GARLAND
T E C H N O L O G Y

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User Guide

AF10G4ACEv2

User Guide

PacketMAX| AF10G4ACEv2 | 49410c03

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Safety Warning Statements

⚠️ **Warning**

No user-serviceable parts inside. Do not open.

⚠️ **Warning**

Only trained and qualified service personnel should be allowed to open, install, replace, or service this equipment.

⚠️ **Warning**

Installation of the equipment must comply with local and national electrical codes.

⚠️ **Warning**

There is a Non-Rechargeable Lithium Coin Cell Battery as part of the main Printed Circuit Board inside the ATLAS enclosure. There is the danger of explosion if the battery is replaced incorrectly. Only trained and qualified service personnel may open this equipment to access the Printed Circuit Board to remove and replace the battery.

Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

⚠️ **Warning**

To meet Clause 10, Radiation: Ethernet Transceivers with Lasers used with this product must be Class I lasers and must be certified to IEC 60825-1.

⚠️ **Warning   AC Fuse: 3A, 250VAC**

This product relies on the building's installation for short-circuit (overcurrent) protection.

⚠️ **Warning**

Ultimate disposal of this product should be handled according to all national laws and regulations.

⚠️ **Warning**

This equipment is not suitable for use in locations where children are likely to be present.

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EMC Statements

Class A Notice for FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Class A Notice for Canada

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EMC Environmental Conditions for Products Installed in the European Union

This section applies to products to be installed in the European Economic Union.

The equipment is intended to operate under the following environmental conditions with respect to EMC:

- A separate, defined location that is under user's control.
- As a minimum, earthing and bonding shall meet the requirements of ETS 300 253:1995 or CCITT K27:1996.
- AC power distribution inside the building shall be, as a minimum, one of the following types (as defined in IEC 60364-3:1993):
    - TN-S
    - TN-C
    - TT
    - IT

In addition, if equipment is operated in a domestic environment, radio-frequency interference may occur.

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List of Components Supplied

The components supplied with each AF10G4ACEv2 are listed below. If any component is found to be missing, damaged, not working, or otherwise faulty, please report it immediately to Garland Technology Technical Support.

1 x AF10G4ACEv2
1 x Rack mounting kit (two brackets and screws)
1 x AC Power Cords
1 x Ethernet Cable (RJ45)
1 x Console Cable (RJ45 x DB9)

Note: Slide-rails are not available for this model.

The customer is responsible for ordering the hardware to secure the AF10G4ACEv2 to the rack when ordering the rack.

4 x Cage Nuts (12-24 threads)
4 x Screws (12-24 threads)

Rack-mounting

This section describes how to mount the AF10G4ACEv2 into a 19" rack. Follow the usual security precautions.

To rack mount the AF10G4ACEv2:
1. Unpack the AF10G4ACEv2 and place it on a suitable work surface.
2. Attach the two mounting brackets supplied to the side of the AF10G4ACEv2 chassis.
3. Slide the chassis into the rack and secure it with screws (not supplied).
4. Attached the AC Power cord to separate the power source

Caution: Installing the switch in a rack required two skilled people. One person should position the switch in the rack, while the other secures it using the rack screws.

Note: Air flow is front to back, ensure that the fans (located rear of the unit) are not blocked.

Shelf-mounting

The switch can also be installed on a desktop or shelf.

1. Unpack the AF10G4ACEv2 and place it on a flat, stable work surface.
2. Attached the AC Power cord to separate the power source

Technical Specifications

Mechanical
- 1.75 (H) x 12.28 (W) x 14 (D) inches (1U)
- 4.45 (H) x 20.96 (W) x 35.56 (D) centimeters (1U)

Electrical

CPU and Memory Options
- Intel Core i3, i5 or i7 up to 3.5GHz clock speed
- Up to 32GB dual channel DDR4 at 1866/2133 MHz
- Up to 1 TB of SSD storage

Ports
- 1 x SFP+ 10 GB LAN PORT
- 4 x SFP+ 10GB
- 1 x QSFP+ 40GB
- 1 x 1GB RJ45 Ethernet Management
- 1 x RS-232 (RJ45)
- 1 x USB 3.0
- 1 x HDMI (INTERNAL)

Timing
- PPS (via MCX)

