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Garland Technology
Modular Chassis
Available in 1U (4 Slots) and 2U (12 Slots) AC or DC Power with Filtering Backplane

The M1GXXCE Filtering Backplane Chassis can receive up to 4 or 12 1Gbps Modules depending on whether the chassis is a 1U chassis or a 2U chassis. Both chassis are equipped with dual internal power supplies for either AC or DC power sources.

The backplane feature can be used with all the Garland Technology 1Gbps Modular TAPs. If you have Garland Technology Modules purchased before this Aggregating Backplane Chassis was released (April, 2015) and you want to be able to take advantage of the aggregating backplane you will need to update the firmware of the modules. Otherwise, the modules will operate as they normally would in the new chassis. There is a RJ-45 Management port that allows access to the Command Line Interface (CLI) and a Ethernet RJ-45 Management port so the Chassis can be connected to the network.
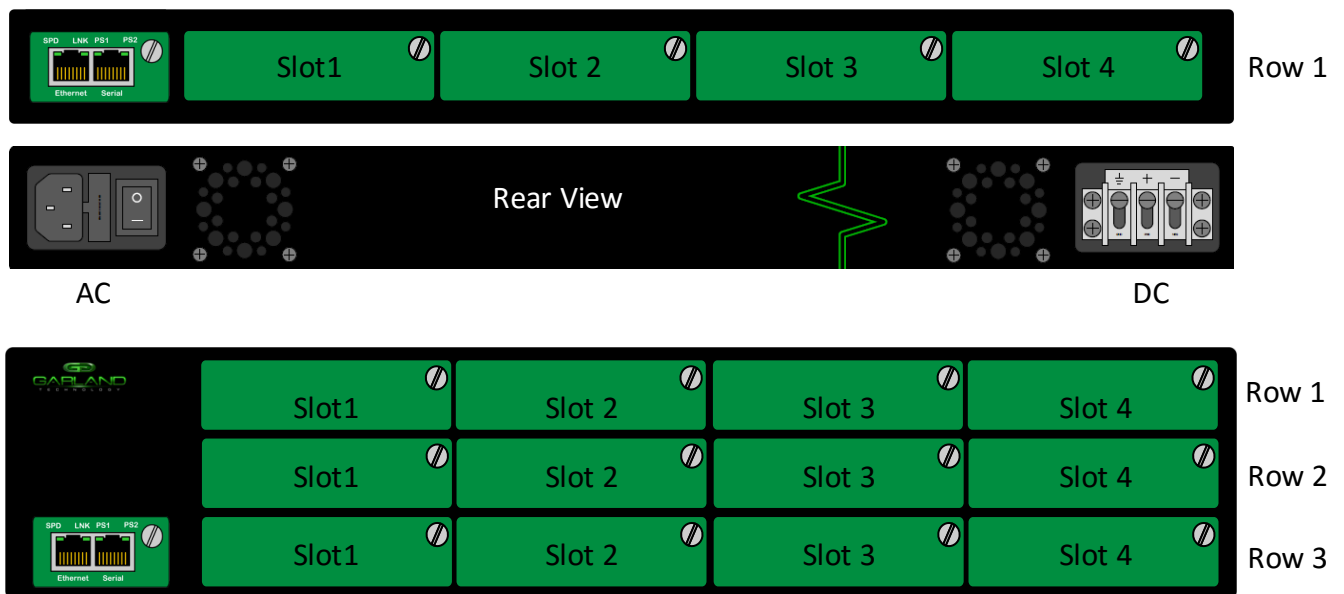

Figure 1: M1GXXCE Row & Slot Layout

To deploy the M1GXXCE Modular Chassis with Filtering Backplane into your network, the following steps apply:

- Carefully unpack the chassis and install it into a 19" equipment rack. The model M1G1XCE will require 1U of rack space and the model M1G2XCE will require 2U of rack space. You will need 2 AC or DC connections to apply power to the two internal power supplies. Now insert your Garland Technology Modular TAPs by carefully sliding into the available slots in the chassis.

- If you are installing F series Modules, you will need to connect to the Chassis Management port to set up the type of Filtering you require for your application.

  If you are installing legacy modules you will be able to manage them through the management port as you would in the standard Managed Chassis (for A series modules or BP series modules) or by setting up the DIP switches located on the Module's logic board.

- Connect a power cable to each of the M1GXXCE power supplies and plug them into an available power source. Recommend plugging the cables into different power sources in case one should fail the other may not.

  Notes: **1.** Fiber links are always 1000Mbps speed and Full Duplex.

  2. Do not leave unused slots uncovered. Install a blanking plate on unused slots so that proper internal air circulation is maintained.

Understanding the Filtering Backplane Chassis capabilities:

The M1GXXCE Filtering modular Chassis provides the user the capability of filtering network traffic at Layers 2, 3 and 4 of a packet. Providing the monitoring tools with only the traffic that they are interested in. This makes them more efficient to do the processing they are designed for.

Layer 2 filtering is filtering on source MAC address, destination MAC address or the VLAN ID. These may be used in any combination with each other or any other filter field.

Layer3 filtering can target all IP messages or all non-IP messages. When IP is selected, the other layer 3 filter fields apear on the menu, these are source IP address, destination IP address, and DSCP. These may be used in any combination with each other or any other filter as long as IP messaging has been selected.

Layer 4 filtering can target TCP, UDP or any other layer 4 protocol. When TCP, or UDP is selected, additional layer 4 menu items appear. These are source port and destination port. These fields are only meaningful in TCP or UDP protocols.
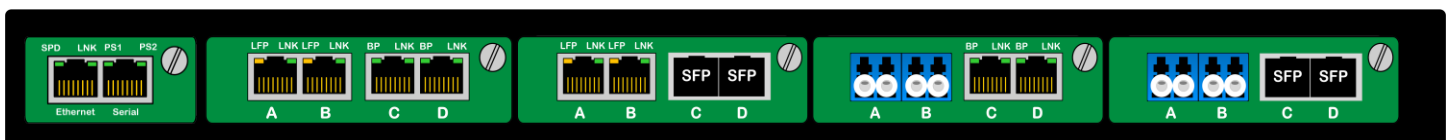

Figure 2: M1G1ACE with four TAP modules & a Management module

Accessing the Garland Technology Modular Chassis with Filtering Backplane:
Connect to the RJ-45 Management port using the supplied cable. You will need a serial terminal emulator like PuTTY using the settings listed below:

User Name:	**admin**
User Password:	**gtadmin1**
Bits per second:	115200
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

The Main Menu provides access to the five main areas that can be controlled on the M1GXXCE chassis.

