identifier, 0, 3) = "ge0";
}
class "ge1" {
        match if substring (option dhcp-client-identifier, 0, 3) = "ge1";
}
class "ge2" {
        match if substring (option dhcp-client-identifier, 0, 3) = "ge2";
}
class "xe0" {
        match if substring (option dhcp-client-identifier, 0, 3) = "xe0";
}
class "xe1" {
        match if substring (option dhcp-client-identifier, 0, 3) = "xe1";
}
subnet 192.168.1.0 netmask 255.255.255.0 {
        option domain-name "rrc.org";
        option domain-name-servers 192.168.2.22, 192.168.2.21;
        option routers 192.168.1.110;
        option subnet-mask 255.255.255.0;
        default-lease-time 21600;
        max-lease-time 43200;

    pool {
        allow members of "ge0";
        range 192.168.1.11 192.168.1.20;
    }
        pool {
        allow members of "ge1";
        range 192.168.1.21 192.168.1.30;
    }
        pool {
        allow members of "ge2";
        range 192.168.1.31 192.168.1.31;
    }
        pool {
        allow members of "xe0";
        range 192.168.1.41 192.168.1.42;
    }
        pool {
        allow members of "xe1";
        range 192.168.1.51 192.168.1.52;
    }
}
```


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```
subnet 192.168.2.0 netmask 255.255.255.0 {
        option domain-name "rrc.org";
        option domain-name-servers 192.168.2.22, 192.168.2.21;
        option routers 192.168.2.1;
        option subnet-mask 255.255.255.0;
        default-lease-time 21600;
        max-lease-time 43200;
    pool {
        allow members of "ge0";
        range 192.168.2.11 192.168.2.20;
    }
        pool {
        allow members of "ge1";
        range 192.168.2.21 192.168.2.30;
    }
        pool {
        allow members of "ge2";
        range 192.168.2.31 192.168.2.31;
    }
        pool {
        allow members of "xe0";
        range 192.168.2.41 192.168.2.42;
    }
        pool {
        allow members of "xe1";
        range 192.168.2.51 192.168.2.52;
    }
}
```


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```
    pool {
        allow members of "ge0";
        range 192.168.2.11 192.168.2.20;
    }
        pool {
        allow members of "ge1";
        range 192.168.2.21 192.168.2.30;
    }
        pool {
        allow members of "ge2";
        range 192.168.2.31 192.168.2.31;
    }
        pool {
        allow members of "xe0";
        range 192.168.2.41 192.168.2.42;
    }
        pool {
        allow members of "xe1";
        range 192.168.2.51 192.168.2.52;
    }
}
```

6.2.3 Relay Configuration

Create vlan interface

```
##Fabric port-config
  port ge2 pvlan 2

##Fabric vlan-config
  vlan 1 port cpu0 tag
  vlan 2 enable
  vlan 2 port ge2 untag
  vlan 2 port cpu0 tag

##Fabric L3_intf-config
  ip vlan-interface 1 address 192.168.1.10/24
  ip vlan-interface 2 address 192.168.2.1/24
```


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Start DHCP relay service

```
[root@cpci-6s10 ~]#dhcrelay 192.168.1.110
Internet Systems Consortium DHCP Relay Agent 4.2.6
Copyright 2004-2014 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/
Listening on LPF/f.vlan.2/00:30:64:27:c1:1a
Sending on      LPF/f.vlan.2/00:30:64:27:c1:1a
Listening on LPF/f.vlan.1/00:30:64:27:c1:1a
Sending on      LPF/f.vlan.1/00:30:64:27:c1:1a
Listening on LPF/eth0/00:30:64:2b:1b:27
Sending on      LPF/eth0/00:30:64:2b:1b:27
Sending on      Socket/fallback
[root@cpci-6s10 ~]#
```

6.2.4 Client Configuration

It is assumed that the port “eth0” of the CPU blade is connected to the port “ge0” of the switch blade.