Power and Cooling
- AC option: 100-240VAC - 47/63Hz - 2.5A (Fuse 250VAC @ 3 amps)
- Redundant power supply option
- Front-to-back cooling (3 smart fans)

Environmental
- Operating Temperature: 0° to 50°C (32° to 122°F)
- Operating Humidity: 0 to 95%, non-condensing

Product Safety
- UL60950-1 (USA/Canada)
- EN60950-1 (EU)

Regulatory Compliance and Directives
- FCC 47 CFR Part 15 Class A (USA/Canada)
- EN55022:2006/A1:2007 Class A ITE (EU)
- EN61000-3-2, EN61000-3 (EU)
- EN55024 (EU)
- Meets VCCI:V-3/2015.04 Class A ITE Emissions (Japan)
- Meets AS/NZS CISPR 22:2009/A1:2010 Class A ITE emissions (Australia/New Zealand)

Introduction

The document is intended to describe the AF10G4ACEv2 hardware, value-add packet processing functions, operating instructions, and the user interface.

Hardware

As shown in Figure 1, the AF10G4ACEv2 is a small form factor appliance, complete with an x86 CPU subsystem, that performs advanced packet conditioning applications. The hardware design is illustrated in Figure 1. The main building blocks are the FPGA Motherboard, x86 ComExpress Modules, and a network Interface featuring a 4 x10G SFP+ frontend, and a 40G QSFP. The Precise Time Stamping source is an externally sourced 1 PPS. The unit features a Rugged Compact Design (1U x 8.25" x 14").

Figure 1 Hardware Design
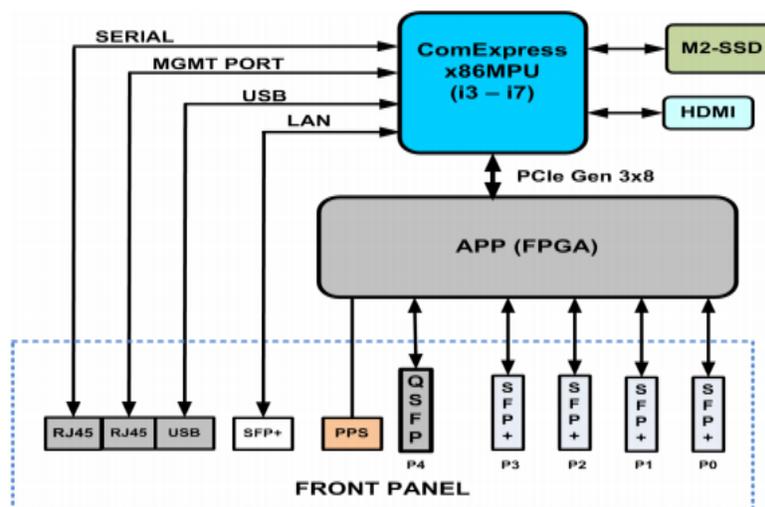
Front Panel
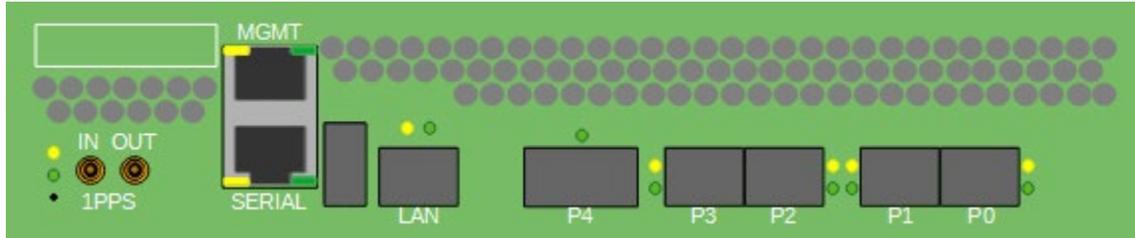
Interfaces

1PPS IN/OUT -	The 1pps can be derived from the usual GPS, PTP or CDMA sources
SERIAL -	RJ45 serial interface
MGMT -	RJ45 ethernet management interface
LAN -	N/A
P4 -	40G QSFP interface
P3 -	10G SFP Interface
P2 -	10G SFP Interface
P1 -	10G SFP Interface
P0 -	10G SFP Interface