Option 1 gives you access to configuring the individual modules.
Option 2 provides access to set up Filtering of each module to the backplane
Option 3 provides the capability to manage the Username and Password for the chassis.
Option 4 provides the capability to manage the Network configuration
Option 5 provides the capability to upgrade the soft
Option 0 allows you to Log Out

Main Menu

```
Garland Technology M1G1ACE (Code Version: 1.0.21)

Main Menu

Select:

1. Change/View Module Configuration
2. Filtering
3. Change Username/Password
4. Settings
5. Upgrade
0. Logout
```

Figure 3: Main Menu

Once you login the above screen will be presented. This is where you will set up the chassis so that you can manage it through the Ethernet Network Management port.
Press '4' on the Main Menu to open the Settings menu.

```
Garland Technology M1G1ACE (Code Version: 1.0.21)

Settings Menu

1. NetworkConfig
2. Key Press Timeout
0. Exit
Select:
```

Figure 4: Settings Menu

Press '1' to get to the Network Configuration Menu

Setting up Network Configuration

```
Garland Technology M1G1ACE (Code Version 1.0.21)
Network Configuration
 Warning: This session depends on the current network config.
          Applying network config may drop this session.
 link: up
current ip add:10.10.10.200
current config:static add: 10.10.10.200 mask:255.255.255.248 gwy:10.10.10.197
    new config:static add: 10.10.10.200 mask:255.255.255.248 gwy:10.10.10.197
      1.re-init interface
      3.ip address
      4.netmask
      5.gateway
      0.exit with new config
 ctrl-c.exit with NO new config
 select:
```

Figure 5: Here is where the static ip address can be changed so you can log into the network via the Ethernet port

Unless your network IP address is 10.10.10.200 you will need to change the default IP address. In order to do this you will need to connect to the serial management port so you can set up the Network parameters. Using the furnished RS232 to DB9 cable;

1. Connect the RJ45 end to the RJ45 Serial Port on the M1GXXCE chassis.

2. Connect the other side of the RS232 cable to your PC's RS232 port.

3. Use any terminal emulation software (PuTTY, HyperTerminal, Etc.) to connect to the CLI interface in order to manage the M1GXXCE chassis.

4. Set the following terminal communication parameters:

Speed:	115200-default
Data Bits:	8
Parity:	none
Stop Bits:	1
Flow Control:	No flow control

5. Power on the M1GXXCE chassis

6. The Login prompt will appear in the terminal window

7. Enter the default Login name (admin)

8. Enter the default password (gtadmin1)

9. After login you should change user name and password. If you plan to use management Ethernet port, set IP address, net mask and gateway parameters. The default IP address is 10.10.10.200 and the Network mask is 255.255.0.0 and the Gateway 0.0.0.0. Remember to save your changes.

Pressing '2' on the settings Menu will present the following menu. This menu lets you determine how long the session will stay active following the last keystroke.

Note: Only one login is allowed at a time.

```
Garland Technology M1G1ACE (Code Version: 1.0.21)

Key press timeout Menu

Current timeout: 60 minutes.
Enter a value between 1-60 (minutes):
```

Figure 6: Key press timeout Menu

Pressing '0'. will bring you back to the 'Main Menu'. Next, we will go to the 'Upgrade Menu' by **pressing '5'**.

```
Garland Technology M1G1ACE (Code Version: 1.0.21)

Main Menu

Select:

1. Change/View Module Configuration
2. Filtering
3. Change Username/Password
4. Settings
5. Upgrade
0. Logout
```

Figure 7: Main Menu

Before being able to upgrade the Chassis with the latest software, the user needs to place the file onto the desktop. The Uploader address for this product is IP address of the Chassis. So go to your preferred Browser and enter the IP address and a simple screen will appear. Press the Choose File button and find the upgrade file that you placed on your desktop then press the Upload Button. The Uploader will upload the upgrade file to the chassis. After the web interface has transferred the file to the chassis, the user must go to the upgrade menu on the CLI (Press 5 on the Main Menu). There, he will see option 1 appear IF the uploaded file uploaded intact and is recognized as an upgrade file for this product. Verify that the uploaded version is the version that you expected. Once you press option 1 the program will then install the upgrade and reboot the system. Task accomplished.

```
Garland Technology M1G1ACE (code Version: 1.0.21)

Upgrade Menu

1. Upgrade using download file version 1.0.21
0. Exit
Select:
```

Figure 8: Upgrade Menu

The ability to download upgrades to the M1GXXCE Chassis through the network is a great feature. There is no need to have to send the chassis back to the factory to be upgraded. You simply request the upgrade file from Tech Support place it on you desktop and set up the chassis Uploader to do the rest of the job. Press '0' to Exit back to the Main Menu. Once back to the Main Menu, press '0' again to log out of the Management System. We do not want to do that yet, what we will do next is set up the Filters.

Selecting "1" on the Main Menu will bring up the **Select Slot Number Screen**.

```
                    Select slot number to view/modify
Chassis Serial Number: 21870000107  Controller Serial Number: 21910000112

Power Supply 1: Down
Power Supply 2: Up
                    #: Module Type
                      Operating Mode (Current State)
---------------------------------------------------------------------
  1: M1GCCBP          2: M1GCCF           3: M1GCCF           4: M1GCCF
     Bypass (Bypass)

Press
1: Select Slot 1     2: Select Slot 2     3: Select Slot 3    4: Select Slot 4
0. Exit
```

Figure 9: Change/View Module Configuration

This screen provides the chassis Serial Number and the condition of the power supplies as to whether they are "UP" or "DOWN".

It also displays the Model Number of the Modules inserted in the chassis if a module is present.

Pressing number 1 through 4 will select the slot of the module you want to manage.

Selecting Slot "1" brings up the Slot 1 Status Screen

```
========================
Slot 1 Status:
========================
Current Bypass State: Bypass

              Port A       Port B       Port C       Port D
Link State:   Down         Down         Down         Down
Duplex:       Auto         Auto         Auto         Auto
Media Type:   RJ45         RJ45         RJ45         RJ45
Serial Number: 2076-0020461
========================
Slot 1 Select Option:
========================
Press
1: Set Operating Mode (Bypass)
2:Set Speed(1G)
3:Set LFP Mode (ON)
4: Set Duplex Mode
5: Set Reverse Bypass Mode (OFF)
6: Set Forced Bypass Mode (OFF)
b: Restore Defaults
Press Enter to refresh this status screen
0. Exit
```

Figure 10: Show Status of the Module of the selected Slot 1

Selecting Slot "2" brings up the Slot 2 Status Screen

```
=========================
Slot 2 Status:
=========================
                Port A          Port B          Port C          Port D
Link State:     Down            Down            Down            Down
Speed:
Duplex:
Media Type:     RJ45            RJ45            RJ45            RJ45
Serial Number: 00000
Software Version: Boot:1.2.2 App:1.2.45
=========================
Slot 2 Select Option:
=========================
Press
2:Set Speed(Synchronize)
b: Restore Defaults
Press Enter to refresh this status screen
0. Exit
```

Figure 11: Show Status of the Module of the selected Slot 2

The TAP Module in slot 2 is different than the module in slot 1. This screen is to show that the slot number screens may be slightly different depending on the functionality of the TAP modules inserted in the slot.