```
[root@localhost ~]# dhclient –I ge0 eth0
[root@cpci-6s10 ~]#ifconfig
eth0        Link encap:Ethernet  HWaddr 00:30:64:2B:1B:27
            inet addr:192.168.2.11  Bcast:0.0.0.0  Mask:255.255.255.0
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:1347 errors:0 dropped:0 overruns:0 frame:0
            TX packets:191 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            Interrupt:234 Base address:0x2000
```

The CPU blade manager port will get the IP 192.168.2.11 .

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7 Boot Configuration File

Except the default configuration file (/etc/vtysh.conf) we saved by the CLI. We provide two configuration file at the boot folder (/usr/local/bcm/). When the PacketManager starting, it will load one of them according to the slot number of the switch blade.
Note that this feature can only work on cPCI-6S10.

File naming rules

The boot configuration files are named as “adlink_boot_config_xx”. “xx” is two bit lowercase hexadecimal digits. Such as: 08, 0c and so on. The value of the digits is the slot number got by the command “ ipmitool raw 0x30 0xF0” (Second bytes of results). When the PacketManager starting, it will execute this command and get the slot number. Then, it will load the file with the specific name.

```
[root@cpci-6s10 ~]#ipmitool raw 0x30 0xf0
be 09 01
[root@localhost ~]#ls /usr/local/bcm/adlink_boot_config_
adlink_boot_config_08 adlink_boot_config_09
[root@localhost ~]#
```

Note: If the IPMI command reports the following error information, you need to install the IPMC FW. You can refer to the user manual of the cPCI-6S10 or ask the local FAE for help.

```
[root@cpci-6s10 ~]#ipmitool raw 0x30 0xF0
Could not open device at /dev/ipmi0 or /dev/ipmi/0 or /dev/ipmidev/0: No such file or directory
[root@localhost ~]#
```


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Configuration rules

The boot configuration files has the same format as the default configuration file. So we can refer to the configure guide of CLI to write this file.

```
#Wrote on Thu Jan    1 00:39:37 1970
!
fabric
      ##Fabric port-config
        port ge0 pvlan 100
        port ge1 pvlan 200
        port ge2 pvlan 300

      ##Fabric vlan-config
        vlan 100 enable
        vlan add 100 cpu0 tag
        vlan add 100 ge0 untag

        vlan 200 enable
        vlan add 200 cpu0 tag
        vlan add 200 ge1 untag


        vlan 300 enable
        vlan add 300 cpu0 tag
        vlan add 300 ge2 untag

      ##Fabric L3_intf-config
        ip vlan-interface 100 address 10.10.1.1/24
        ip vlan-interface 200 address 10.10.2.1/24
        ip vlan-interface 300 address 10.10.3.1/24

      ##Fabric route-config
        route add 192.168.1.1/24 10.10.1.100 10
        route add 192.168.2.1/24 10.10.2.100 10
        route add 192.168.3.1/24 10.10.3.100 10