LEDs

System GREEN LED -	Green – Power applied and switch ON
System AMBER LED -	Flashes during bootup
MGMT AMBER LED -	Activity
MGMT GREEN LED -	Link
SERIAL AMBER LED -	N/A
SERIAL GREEN LED -	N/A
LAN AMBER LED -	N/A
LAN GREEN LED -	N/A
P4 GREEN LED -	Link/Activity
P3 AMBER LED -	N/A
P3 GREEN LED -	Link/Activity
P2 AMBER LED -	N/A
P2 GREEN LED -	Link/Activity
P1 AMBER LED -	N/A
P1 GREEN LED -	Link/Activity
P0 AMBER LED -	N/A
P0 GREEN LED -	Link/Activity

Rear Panel
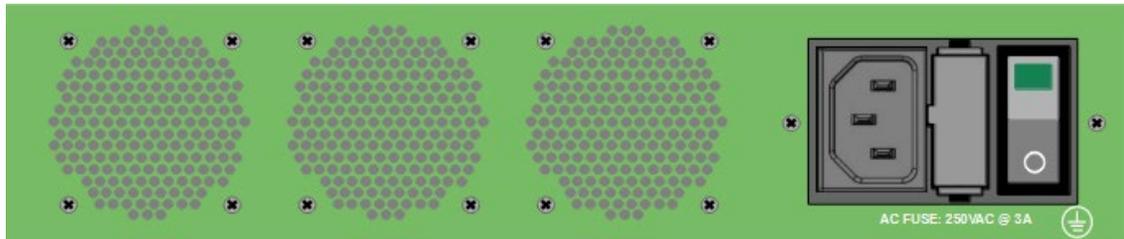
Interfaces

AC Input -   Power Input

LEDs

Power Switch GREEN LED -   GREEN – AC power applied and switch ON

Service Node

The AF10G4ACEv2 Service Node connects to device ports that send it streams of packets for packet conditioning on 10G or 40G ports. The AF10G4ACEv2 performs the required packet conditioning function on each ingress stream and performs a U-Turn on each link and returns the stream in the egress direction on the same device port. Value-add functions are supported that include Deduplication, configurable Parsing, Time Stamping, Header Stripping and Packet Slicing. These value-add functions are described in more detail in the following sections.

Deduplication

Packet duplication is a potential problem in all large data center networks. While there are many causes of packet duplication, a common cause is networks that are tapped at multiple locations which tend to output duplicate copies of packets. Packet Brokers (PBs) or Network monitoring switches hence receive multiple copies of the same packet from these tapping points as the packets traverse the network. Removal of duplicate packets in the PB will therefore significantly reduce processing overhead in Monitoring Tools and Probes.

The AF10G4ACEv2 is designed to remove all duplicate packets in the ingress stream within a roughly 850mS window, for an average packet size of 128 Bytes and send the de-duplicated packet stream back out the egress direction to the Packet Broker. The deduplication function is performed by the Advanced Packet Processor (APP), in conjunction with on-board Buffer Memory and Look-up Tables. Removal of duplicate packets reduces significant processing overhead in the Monitoring Applications running on a Network Probe connected to a Packet Broker.

Packet Parsing and Masking

For the AF10G4ACEv2 to perform accurate de-duplication, the parser skips encapsulating headers to isolate the actual IP packet of interest and masks volatile IP header fields.

The sequence is as follows:

L2 tags such as VLAN, MPLS and Fabric Path are skipped by default.

The standard L2 header (destination MAC, source MAC, ethernet type) is always skipped. Optionally, support for ignoring VN-Tag can also be configured.

The optional encapsulations that can be enabled include IP-in-IP, GRE, GTP-U, VXLAN. (when enabled the inner IP frame is used for determining uniqueness).

At this point, the packet of interest has been isolated, starting with its L3 header.

The following header fields are masked (cleared to zero):

- IPV4 TTL and header checksum
- IPV6 hop limit

Two packets in the dedupe window are considered to be duplicates if after the above processing, they have the same hash signature.

Deduplication Performance

The Deduplication process uses a hash-based table to store past packet signatures and compares the current packet signature to past packet signatures to find a duplicate.

There are two performance metrics:

Packets per second, which is determined by access rate into the DRAM table. This is limited to 30M packets per second. This translates into all four 10G ports or one 40G carrying full load traffic with an average packet size of 128 bytes.