Pressing "1" when on the Slot 1 Status Screen, will bring up this screen.

```
=========================
Slot 1 TAP Mode Configuration
=========================

Current Mode: Bypass
  New Duplex: Bypass

1. Breakout
2. Aggregate
3. Span
4. Bypass
0. Return and Apply
```

Figure 12: Select the TAP mode of the TAP in this slot

Pressing "2" when on the Slot 1 Status Screen of a Copper TAP Module, will bring up this screen.

```
=========================
Slot 1 Speed Mode Configuration
=========================


Current Speed: 1G
New Speed: 1G
1. 1G
2. 100M

0. Return and Apply
```

Figure 13: Show Speed setting of the selected module

Pressing "3" when on the Slot 1 Status Screen of a Copper TAP Module, will bring up this screen.

```
===================
Slot 1 LFP Configuration
===================


Current LFP state: ON
    New LFP state: ON

1. ON
2. OFF

0. Return and Apply
```

Figure 14: This screen lets you control LFP ON or OFF

LFP is used mostly for HA designed networks. When turned on, it can sense a network failure and reflect the failure to the adjacent port of the live network allowing the network's failover mechanism to switch over to the secondary network path.

Pressing "4" when on the Slot 1 Status Screen of a Copper TAP Module, will bring up the Duplex Configuration Screen.

```
=========================
Slot 1 Duplex Configuration
=========================

Current Mode:
            Link:   Port A    Port B    Port C    Port D
     New Duplex:    Auto      Auto      Auto      Auto
  Current Duplex:   Full      Full      Auto      Auto
1. Auto
2. Full Duplex

0. Return and Apply
```

Figure 15: Setting up Duplex Mode

This screen will let you set the Duplex mode if the Speed setting is less that 1Gbps. If the Speed is 1Gbps, the Duplex mode is forced to Autonegotiate.

Pressing "5" when on the Slot Status Screen of a Copper Bypass TAP Module, will bring up the Reverse Bypass Mode Configuration. Reverse Bypass disables link on both live network ports if any inline appliances lose link or cannot pass traffic. This feature is disabled by default.

```
=========================
Slot 1 Reverse Bypass Mode Configuration
=========================

Current Reverse Bypass: OFF
    New Reverse Bypass: OFF
1. ON
2. OFF

0. Return and Apply
```

Figure 16: Setting up Reverse Bypass Mode ON or OFF

Pressing "6" when on the Slot Status Screen of a Bypass Copper TAP Module, will bring up this Restore Defaults screen.

```
===========================
Slot 1 Forced Bypass Configuration
===========================

Current Forced Bypass: OFF
    New Forced Bypass: OFF
1. ON
2. OFF

0. Return and Apply
```

Figure 17: Restore Defaults

Pressing "b" when on the Slot Status Screen of a Copper TAP Module, will bring up this Restore Defaults screen.

```
===========================
Slot 4 Restore Defaults
===========================

1: Restore defaults
0: Exit without restore
```

Figure 18: Restore Defaults

Filtering

Pressing #2 on the Main Menu Screen, will begin the Filtering setup process.

We will set up filters for Layer 2, Layer 3 and Layer 4;

Below is the screen you get when pressing '2' on the main menu. This is a 2U chassis, so this menu allows you to select one of three rows to set up filters. Pressing '2' on a 1U chassis would take you directly to the 'Filter Row' menu.

The **'Select Row'** Screen

```
Garland Technology M1G1ACE (code Version: 1.0.21)

Select Row

1:    M1GCCBP     M1GCCF      M1GCCF      M1GCCF
0: Back
```

Figure 19: Restore Defaults

We will show the setting up of some Layer 2, 3 and 4 filters in the following screen shots.

Layer 2 Filtering

Layer 2 filtering allows filtering on source MAC address, destination MAC address or the VLAN ID. These may be used in any combination with each other or any other filter field.

Row Filters Menu

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters

No Filters Defined for row 1.


u:cursor up   d:cursor down    t:filter up    g:filter down
a:add         e:edit           i:insert       x:delete
v:view        c:clear count    r:reset        h:help
0:exit
Select:
```

Figure 20: Row Filters Menu

Press 'a' to begin the process of adding and defining a filter.

'Edit Filter' Menu

```
Edit Filter:
1. Name                 : Filter
2. Ports                : [    |    |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:
```

Figure 21: Edit Filter Menu

This is the Edit Filter Menu. The program provided the default name 'Filter'. Press '1' to change the filter name.

Naming the Filter

```
Edit Filter:
          All Values in Decimal.
1. Name                 : Filter
2. Ports                : [    |    |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:
Filter Name: 'Case 432A'
```

Figure 22: Filter Name Edit

The 'Filter Name' line appears below the menu. First delete the word FILTER then enter the new filter name 'case 432A'

The Filter has a name

```
Edit Filter:
1. Name                 : case 432A
2. Ports                : [    |    |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:
```

Figure 23: Edit Filter Menu

Press 'Return' and the filter name 'case 432A' gets placed on the Name Line of the Edit Filter Menu. Press '2' so we can select the ingress port (s) for this filter.

The Select 'Ingress Ports' Menu

```
Garland Technology M1G1ACE (Code Version: 1.0.21)

Select Ingress Port(s)

map: [unav| i  |    |i   ]


Slot 2 - M1GCCF:
3: A2 [ ]
4: B2 [*]
Slot 3 - M1GCCF:
5: A3 [ ]
6: B3 [ ]
Slot 4 - M1GCCF:
7: A4 [*]
8: B4 [ ]
e: Egress Ports Menu
0: Exit
```

Figure 24: Ingress Ports Menu

Pressing '2' takes you directly to the 'Select Ingress Port (s)' menu. Press '4' and '7'. This places an asterisk in the Brackets of port B2 and port A4 as well as placing 'i's in their respective positions on the ports map. You can go directly to the 'Select Egress Port (s) menu to setup the egress port (s) by pressing 'e'.

'Egress Ports' Menu

```
Garland Technology M1G1ACE (Code Version: 1.0.21)

Select Egress Port(s)

map: [unav| i  |    |i  o]

Slot 2 - M1GCCF:
3: C2 [ ]
4: D2 [ ]
Slot 3 - M1GCCF:
5: C3 [ ]
6: D3 [ ]
Slot 4 - M1GCCF:
7: C4 [ ]
8: D4 [*]
i: Ingress Ports Menu
0: Exit
```

Figure 25: Select Egress Port (s) Menu

Press 'e' to bring up the Select Egress Port (s) screen then press 8 to place an asterisk in D4 brackets and an 'o' in the appropriate place on the ports map. Then press '0' to return to the Edit Filter Menu.

Ingress/Egress ports for filter Case 432A

```
Edit Filter:
1. Name                 : case 432A
2. Ports                : [unav| i  |    |i  o]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:
```

Figure 26: Case 432A w/Ingress & Egress

We now have an 'i' in the B2 and A4 positions of the ports map line and an 'o' in the D4 position of the ports map line. Press '0' to return to the 'Row 1 Filters' Screen

Return to the 'Row 1 Filters' Screen

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters  ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

    #:  Name           Ports              Count
-> 1:  Case 432A      [unav| i  |  |i  o]   0

u:cursor up  d:cursor down   t:filter up   g:filter down
a:add        e:edit          i:insert      x:delete
v:view       c:clear count   r:reset       h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 27: Row 1 Filters' Screen showing the case 432A filter

We now have a filter 'case 432A' which can send traffic from ports B2 and A4 to port D4 (slot 2 port B and slot 4 port A to slot 4 port D). At this point ALL traffic will be sent as no filters have been defined. Note the presence of the 'S' in the menu. This indicates that the filter has not been saved in flash memory or downloaded to the modules yet.
Press 'S' now

The Filter is now being saved

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters  ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

    #:  Name           Ports              Count
-> 1:  Case 432A      [unav| i  |  |i  o]   0

u:cursor up  d:cursor down   t:filter up   g:filter down
a:add        e:edit          i:insert      x:delete
v:view       c:clear count   r:reset       h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:

Updating filters in modules in row 1, slot 1, 2, 3, 4 ...
```

Figure 28: Row 1 Filters screen while saving the filter

The program is saving the filter to Flash and downloading to the modules.