!
#End
```

Note: If the file format is incorrect, PacketManager may fail to start.

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Effective rules

When the PacketManager starts, it will load the default configuration file (/etc/vtysh.conf) firstly. The boot configuration file (/usr/local/adlink_boot_config_xx) will load at the second step. So boot configuration will cover the default configuration.

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8 Glossary

Most of the definitions found in this glossary can be found in various public and commercial websites.

ACE

Access Control Entry. An ACE is a description of access rights associated with a user or process.

ACL

An ACL is a list of permissions assigned to an object. The list describes which users or which processes are allowed to access and manipulate an object. An ACL is made up of ACEs.

Bandwidth

A measurement of the information-carrying capacity of a line or a network. For digital devices, the bandwidth is usually expressed in bits per second (bps) or bytes per second. For analog devices, the bandwidth is expressed in cycles per second, or Hertz (Hz).

bps

Bits per second. A measurement for determining transmission speed.

Class of Service

Class of Service is a way of managing network traffic by grouping similar types of data (for example, e-mail, streaming video, voice, large document file transfer) and treating each type as a class with its own level of service priority. Class of Service technologies do not guarantee a level of service in terms of bandwidth and delivery time; they offer a "best-effort." One can think of CoS as "coarsely-grained" traffic control and QoS (Quality of Service) as "finely-grained" traffic control.

CoS

See Class of Service.

CRC

Cyclic Redundancy Checking. A method of checking for errors in data that has been transmitted on a communications link. A sending device applies a 16- or 32-bit polynomial to a block of data that is to be transmitted and appends the resulting cyclic redundancy code (CRC) to the block. The receiving end applies the same polynomial to the data and compares its result with the result appended by the sender. If they agree, the data has been received successfully. If not, the sender can be notified to resend the block of data.

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Differentiated Services
Also known as DiffServ or Type of Service, is a field in the IP header that allows users to provide Quality of Service (QoS) for network traffic. See also Type of Service.

Fast Ethernet
Fast Ethernet is a LAN transmission standard that provides a data rate of 100 megabits per second (referred to as 100BASE-T).

ICMP
Internet Control Message Protocol. This protocol is used to transmit messages in IP networks. It also includes utilities such as ping and traceroute which are useful for diagnostic analysis of network connectivity.

IEEE
Institute of Electrical and Electronics Engineers. The largest international non-profit, professional organization for the advancement of technology related to electricity.

IGMP
Internet Group Management Protocol. A communications protocol that focuses on the membership of Internet Protocol multicast groups.

IP
Internet Protocol. The computer networking protocol used on the Internet. IP may also stand for:Internet Provider (more commonly referred to as Internet Service Provider or ISP). A business or organization that offers users access to the Internet and related services.Intellectual Property. The legal term which encompasses copyrights, patents, trademarks, and trade secrets (amongst others).

ITU
International Telecommunications Union. Created to standardize and regulate international radio and telecommunications. Originally (in 1865) formed as the International Telegraph Union, the ITU is one of the oldest active international organizations.

Kbps
Kilobits per second

LAN
Local Area Network. A computer network covering a local area, like a home, office or small group of buildings such as a college. When using ethernet, the computers are usually wired to a hub or

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to a switch. LANs can be interlinked via a router to form a Wide Area Network (WAN).

MEF

The MEF (Metro Ethernet Forum) is a non-profit organization promoting the adoption of Carrier-class Ethernet networks and services. The Forum membership includes service providers, incumbent local exchange carriers, network equipment vendors such as Salira, test equipment vendors, and other networking companies that share an interest in metro Ethernet. (See Metro Ethernet Network.)

MEN

Metro Ethernet Network. The Ethernet network created by service providers.

MIB

Management Information Base. A database of network performance information (such as error counts and on/off information), stored on a Network Agent and retrieved by a Network Management Station (NMS).

NE

Network Element, for example, a Salira 2500 Series terminal. A network element is telecommunications hardware equipment that is addressable and manageable. NEs provide support or services to the user and can be managed through an element manager (EMS). A group of interconnected network elements form a network.

OSI

Open Systems Interconnection was a new effort in networking started in 1982 by the International Organization for Standardization (ISO), along with the ITU-T.Prior to OSI, networking was completely vendor-developed and proprietary, which lead to interoperability issues resulting from a lack of common protocols between network devices. OSI was a new industry effort, attempting to get everyone to agree to common network standards to provide multi-vendor interoperability.The OSI approach was eventually eclipsed by the Internet s TCP/IP protocol suite. Its pragmatic approach to computer networking and independent implementations of simplified protocols made it a practical standard.

RADIUS

Remote Authentication Dial-In User Service. A security service for authenticating and authorizing remote users.

STP

Spanning Tree Protocol. A network management protocol that facilitates loop-free traffic forwarding for any bridged LAN.

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Type of Service
A system of seven traffic prioritization schemes.

VLAN
Virtual Local Area Network. A group of devices on different physical LANs which can communicate with each other as if they were on the same physical LAN segment.

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Getting Service

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