Maximum deduplication window depth, which is determined by the DRAM table size, which is 16M buckets of depth 8 each. A probabilistic analysis shows a below 0.1% missed duplicate rate with about 30M packets in progress. With 4 ports of 10G, or 1 port of 40G, at 128B average packet size, this translates to an 850ms dedupe window.

Time Stamping

The AF10G4ACEv2 timestamps all packets at ingress. The timestamp is internally a 64-bit integer, with 32-bits of seconds and 32-bits of sub-seconds. The resolution is that of the FPGA main clock, namely 5ns. The timestamp is disciplined using NTP by default and using a front-panel 1pps input as an option.

The 1pps can be derived from the usual GPS, PTP or CDMA sources.

This timestamp is carried together with the packet through the processing pipeline and can optionally be added to egress packets in the Gigamon Header Time Stamp format.

Packet Brokers support proprietary time stamp formats, since there is no standard time stamping format. Because of its programmability, future releases may be programmed to emulate other specific time stamping formats.

Packet Slicing

If the target application in a monitoring tool does not require analysis of all packet data in its entirety, packet slicing can be used to limit the amount of data that is U-turned on each port to the PB. Some example applications where this functionality is useful are traffic engineering, billing, or protocol analysis.

The packet slicing mode can be configured as a number of bytes, anchored to various packet headers, namely the L2, L3 or L4 header.

Configuration

Main Menu
The main menu provides access to the supported applications. Select the desired application by entering the designated number.

1. Login to the AF10G4ACEv2, admin/gtadmin1.

   The main menu will be displayed.

```
0: menu exit
1: deduplication control
2: slicing control
3: parser control
4: egress insertion control
5: egress stripping control
6: stats
7: configuration
8: restart application
9: reboot/shutdown appliance
10: interface mode
11: timing mode
```

2. Enter 1-11 (rt) for the desired option.

Interface Mode

Two interface modes are supported, 4x10G or 40G. The default is 4x10G. The 10G ports are identified as P0, P1, P2 and P3 and the 40G port is identified as P4. Changing the mode requires an application restart.

1. On the main menu, enter 10 (rt) to access the interface mode menu.

The interface mode menu will be displayed.

```
WARNING: These options are only configured on application start. Changes must be
         saved in the configuration and the application restarted to take effect.

         0: menu exit (default)
         1: 4x10G
         2: 40G

         enter selection:
```

2. Enter 1 (rt) for 4x10G mode.

3 Enter 2 (rt) for 40G mode.

4. Enter 0 (rt) to exit the interface mode menu.

The main menu will be displayed.

5. Enter 7 (rt) to access the configuration menu.

The configuration menu will be displayed.

6. Enter 2 (rt) to save the configuration.

7. Enter 1 (rt) to display the saved configuration.

8. Verify the desired mode is displayed.

9. Enter 0 (rt) to exit the interface mode menu.

The main menu will be displayed.

10. Enter 8 (rt), to restart application.

The main menu will be displayed.

Display the Saved Configuration

The saved configuration displays all application options and current status.

1. On the main menu, enter 7 (rt) to display the configuration menu.

    The configuration menu will be displayed.

2. Enter 1 (rt) to display the saved configuration.

    The saved configuration will be displayed.

```
dedup off
timestamp off
slice off
ipinip off
gre off
gtpu off
vntag off
vxlan off
egressvlan off
stripvlan off
stripmpls off
stripvntag off
stripfp off
stripvxlan off
stripgtpu off
stripipinip off
stripl3gre off
stripl2gre off
ifmode 40G
timingmode internal
```

3. Enter 0 (rt) to exit the configuration menu.

    The main menu will be displayed.

Deduplication Control

Deduplication is disabled by default.

1. On the main menu, enter 1 (rt) to access the deduplication control menu.

   The deduplication control menu will be displayed.