Row Filters Sceen after saving filter 432A

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters

    #:  Name           Ports              Count
-> 1:  Case 432A      [unav| i  |  |i  o]   0

u:cursor up  d:cursor down   t:filter up   g:filter down
a:add        e:edit          i:insert      x:delete
v:view       c:clear count   r:reset       h:help
0:exit
Select:
```

Figure 29: Edit Filter Menu to set Destination MAC

Notice the 'S' Save and Download selection is gone. Now we want to copy the filter then edit it to filter on the destination MAC address. Pressing function key 'F1' to copy the currently selected filter.

Row 1 Filters Screen after pressing F1

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

    #:  Name           Ports              Count
-> 1:  Case 432A      [unav| i  |  |i  o]   0
   1:  Case 432A      [unav| i  |  |i  o]   0

u:cursor up  d:cursor down   t:filter up   g:filter down
a:add        e:edit          i:insert      x:delete
v:view       c:clear count   r:reset       h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 30: Edit Filter Menu to set Source IP

Now we can edit the new filter we just added by pressing 'E'.

Back to the Edit Filter Screen

```
Edit Filter:
1. Name                 : case 432A dmac
2. Ports                : [unav| i  |   |i  o]
3. Counter Used         : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID               :
7. Layer 3               :
0: Exit
Enter menu selection:
```

Figure 31: Edit Filter Menu to set Destination MAC

Press '1' so we can provide a name for the new filter. In this case we will add to the existing name 'case 432A' we will enter dmac at the end of the current name. Press 5 to setup Destination MAC.
Note: The name of the filter is for User's convenience only and does no affect the operation.
So multiple filters with the same name are allowed.

Pressing '5' adds a line to the menu

```
Edit Filter:
1. Name                 : case 432A dmac
2. Ports                : [unav| i  |   |i  o]
3. Counter Used         : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID               :
7. Layer 3               :
0: Exit
Enter menu selection:

 filter on DESTINATION MAC address? [N]:
```

Figure 31: Begin setting up the destination MAC address

The program will add 'filter on DESTINATION MAC address? [N]:' line at the bottom of the menu. Press 'y' to add the address.

Press 'y' to add MAC address

```
Edit Filter:
1. Name                  : case 432A dmac
2. Ports                 : [unav| i |    |i  o]
3. Counter Used          : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID               :
7. Layer 3               :
0: Exit
Enter menu selection:

 filter on DESTINATION MAC address? [N]:
                    Enter DESTINATION MAC address? (hex):
```

Figure 33: ready to enter destination MAC address

The program will add 'Enter DESTINATION MAC address? (hex): line at the bottom of the menu. Press 'y' to add the address. at this point, the controller expects the user to enter 6 hex numbers. The ':' delimiting colons are added automatically for convenience. Hex numbers expected are two digits each with digits being 0-9 or a-f.

Begin Adding DESTINATION MAC address

```
Edit Filter:
1. Name                  : case 432A dmac
2. Ports                 : [unav| i |    |i  o]
3. Counter Used          : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID               :
7. Layer 3               :
0: Exit
Enter menu selection:

 filter on DESTINATION MAC address? [N]:y
                    Enter DESTINATION MAC address? (hex): c8:20:f
```

Figure 34: Entering the destination MAC address

We will enter 'c', '8','2','0','f'. If any other digit besides 0-9 and a-f is entered such as a 'g', a warning message will appear. For example pressing 'g' will warn of an INVALID CHARACTER.

If an invalid character is entered

```
Edit Filter:
1. Name                  : case 432A dmac
2. Ports                 : [unav| i |    |i  o]
3. Counter Used          : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID               :
7. Layer 3               :
0: Exit
Enter menu selection:5

 filter on DESTINATION MAC address? [N]:y
                    Enter DESTINATION MAC address? (hex): c8:20:f
```

Figure 35: Enter the next octet of the Source IP

Pressing 'g' caused - !INVALID CHARACTER! Message to Pop up. The 'g' is not entered on the line.

Enter the remainder of the address

```
Edit Filter:
1. Name                  : case 432A dmac
2. Ports                 : [unav| i |    |i  o]
3. Counter Used          : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID               :
7. Layer 3               :
0: Exit
Enter menu selection:5

 filter on DESTINATION MAC address? [N]:y
valid MAC address   Enter DESTINATION MAC address? (hex): c8:20:f1:57:3a:42
```

Figure 36: Enter remainder of address

Enter the remainder of the DESTINATION MAC address - '1', '5', '7', '3', 'a', '4', '2' and if you entered the numbers correctly, the program will announce that you have entered a 'valid MAC address'. Press 'enter' to accept the MAC address.

We now have a valid Destination MAC address

```
Edit Filter:
1. Name                  : case 432A dmac
2. Ports                 : [unav| i |    |i  o]
3. Counter Used          : YES
4. Source MAC Address    :
5. Destination MAC Address: c8:20:f1:57:3a:42
6. VLAN ID               :
7. Layer 3               :
0: Exit
Enter menu selection:5
```

Figure 37: The Destination MAC address is added to line 5

Please note that entering the SOURCE MAC address is operationally the same as entering the DESTINATION MAC address. If a SOURCE MAC address is entered at this point, the filter would require a packet to match both criteria before passing that packet. Press '0' to return to the Row 1 Filter screen.

Back to the Row 1 Filters Screen

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

   #:  Name                Ports               Count
-> 1:  Case 432A dmac    [unav| i |    |i  o]   0
   1:  Case 432A         [unav| i |    |I  o]   0

u:cursor up   d:cursor down   t:filter up   g:filter down
a:add         e:edit          i:insert      x:delete
v:view        c:clear count   r:reset       h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 38: the Case 432A dmac has been created

Press 'S' to save the filters to flash and download to the modules

The Filter is saved

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters

   #:  Name              Ports             Count
-> 1:  Case 432A dmac    [unav| i |   |i o]  0
   1:  Case 432A         [unav| i |   |i o]  0

u:cursor up  d:cursor down   t:filter up    g:filter down
a:add        e:edit          i:insert       x:delete
v:view       c:clear count   r:reset        h:help
0:exit
Select:
```

Figure 39: We now have two Filters on the Row 1 Filters Screen

The 'S:Save and download' selection has been removed.
We now want to create a new filter called 'abc'. This filter will look for packets
with a VLAN ID 768 from port A on slot 2 and send them to port C on slot 3. So
we will press 'a' to add the filter

Adding a new filter named 'abc'

```
Edit Filter:
1. Name                 : FILTER
2. Ports                : [    |    |    |    ]
3. Counter Used         : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:
```

Figure 40: Add a new filter

We will create the new filter's name

Set up filter name and port mapping

```
Edit Filter:
1. Name                 : abc
2. Ports                : [unav|i |  o |    ]
3. Counter Used         : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:6
```

Figure 41: Enter Name and port mapping

Change the filter name to 'abc' and set up port mapping as was previously
described - Port A on slot 2 and port C on slot 3.
Press '6' to enter the VLAN ID. Then press 'y'

Enter 768 for the VLAN ID

```
Edit Filter:
1. Name                 : abc
2. Ports                : [unav|i  |  o |    ]
3. Counter Used         : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:

 filter on VLAN ID? [N]:y
              Enter VLAN ID(decimal):768
```

Figure 42: provide VLAN ID

Enter '7','6','8' for the VLAN ID then press <enter>

VLAN ID defined

```
Edit Filter:
1. Name                 : abc
2. Ports                : [unav|i  |  o |    ]
3. Counter Used         : YES
4. Source MAC Address    :
5. Destination MAC Address:
6. VLAN ID              : 768
7. Layer 3              :
0: Exit
Enter menu selection:
```

Figure 43: vlan 768 assigned

Press '0' to return to the Row 1 Filters Screen

Back to the Row 1 Filters Screen

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters  ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

   #:  Name              Ports             Count
   1:  Case 432A dmac    [unav| i |   |i o]  0
   2:  Case 432A         [unav| i |   |i o]  0
-> 3:  abc               [unav|i  |  o |  ]  0

u:cursor up  d:cursor down   t:filter up    g:filter down
a:add        e:edit          i:insert       x:delete
v:view       c:clear count   r:reset        h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 44: provide VLAN ID

Move the selection cursor up by pressing the <up arrow>. Since filters 1 and 2
both use the same ingresses, packets coming in will try to meet the criteria for
filter 'case 432 dmac and will only go to other filters if there is no match. To
change the order (priority) of a filter, use 'T' to move the **filter** up one row or 'G'
to move it down one row.

Move the Selection Cursor

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

    #:  Name                 Ports              Count
    1:  Case 432A dmac       [unav| i |    |i  o]   0
 -> 2:  Case 432A            [unav| i |    |i  o]   0
    3:  abc                  [unav|i  |  o |    ]   0
u:cursor up  d:cursor down   t:filter up   g:filter down
a:add      e:edit           i:insert      x:delete
v:view     c:clear count    r:reset       h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 45: VLAN ID 768 assigned

The cursor has been moved up. Press 'T' to move the filter up one row.

Save Row 1 Filters

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters

    #:  Name                 Ports              Count
 -> 1:  Case 432A            [unav| i |    |i  o]   0
    2:  Case 432A dmac       [unav| i |    |i  o]   0
    3:  abc                  [unav|i  |  o |    ]   0
u:cursor up  d:cursor down   t:filter up   g:filter down
a:add      e:edit           i:insert      x:delete
v:view     c:clear count    r:reset       h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 47: vlan 768 assigned

Press 'S' to save the row 1 filters screen.

IP filtering Setting up 'Source IP Filter'

```
Edit Filter:
1. Name                 : src IP fltA
2. Ports                : [Unav|i  o|    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:
```

Figure 48: start setting up Source IP

Using the menu system as previously described, we will create a filter named 'src IP fltA'. The filter on packets with a source IP address 192.168.1.102

Layer 3 Select IP

```
Edit Filter:
1. Name                 : src IP fltA
2. Ports                : [Unav|i  o|    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              :
0: Exit
Enter menu selection:
```

Figure 50: vlan 768 assigned

The Edit Filter screen changes, so now we can enter the source IP address we are interested in – 192.168.1.102 – Press 8

Case 432A filter is now in first position

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

    #:  Name                 Ports              Count
 -> 1:  Case 432A            [unav| i |    |i  o]   0
    2:  Case 432A dmac       [unav| i |    |i  o]   0
    3:  abc                  [unav|i  |  o |    ]   0
u:cursor up  d:cursor down   t:filter up   g:filter down
a:add      e:edit           i:insert      x:delete
v:view     c:clear count    r:reset       h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 46: vlan 768 assigned

The 'case 432A filter is now in the first position.

Layer 3 filtering

Layer 3 filtering can target all IP messages or all non-IP messages. When IP is selected, the other layer 3 filter fields appear on the menu, these are source IP address, destination IP address, and DSCP. These may be used in any combination with each other or any other filter as long as IP messaging has been selected.

Select Layer 3 to setup filter

```
Edit Filter:
1. Name                 : src IP fltA
2. Ports                : [Unav|i  o|    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:7

i.IP:
n.non-IP
e.no-filter
any other key.no change
Select layer 3 type[no filter]:
```

Figure 49: vlan 768 assigned

We will select IP packets by pressing '7' then 'i'

Setting up 'Source IP address'

```
Edit Filter:
1. Name                 : src IP fltA
2. Ports                : [Unav|i  o|    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              :
0: Exit
Enter menu selection:8

Filter on SOURCE IP address? [N]:
```

Figure 51: vlan 768 assigned

Press 'y' to set up entering the SOURCE IP address.

Setting up 'Source IP address' cont

```
Edit Filter:
1. Name               : src IP fltA
2. Ports              : [Unav|i  o|    |    ]
3. Counter Used       : YES
4. Source IP Address  :
5. Destination IP Address:
6. VLAN ID            :
7. Layer 3            : IP
8. Source IP address  :
9. Destination IP address :
a. DSCP               :
b. Layer 4            :
0: Exit
Enter menu selection:8
 filter on SOURCE IP address? [N]:y
Enter SOURCE IP address (decimal):192
```

Figure 52: adding the first octet

Enter 192

Setting up 'Source IP address' cont

```
Edit Filter:
1. Name               : src IP fltA
2. Ports              : [Unav|i  o|    |    ]
3. Counter Used       : YES
4. Source MAC Address :
5. Destination MAC Address:
6. VLAN ID            :
7. Layer 3            : IP
8. Source IP address  :
9. Destination IP address :
a. DSCP               :
b. Layer 4            :
0: Exit
Enter menu selection:8
 filter on SOURCE IP address? [N]:y
Enter SOURCE IP address (decimal):192.
```

Figure 53: entering an error

The program enters the delimiter for you so all you need enter are the numbers. Now enter 268

Setting up 'Source IP address' cont

```
Edit Filter:
1. Name               : src IP fltA
2. Ports              : [Unav|i  o|    |    ]
3. Counter Used       : YES
4. Source MAC Address :
5. Destination MAC Address:
6. VLAN ID            :
7. Layer 3            : IP
8. Source IP address  :
9. Destination IP address :
a. DSCP               :
b. Layer 4            :
0: Exit
Enter menu selection:8
 filter on SOURCE IP address? [N]:y
Enter SOURCE IP address (decimal): 192.268<<<INVALID
```

Figure 54: correcting the error

Since 268 is out of range, the program puts up a message and will not allow the user to continue. This invalid entry must first be corrected in order to continue. Backspace to remove the bad entry and enter 168