   ```
   0: menu exit (default)
   1: disable deduplication
   2: enable deduplication

   enter selection:
   ```

2. Enter 1 (rt) to disable deduplication.

3. Enter 2 (rt) to enable deduplication.

4. If 2 was entered, the validation window value menu will appear.

   ```
   1:    66.7 milliseconds (minimum, default)
   2:   133.3 milliseconds
   3:   200.0 milliseconds
   4:   266.7 milliseconds
   5:   333.3 milliseconds
   6:   400.0 milliseconds
   7:   466.7 milliseconds
   8:   533.3 milliseconds
   9:   600.0 milliseconds
   10:  666.7 milliseconds
   11:  733.3 milliseconds
   12:  800.0 milliseconds
   13:  866.7 milliseconds
   14:  933.3 milliseconds
   15: 1000.0 milliseconds (maximum)

   enter window selection:
   ```

5. Enter 1-15 (rt) for the desired validation window value.

   The enter VLAN tag support option will be displayed.

   ```
   1: ignore VLAN tags in packet signature (default)

   2: include VLAN tags in packet signature
   ```

6. Enter 1 (rt) to ignore VLAN tags with deduplication.

7. Enter 2 (rt) to include VLAN tags with deduplication.

   The enter MPLS tag support option will be displayed.

   ```
   1: ignore MPLS tags in packet signature (default)

   2: include MPLS tags in packet signature
   ```

8. Enter 1 (rt) to ignore MPLS tags with deduplication.

9. Enter 2 (rt) to include MPLS tags with deduplication.

10. Enter 0 (rt) to exit the deduplication control menu.

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The main menu will be displayed.

11. Enter 7 (rt) to access the configuration menu.

   The configuration menu will be displayed.

12. Enter 2 (rt) to save the configuration.

13. Enter 1 (rt) to display the saved configuration.

   The configuration will be displayed. The deduplication control should be on with the configured options similar to the example provided.

```
dedup on 3 0
timestamp off
slice off
ipinip off
gre off
gtpu off
vntag off
vxlan off
egressvlan off
stripvlan off
stripmpls off
stripvntag off
stripfp off
stripvxlan off
stripgtpu off
stripipinip off
stripl3gre off
stripl2gre off
ifmode 40G
timingmode internal
```

14. Enter 0 (rt) to exit the configuration menu.

   The main menu will be displayed.

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Slicing Control

Slicing can be configured as a number of bytes, anchored to various packet headers, namely the L2, L3 or L4. A minimum byte number is enforced for each header type. Slicing may be enabled/disabled for all three or individually as desired. L2, L3 and L4 slicing is disabled by default.

1. On the main menu, enter 2 (rt) to access the slicing control menu.

   The slicing control menu will be displayed.

   ```
   0: menu exit (default)
   1: disable slicing
   2: enable slicing

   enter selection:
   ```

2. Enter 1 (rt) to disable slicing.

3. Enter 2 (rt) to enable slicing.

4. If 2 was entered, the l2offset, l3offset and l4offset configuration options will be displayed.

   The enter l2offset option will appear.

   The l2offset enforces a minimum value of 16 bytes.

   ```
   enter l2offset value for non-IP packets (i.e. number of bytes after L2 header)
   or:
        -1: disable slicing for non-IP packets (default)

   enter l2offset: (-1) or number of bytes
   ```

   The enter l3offset option will appear.

   The l3offset enforces a minimum value of 20 bytes.

   ```
   enter l3offset value for IP packets other than TCP/UDP/SCTP (i.e. number
     of bytes after L3 header)
   or:
        -1: disable slicing for IP packets other than TCP/UDP/SCTP (default)
        -2: use l2offset (i.e. number of bytes after L2 header)

   enter l3offset: (-1) or (-2) or number of bytes
   ```

   The enter l4offset option will appear.

   The l4offset enforces a minimum value of 20 bytes.

   ```
   enter l4offset value for TCP/UDP/SCTP packets (i.e. number of bytes
     after L4 header)
   or:
        -1: disable slicing for TCP/UDP/SCTP packets (default)
        -2: use l2offset (i.e. number of bytes after L2 header)
        -3: use l3offset (i.e. number of bytes after L3 header)

   enter l4offset: (-1) or (-2) or (-3) or number of bytes
   ```

5. Enter 0 (rt) to exit the slicing control menu.

   The main menu will be displayed.

6. Enter 7 (rt) to access the configuration menu.

The configuration menu will be displayed.