Setting up 'Source IP address' cont

```
Edit Filter:
1. Name               : src IP fltA
2. Ports              : [Unav|i  o|    |    ]
3. Counter Used       : YES
4. Source MAC Address :
5. Destination MAC Address:
6. VLAN ID            :
7. Layer 3            : IP
8. Source IP address  :
9. Destination IP address :
a. DSCP               :
b. Layer 4            :
0: Exit
Enter menu selection:8
 filter on SOURCE IP address? [N]:y
Enter SOURCE IP address (decimal): 192.168.1.102
Enter SOURCE IP mask (decimal): 255.255.255.255
```

Figure 55: correcting the error

Enter '1'. Since we want to place one digit in this octet we can enter the delimiter explicitly. Now enter 102 to finish the address. The program will automatically enter the SOURCE IP mask 255.255.255.255 and provides the opportunity to edit it if necessary. Press <enter>

The Source IP address is created

```
Edit Filter:
1. Name               : src IP fltA
2. Ports              : [Unav|i  o|    |    ]
3. Counter Used       : YES
4. Source MAC Address :
5. Destination MAC Address:
6. VLAN ID            :
7. Layer 3            : IP
8. Source IP address  : 192.168.1.102 mask: 255.255.255.255
9. Destination IP address :
a. DSCP               :
b. Layer 4            :
0: Exit
```

Figure 56: finish the entry

Press '0' to return to the Row 1 Filters Screen

Back to Row 1 Filters screen

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters  ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

   #:  Name            Ports              Count
-> 1:  src IP fltA     [Unav|i  o|    |    ] 0
   2:  Case 432A       [unav| i  |    |i  o] 0
   3:  Case 432A dmac  [unav| i  |    |i  o] 0
   4:  abc             [unav|i  |  o|    ] 0
u:cursor up  d:cursor down   t:filter up  g:filter down
a:add        e:edit         i:insert      x:delete
v:view       c:clear count  r:reset       h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 57: Filter 'src IP fltA' is finished

We have created a fourth filter.
Next we will create a DSCP filter

DSCP filter

Using the menu system as previously described, we created a filter named 'DSCP=21', 4A->4C. Now, to add a filter for all packets with DSCP=21.

Start setting up 'DSCP filter'

```
Edit Filter:
1. Name                 : DSCP=21
2. Ports                : [unav|   |   |i o ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:
```

Figure 58: start setting up Source IP

Using the menu system as previously described, we will create a filter named 'DSCP=21'. TO filter on all packets with DSCP=21. Press '7'

Setting up 'DSCP filter' cont

```
Edit Filter:
1. Name                 : DSCP=21
2. Ports                : [unav|   |   |i o ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:7

   i.IP:
   n.non-IP
   e.no filter
   any other key.no change
   Select layer 3 type[no filter]:
```

Figure 59: We want to select Layer 3

The get Layer 3 options when we press '3' more options appear at the bottom of the menu. Press 'i'.

Setting up 'DSCP Filter' cont

```
Edit Filter:
1. Name                 : DSCP=21
2. Ports                : [unav|   |   |i o ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :IP
8. Source IP address    :
9. Destination IP Address :
a: DSCP                 :
b: Layer 4              :
0: Exit
Enter menu selection:a

 filter on dscp?[N]:
```

Figure 60: Select

Selecting IP brings up three new options, Source IP, Destination IP and DSCP. We will select 'a' to set up filter on DSCP

Setting up 'DSCP Filter' cont

```
Edit Filter:
1. Name                 : DSCP=21
2. Ports                : [unav|   |   |i o ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :IP
8. Source IP address    :
9. Destination IP Address :
a: DSCP                 :
b: Layer 4              :
0: Exit
Enter menu selection:a

 filter on dscp?[N]:y
```

Figure 61: DSCP of '21' is set

Press 'y'

DSCP of 21 is set

```
Edit Filter:
1. Name                 : DSCP=21
2. Ports                : [unav|   |   |i o ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :IP
8. Source IP address    :
9. Destination IP Address :
a: DSCP                 :
b: Layer 4              :
0: Exit
Enter menu selection:a

 filter on dscp?[N]:
              Enter DSCP(decimal 0-63):21
```

Figure 62: VLAN ID of '21' is set

Press '21' <return> to enter 21 on line a of the edit filter screen

Filter DSCP 21 is complete

```
Edit Filter:
1. Name                 : DSCP=21
2. Ports                : [unav|   |   |i o ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :IP
8. Source IP address    :
9. Destination IP Address :
a: DSCP                 :21
b: Layer 4              :
0: Exit
Enter menu selection:
```

Figure 63: VLAN ID of '21' is set

Filter DSCP 21 is complete. Press '0' to return to the Row 1 Filters screen

See every bit, byte, and packet®

Back at the Row 1 filters screen

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters  ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

   #:  Name             Ports              Count
   1:  src IP fltA      [Unav|i  o|    |    ]  0
   2:  Case 432A        [unav| i  |    |i  o]  0
   3:  Case 432A dmac   [unav| i  |    |i  o]  0
   4:  abc              [unav|i   |  o |    ]  0
-> 5:  DSCP=21          [unav|    |    |i  o]

u:cursor up    d:cursor down    t:filter up   g:filter down
a:add          e:edit           i:insert      x:delete
v:view         c:clear count    r:reset       h:help
0:exit    *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 62: begin entering the VLAN ID
We are finished with the Layer 3 level filters. Next we will work on the Layer 4 filters

Layer 4 filtering

Layer 4 filtering captures protocols riding on layer 3 IP. Specifically the IP port number, 0-255, which identifies the Layer 4 protocol in the packet. Two of the protcols, TCP=6, and UDP=17, contain source and destination ports which can also be used as keys for filters.

ICMP filter

ICMP is identified as IP protocol =1. Using previously explained commands, we create a new filter named 'ICMP', B2->C3...

Setting up IP protocol 1...

```
Edit Filter:
1. Name                 : ICMP
2. Ports                : [unav| i  | o  |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:
```

Figure 65: setting up IP protocols

We have set up a filter named 'ICMP', B2->C3   Press '7' to return to the Row 1 Filters screen

Selecting IP protocol

```
Edit Filter:
1. Name                 : ICMP
2. Ports                : [unav| i  | o  |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:7

i.IP:
n.non-IP
e.no-filter
any other key.no change
Select layer 3 type[no filter]:
```

Figure 66: Setting up IP protocol

Press 'i' to begin setting up the IP protocol

Choose to filter on layer 4

```
Edit Filter:
1. Name                 : ICMP
2. Ports                : [unav| i  | o  |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              :
0: Exit
Enter menu selection:b

 filter on layer 4(IP protocol)?[N]:y
t.tcp:
u.udp
h.other
any other key.no change
IP protocol[0]:
```

Figure 67: Select Layer 4

Press 'b' to set up a filter on layer 4. Program adds the line 'filter on layer 4 (IP protocol) ? [N] :'   Press 'y' and the program adds the choices available to choose from. Press 'h'. The program adds the line 'Enter IP protocol (decimal 0-255)'