7. Enter 2 (rt) to save the configuration.

8. Enter 1 (rt) to display the saved configuration.

The configuration will be displayed. The slicing control should be on with configured options similar to the example provided.

```
dedup off
timestamp off
slice on -1 -1 30
ipinip off
gre off
gtpu off
vntag off
vxlan off
egressvlan off
stripvlan off
stripmpls off
stripvntag off
stripfp off
stripvxlan off
stripgtpu off
stripipinip off
stripl3gre off
stripl2gre off
ifmode 40G
timingmode internal
```

9. Enter 0 (rt) to exit the configuration menu.

The main menu will be displayed.

Parser Control

For the AF10G4ACEv2 to perform accurate de-duplication, the parser skips encapsulating headers by default to isolate the actual IP packet of interest and masks volatile IP header fields. If desired encapsulating headers may be included via enabling awareness. All header types are disabled by default. More than one header type may be enabled as desired.

1. On the main menu, enter 3 (rt) to access the parser control menu.

   The parser control menu will be displayed.

```
WARNING: These options are only configured on application start. Changes must be
         saved in the configuration and the application restarted to take effect.

        0: menu exit (default)
        1: disable IP-in-IP encapsulation awareness
        2: enable  IP-in-IP encapsulation awareness
        3: disable GRE encapsulation awareness
        4: enable  GRE encapsulation awareness
        5: disable GTP-U encapsulation awareness
        6: enable  GTP-U encapsulation awareness
        7: disable VNTAG awareness
        8: enable  VNTAG awareness
        9: disable VXLAN encapsulation awareness
        10: enable VXLAN encapsulation awareness

        enter selection:
```

2. Enter 1 (rt) to disable IP-in-IP encapsulation awareness.

3. Enter 2 (rt) to enable IP-in-IP encapsulation awareness.

4. Enter 3 (rt) to disable GRE encapsulation awareness.

5. Enter 4 (rt) to enable GRE encapsulation awareness.

6. Enter 5 (rt) to disable GTP-U encapsulation awareness.

7. Enter 6 (rt) to enable GTP-U encapsulation awareness.

8. Enter 7 (rt) to disable VNTAG encapsulation awareness.

9. Enter 8 (rt) to enable VNTAG encapsulation awareness.

10. Enter 9 (rt) to disable VXLAN encapsulation awareness.

11. Enter 10 (rt) to enable VXLAN encapsulation awareness.

12. Enter 0 (rt) to exit the parser control menu.

   The main menu will be displayed.

13. Enter 7 (rt) to access the configuration menu.

   The configuration menu will be displayed.

14. Enter 2 (rt) to save the configuration.

15. Enter 1 (rt) to display the saved configuration.

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The configuration will be displayed. The parser control should be on with the configured options similar to the example provided.

```
dedup off
timestamp off
slice off
ipinip on/off
gre on/off
gtpu on/off
vntag on/off
vxlan on/off
egressvlan off
stripvlan off
stripmpls off
stripvntag off
stripfp off
stripvxlan off
stripgtpu off
stripipinip off
stripl3gre off
stripl2gre off
ifmode 40G
timingmode internal
```

16. Enter 0 (rt) to exit the configuration menu.

The main menu will be displayed.

17. Enter 8 (rt) to restart application.

The main menu will be displayed.

Egress Insertion Control

The egress insertion control provides the ability to insert timestamps or VLANs.

1. On the main menu, enter 4 (rt) to access the egress insertion control menu.

   The egress insertion control menu will be displayed.

   ```
   0: menu exit (default)
   1: disable timestamp insertion
   2: enable timestamp insertion
   3: disable egress VLAN insertion
   4: enable egress VLAN insertion

   enter selection:
   ```

2. Enter 1 (rt) to disable timestamp insertion.

3. Enter 2 (rt) to enable timestamp insertion.

4. Enter 3 (rt) to disable egress VLAN insertion.

5. Enter 4 (rt) to enable egress VLAN insertion.

6. If 4 was entered to enable egress VLAN insertion, prompts will be presented for ports 0, 1, 2 and 3.

   Prompt for port 0 will be displayed.

   ```
   enter port 0 VLAN tag (default 100):
   ```

7. Enter VLAN # (rt) or enter (rt) to use the default value, 100.

   Prompt for port 1 will be displayed.

   ```
   enter port 1 VLAN tag (default 101):
   ```

8. Enter VLAN # (rt) or enter (rt) to use the default value, 101.

   Prompt for port 2 will be displayed.