Program provides what you can choose from

```
Edit Filter:
1. Name                 : ICMP
2. Ports                : [unav| i  | o  |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              :
0: Exit
Enter menu selection:b

 filter on layer 4(IP protocol)?[N]:y
t.tcp:
u.udp
h.other
any other key.no change
IP protocol[0]:
             Enter IP Protocol (decimal 0-255):1
```

Figure 68: select from new menu items

Enter '1' and press ENTER to get back to the Edit milter menu

The ICMP filter is complete

```
Edit Filter:
1. Name                 : ICMP
2. Ports                : [unav| i | o|    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              :1
0: Exit
Enter menu selection:
```

Figure 69: ICMP filter is complete

Press '0' to return to the Row 1 Filters screen

Row 1 Filter now has six filters complete

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters ***FILTER CONFIGURATION NOT SAVED OR APPLIED***

     #:  Name              Ports                Count
     1:  src IP fltA       [Unav|i  o|    |    ]   0
     2:  Case 432A         [unav|  i  |    |i  o]  0
     3:  Case 432A dmac    [unav|  i  |    |i  o]  0
     4:  abc               [unav|i    |  o |    ]  0
     5:  DSCP=21           [unav|    |    |i  o ]  0
 -> 6:  ICMP              [unav|  i  | o|    ]    0

u:cursor up  d:cursor down   t:filter up   g:filter down
a:add        e:edit          i:insert      x:delete
v:view       c:clear count   r:reset       h:help
0:exit   *** s:SAVE AND APPLY FILTERS ***
Select:
```

Figure 70: Completed the 6th filter - ICMP filter

The next filter we will develop is the 'Email send capture filter'. Emails are sent to tcp port 587. We will create a filter to capture 'email send' and send them to a monitoring port.

email send capture filter

Next Filter 'Email send capture' filter

```
Edit Filter:
1. Name                 : email send
2. Ports                : [unav|i o |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:7
```

Figure 71: create 'email send' filter

Using the previously described commands, create a filter named 'email send' which will go from A2 -> C2.
Press '7' to select layer 3

Select Layer 3

```
Edit Filter:
1. Name                 : email send
2. Ports                : [unav|i o |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              :
0: Exit
Enter menu selection:7

i.IP:
n.non-IP
e.no-filter
any other key.no change
Select layer 3 type[no filter]:
```

Figure 72: Select IP

Selecting Layer 3 brings up more menu selections. Press 'i' to select IP

Pressing 'b' will change the menu again

```
Edit Filter:
1. Name                 : email send
2. Ports                : [unav|i o |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              :
0: Exit
Enter menu selection:b

 filter on layer 4(IP protocol)?[N]:
```

Figure 73: Select layer 4

Press 'b' to select layer 4. A new line is added to the bottom of the menu.

Pressing 'y' will set up for selection of protocol

```
Edit Filter:
1. Name                 : email send
2. Ports                : [unav|i o |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              :
0: Exit
Enter menu selection:b

 filter on layer 4(IP protocol)?[N]:y
 t.tcp:
 u.udp
 h.other
 any other key.no change
 IP protocol[0]:
```

Figure 74: Set up selecting the protocol

Press 'y' to select protocol will add more menu selections.

Select the protocol

```
Edit Filter:
1. Name                 : email send
2. Ports                : [unav|i o |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              : 6(TCP)
c. Source Port          :
d. Destination port     :
0: Exit
Enter menu selection:
```

Figure 75: Select tcp protocol

Press 't' to select tcp protocol

Now we setup the destination port

```
Edit Filter:
1. Name                 : email send
2. Ports                : [unav|i o |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              : 6(TCP)
c. Source Port          :
d. Destination port     :
0: Exit
Enter menu selection:d
```

Figure 76: Setup destination port

Press 'd' to select Destination port. Program adds a new line to the bottom of the menu – filter on DESTINATION port?[N]

Enter the DESTINATION port

```
Edit Filter:
1. Name                 : email send
2. Ports                : [unav|i o |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              : 6(TCP)
c. Source port          :
d. Destination port     :
0: Exit
Enter menu selection:d

 filter on DESTINATION port?[N]:y
              Enter DESTINATION (decimal):587
```

Figure 77: Enter the destination port

Press 'y' then the program adds another line to allow the entry of the Destination port. Enter the DESTINATION port '587 <enter>''

The Destination port filter is complete

```
Edit Filter:
1. Name                 : email send
2. Ports                : [unav|i o |    |    ]
3. Counter Used         : YES
4. Source MAC Address   :
5. Destination MAC Address:
6. VLAN ID              :
7. Layer 3              : IP
8. Source IP address    :
9. Destination IP address :
a. DSCP                 :
b. Layer 4              : 6(TCP)
c. Source port          :
d. Destination port     : 587
0: Exit
Enter menu selection:
```

Figure 78: destination port is complete

Enter the DESTINATION port '587'. We are finished setting up the 'email send' filter. Press '0' to return to the Row 1 Filters screen

Back at the Row 1 filters screen

```
Garland Technology M1G1ACE (Code Version:1.0.21)

Row 1 Filters

   #:  Name              Ports              Count
   1:  src IP fltA       [Unav|i  o|    |    ]  0
   2:  Case 432A         [unav| i  |    |i o]  0
   3:  Case 432A dmac    [unav| i  |    |i o]  0
   4:  abc               [unav|i  | o |    ]  0
   5:  DSCP=21           [unav|    |    |i o ]  0
   6:  ICMP              [unav| i  | o |    ]  0
-> 7:  email send        [unav|i o |    |    ]  0