   ```
   enter port 2 VLAN tag (default 102):
   ```

9. Enter VLAN # (rt) or enter (rt) to use the default value, 102.

   Prompt for port 3 will be displayed.

   ```
   enter port 3 VLAN tag (default 103):
   ```

10. Enter VLAN # (rt) or enter (rt) to use the default value, 103.

11. Enter 0 (rt) to exit the egress insertion menu.

    The main menu will be displayed.

12. Enter 7 (rt) to access the configuration menu.

    The configuration menu will be displayed.

13. Enter 2 (rt) to save the configuration.

14. Enter 1 (rt) to display the saved configuration.

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The configuration will be displayed. Timestamp should be on if previously enabled. The egressvlan should be on if previously enabled. The VLAN values displayed for ports 0, 1, 2 and 3 are displayed in hexadecimal values. The example below represents the default VLAN values 100, 101, 102 and 103.

```
dedup off
timestamp off/on
slice off
ipinip off
gre off
gtpu off
vntag off
vxlan off
egressvlan off/on 0x0064 0x0065 0x0066 0x0067
stripvlan off
stripmpls off
stripvntag off
stripfp off
stripvxlan off
stripgtpu off
stripipinip off
stripl3gre off
stripl2gre off
ifmode 40G
timingmode internal
```

15. Enter 0 (rt) to exit the configuration menu.

The main menu will be displayed.

Egress Stripping Control

All options are disabled by default. More than one stripping option may be enabled as desired.

1. On the main menu, enter 5 (rt) to access the egress stripping control menu.

> *The egress stripping control menu will be displayed.*

```
WARNING: These options are only configured on application start. Changes must be
         saved in the configuration and the application restarted to take effect.

         0: menu exit (default)
         1: disable VLAN stripping
         2: enable  VLAN stripping
         3: disable MPLS stripping
         4: enable  MPLS stripping
         5: disable VNTAG stripping
         6: enable  VNTAG stripping
         7: disable FabricPath stripping
         8: enable  FabricPath stripping
         9: disable VXLAN stripping
         10: enable  VXLAN stripping
         11: disable GTP-U stripping
         12: enable  GTP-U stripping
         13: disable IP-in-IP stripping
         14: enable  IP-in-IP stripping
         15: disable L3GRE stripping
         16: enable  L3GRE stripping
         17: disable L2GRE stripping
         18: enable  L2GRE stripping

         enter selection:
```

2. Enter 1 (rt) to disable VLAN stripping.

3. Enter 2 (rt) to enable VLAN stripping.

4. Enter 3 (rt) to disable MPLS stripping.

5. Enter 4 (rt) to enable MPLS stripping.

6. Enter 5 (rt) to disable VNTAG stripping.

7. Enter 6 (rt) to enable VNTAG stripping.

8. Enter 7 (rt) to disable FabricPath stripping.

9. Enter 8 (rt) to enable FabricPath stripping.

10. Enter 9 (rt) to disable VXLAN stripping.

11. Enter 10 (rt) to enable VXLAN stripping.

12. Enter 11 (rt) to disable GTP-U stripping.

13. Enter 12 (rt) to enable GTP-U stripping.

14. Enter 13 (rt) to disable IP-in-IP stripping.

15. Enter 14 (rt) to enable IP-in-IP stripping.

16. Enter 15 (rt) to disable L3GRE stripping.

17. Enter 16 (rt) to enable L3GRE stripping.

18. Enter 17 (rt) to disable L2GRE stripping.

19. Enter 18 (rt) to enable L2GRE stripping.

20. Enter 0 (rt) to exit the egress stripping control menu.

   The main menu will be displayed.

21. Enter 7 (rt) to access the configuration menu.

   The configuration menu will be displayed.

22. Enter 2 (rt) to save the configuration.

23. Enter 1 (rt) to display the saved configuration.

   The configuration will be displayed. The egress stripping control should be on/off with the configured options similar to the example provided.

```
dedup off
timestamp off
slice off
ipinip off
gre off
gtpu off
vntag off
vxlan off
egressvlan off
stripvlan on/off
stripmpls on/off
stripvntag on/off
stripfp on/off
stripvxlan on/off
stripgtpu on/off
stripipinip on/off
stripl3gre on/off
stripl2gre on/off
ifmode 40G
timingmode internal
```

24. Enter 0 (rt) to exit the configuration menu.

   The main menu will be displayed.

25. Enter 8 (rt) to restart application.

   The main menu will be displayed.

Stats

Ingress and egress statistical information may be displayed on the AF10G4ACEv2. If the unit is in the 10G mode, then ports 0, 1, 2 and 3 display statistical information. If the unit is in the 40G mode, then port 4 display statistical information.

- Ingress and egress packets and bytes are displayed for each port based on mode along with totals.
- The malfs column displays ingress packets dropped due to malformation, runts, etc.
- The rsrcs column displays packets dropped due to the fifo queue is full.
- The fifo% column displays the queue status.
- The 1sec b/w column displays the bandwidth usage.
- The port status is displayed as UP or DOWN.

1. On the main menu, enter 6 (rt) to access the stats display.

The stats for the ingress and egress ports will be displayed. The stats refresh 1/sec.

```
elap    6 (0:00:06)   16:04:53   2020-10-05

ingress port  packets   bytes   malfs    rsrcs     fifo%     1sec b/w

port      0       0        0       0        0      0.000     0.000      DOWN
port      1       0        0       0        0      0.000     0.000      DOWN
port      2       0        0       0        0      0.000     0.000      DOWN
port      3       0        0       0        0      0.000     0.000      DOWN
port      4       0        0       0        0      0.000     0.000      DOWN
ingress total     0        0       0        0                0.000
egress  port  packets   bytes
egress    0       0        0
egress    1       0        0
egress    2       0        0
egress    3       0        0
egress    4       0        0
egress  total     0
```

2. Press the enter key to halt the stats and return to the main menu.

The main menu will be displayed.

Configuration

1. On the Main Menu, enter 7 (rt) to access the configuration menu.

> *The Configuration Menu will be displayed.*

```
0: menu exit (default)
1: display saved configuration
2: save configuration
3: clear configuration
7: print version info
9: network configuration

enter selection:
```

2. Enter 0 (rt) to return to the main menu.

3. Enter 1 (rt) to display the saved configuration.

4. Enter 2 (rt) to save the configuration.

5. Enter 3 (rt) to clear the configuration to the default. This will not reset the network configuration.

6. Enter 7 (rt) to print the version information.

```
SDK:       SDK_1_2_20210928
firmware: 49410c03
```

7. Enter 9 (rt) to set up the network configuration. This process is discussed in the Quick Start Guide.

Timing Mode

1. On the Main Menu, enter 11 (rt) to access the timing mode menu.

   The timing mode menu will be displayed.

   ```
   WARNING: These options are only configured on application start. Changes must be
            saved in the configuration and the application restarted to take effect.

            0: menu exit (default)
            1: internal appliance clock (NTP disciplined)
            2: PPS rising edge
            3: PPS falling edge

            enter selection:
   ```

2. Enter 1 (rt) to enable the internal appliance clock (NTP disciplined), (default).

3. Enter 2 (rt) to enable PPS rising edge.

4. Enter 3 (rt) to enable PPS falling edge.

5. Enter 0 (rt) to exit the timing mode menu.

   The main menu will be displayed.

6. Enter 7 (rt) to access the configuration menu.

   The configuration menu will be displayed.

7. Enter 2 (rt) to save the configuration.

8. Enter 0 (rt) to exit the configuration menu.

9. Enter 8 (rt) to restart application.

   The main menu will be displayed.

Restart Application

Some applications require a restart. The following warning message will be displayed on the menu for that application.

```
WARNING: These options are only configured on application start. Changes must be
         saved in the configuration and the application restarted to take effect.
```

Applications that require restart:

Parser Control

Egress Stripping Control

Timing Mode

1. On the Main Menu enter 8 (rt) to restart application.

Reboot/Shutdown Appliance

1. On the main menu enter 9 (rt) to access the reboot/shutdown menu.

The reboot/shutdown menu will be displayed.

```
0: menu exit (default)
1: reboot
2: graceful shutdown

enter selection:
```

2. Enter 1 (rt) to reboot the unit.

3. Enter 2 (rt) to gracefully shutdown the unit.

A graceful shutdown should always be executed before the unit is turned off or AC power removed.

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