u:cursor up   d:cursor down    t:filter up    g:filter down
a:add         e:edit           i:insert       x:delete
v:view        c:clear count    r:reset        h:help
0:exit    *** s:SAVE AND APPLY FILTERS ***
Select:
```
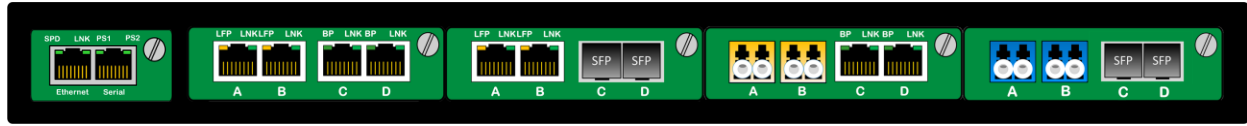
Figure 79: We have set up 7 filters

The TCP source port, and UDP source and destination entries are similar.
Note: Always remember to press 'S' when you finish entering your filters or they won't be there when you try to use them

1U – 1G Modular Chassis holds up to 4 TAPs with dual internal PSU

M1G1ACE/M1G1DCE

Rack Mount Space:	1U
Size dimensions	(W x H x D): 17.44 x 1.72 x 13.32 inches
Weight:	6.8 lbs
Ambient Temperature:	0°C to+40°C/+32°F to+104°F
Operating Relative Humidity:	90% non-condensing
Storage Temperature:	-20°C to+70°C/-4°F to+158°F
Voltage (AC/DC):	85-264 Volts AC / 36-72 Volts DC
Current (nominal):	.4 amps
Maximum Power Consumption:	50 watts
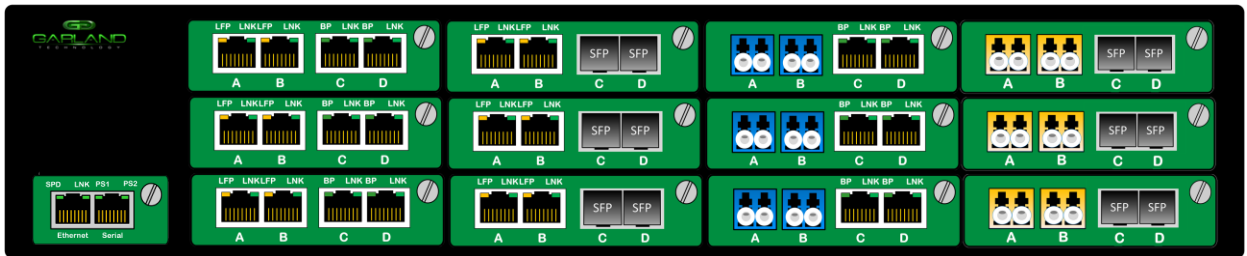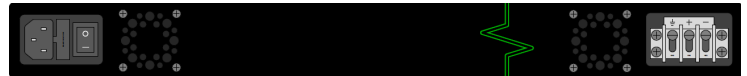
2U – 1G Modular Chassis holds up to 12 TAPs with dual internal PSU

M1G2ACE/M1G2DCE

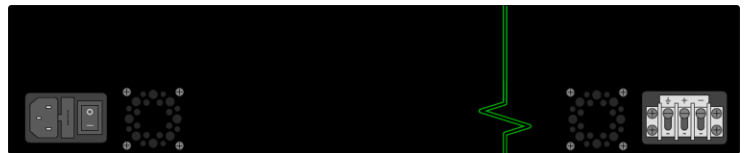|	
Rack Mount Space:	2U
Size dimensions:	(WxHxD): 17.44 x 3.47 x 13.32 inches
Weight:	9 lbs
Ambient Temperature:	0° C to +40°C/+32°F to +104°F
Operating Relative Humidity:	90% non-condensing
Storage Temperature:	-20°C to +70°C/-4°F to +158°F
Voltage (AC/DC):	85-264 Volts AC / 36-72 Volts DC
Current (nominal):	1.2 amps
Maximum Power Consumption:	144 Watts

Figure 80: M1G1XCF and M1G2XCF Chassis Specifications

Part Numbers and Descriptions

Part No.	Description
M1G1ACE	1U modular chassis with dual internal AC power supplies, supports up to four TAP modules. Backplane feature can be used with all of Garland Technology's 1Gbps modular TAPs that end with a letter "F".
M1G1DCE	1U modular chassis with dual internal DC power supplies, supports up to four TAP modules. Backplane feature can be used with all of Garland Technology's 1Gbps modular TAPs that end with a letter "F".
M1G2ACE	2U modular chassis with dual internal AC power supplies, supports up to twelve TAP modules. Backplane feature can be used with all of Garland Technology's 1Gbps modular TAPs that end with a letter "F".
M1G2DCE	2U modular chassis with dual internal DC power supplies, supports up to twelve TAP modules. Backplane feature can be used with all of Garland Technology's 1Gbps modular TAPs that end with a letter "F".

Modular TAPs that can use the Aggregating/Filtering Backplane

M1GCCF	Copper network ports to Copper, Aggregating, Filtering monitor ports module.
M1GCSF	Copper network ports to SFP, Aggregating, Filtering monitor ports module.
M1GMCF	Single-mode fiber network ports to Copper, Aggregating, Filtering monitor ports module.
M1GMSF	Multi-mode fiber network ports to SFP, Aggregating, Filtering monitor ports module.
M1GSCF	Single-mode fiber network ports to Copper, Aggregating, Filtering monitor ports module.
M1GSSF	Single-mode fiber network ports to SFP, Aggregating, Filtering monitor ports module.

Note: See page 1 for more details about the modules that can be used with this Chassis.

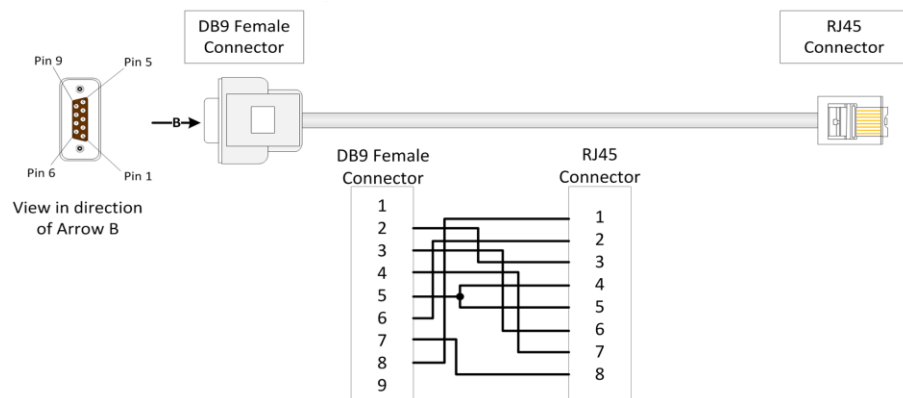# Console Cable for M1GXXCE Serial Management port

Figure 81: Serial Cable Pinout

Pressing 'h' will bring up the help Screen on Filtering Menu

```
----- CURSOR MOVEMENT -----
<home>..............................Place cursor at the beginning of the filter list
<end>...............................Place cursor at the end of the filter list
<pg up>...........................Move cursor forward a page in the filter list
<pg dn>...........................Move cursor backward a page in the filter list
U,u,<up arrow>........Move cursor up one position in the filter list
D,d,<down arrow>…Move cursor down one position in the filter list

----- FILTER MOVEMENT -----
T,t........................................Move selected filter on the list (increases priority)
G,g.......................................Move selected filter down on the list(decreases priority)

----- FILTER MODIFICATION -----
E,e........................................Edit selected filter
A,a.......................................Add a new filter to the end of the list
<F1>.....................................Copy a selected filter
I,i,<insert>..............Insert a new filter above selected filter
X,x,<delete>..............Delete selected filter
V,v.......................................View details on selected filter
C.............................................Clear count on selected filter


----- CONTROL -----
0............................................Exit row filtering menu
C............................................Clear counts on all filters this row
R,r.........................................Reset filters to factory default, deletes all filters this row
S,s.........................................Save this row's filter list to flash, and apply it to modules
```

Figure 82: HELP Screen for the Filtering Menu

Definitions:

SMF	Singlemode Fiber Network Ports
MMF	Multimode Fiber Network Ports
RJ-45	Copper Port
SFP	Transceiver Port – 1Gbps
LFP	Link Failure Propagation - LFP is used mostly for HA designed networks. When turned on, it can sense a network failure and reflect the failure to the adjacent port of the live network allowing the network's failover mechanism to switch over to the secondary network path.
Reverse Bypass	Reverse Bypass: Disables link on both live network ports if all inline appliances lose link or cannot pass traffic. Disabled by default.
Forced Bypass	Allows the In-line appliance to be bypassed whenever firmware or software upgrades need to be installed.