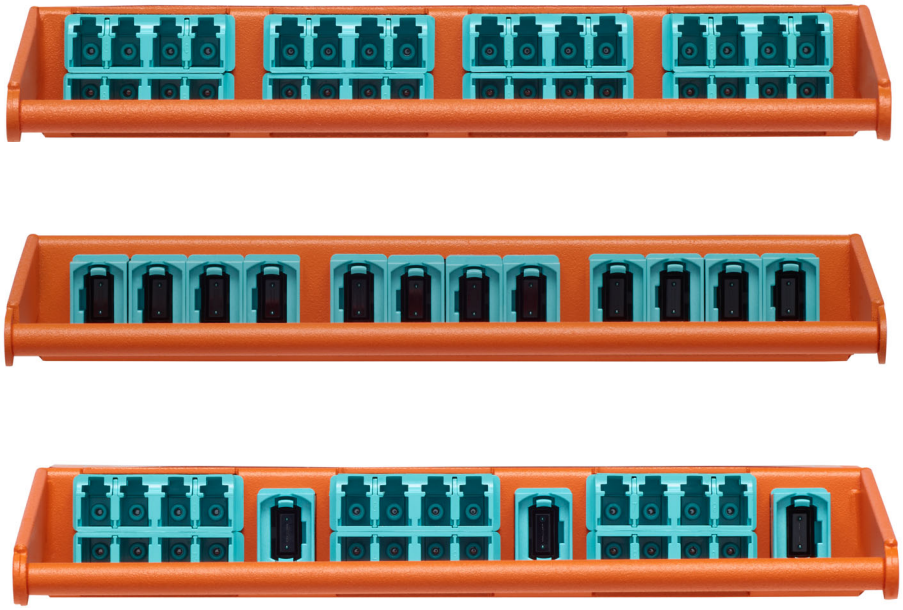
Gigamon®



G-TAP M Series Hardware Guide

Document Version 1.4

Contents

About This Guide

This guide describes how to rack mount, assemble, and connect the Gigamon Tapping Access Point (G-TAP) M Series modules manufactured by Gigamon® Inc.

The G-TAP M Series modules contain from one to six passive, optical splitter TAPs for common optical media and speeds. Similar to the rest of the G-TAP line, the G-TAP M Series modules provide visibility to 1Gb, 10Gb, 25Gb, 40Gb, and 100Gb traffic.

The G-TAP M Series modules are built to access multimode short-range links and single-mode, long-range links. The optical TAPs of the modules provide a duplication of production network traffic for analytic and security tools.

The G-TAP M Series modules have the following capabilities:

- The number of modules that can be installed in a G-TAP M Series chassis are:
  - Up to six modules can be installed in a G-TAP M Series TAP-M200, which is a 1 Rackmount Unit (RU) chassis
  - Up to three modules can be installed in a G-TAP M Series TAP-M100T, which is a 1/2 RU chassis.
  - Up to two multimode unidirectional TAP modules from the TAP-Mxx1ULT family can be installed in a G-TAP M Series TAP-M202ULT, which is a 1 RU chassis.
- Visibility to higher-density links leveraging higher speed optics.
- Completely passive. The G-TAP M Series modules never require power, software, or configuration.
- LC Duplex connectors or MPO/MTP connectors for network links leading directly into the Gigamon Visibility Platform.
- Integration with all GigaVUE nodes.

There are also two G-TAP M Series breakout panels that provide for the breakout or aggregation of GigaVUE ports.

Chapter 1

G-TAP M Series Module Installation

This chapter describes the following:

Installing and Removing G-TAP M Series Modules

A G-TAP M Series module consists of one, two, three, four, or six TAPs and installs into either a 1 RU G-TAP M Series chassis (TAP-M200 or TAP-M202ULT), or a 1/2 RU G-TAP M Series chassis (TAP-M100T). A G-TAP M Series chassis can contain up to six M Series modules. G-TAP M Series TAPs using MPO/MTP connectors have up to three TAPs per module. TAPs using LC connectors have up to six TAPs per module as shown in Figure 1-1.

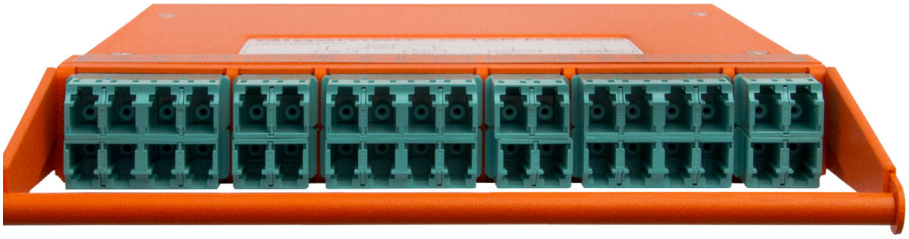


Figure 1-1: G-TAP M Series Module with Six TAPs and LC Connectors

Installing G-TAP M Series Modules in a G-TAP M Series Chassis

To install G-TAP M Series modules in a G-TAP M Series chassis, do the following:

1. Install the G-TAP M Series chassis in a rack. Following figures show examples of 1RU G-TAP M Series TAP-M200 chassis, TAP-M202ULT chassis, and 1/2RU G-TAP M Series TAP-M100T chassis that are empty.

   NOTE: You can either flush mount the rack or install it with a 3in setback.

Figure 1-2: Empty 1RU G-TAP M Series TAP-M200 chassis

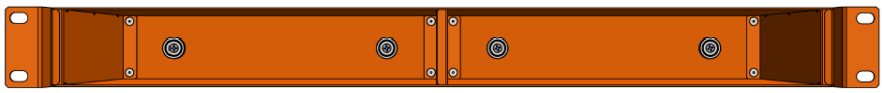


Figure 1-3: Empty 1RU G-TAP M Series TAP-M202ULT chassis

Figure 1-4: Empty 1/2RU G-TAP M Series TAP-M100T chassis

2. Hold the module by the handle and gently slide it into one of the slots in the chassis.
3. Push the module into the slot until it is seated. Magnets inside the chassis hold the module in place.
4. Repeat steps 2 and 3 for each module to be inserted into the chassis. Following figures show the G-TAP M Series chassis with modules installed in each slot.

Figure 1-5: G-TAP M Series TAP-M200 Chassis with Modules Installed

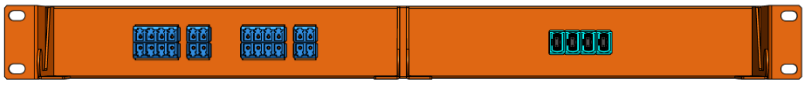


Figure 1-6: G-TAP M Series TAP-M202ULT Chassis with Modules Installed

Figure 1-7: G-TAP M Series TAP-M100T Chassis with Modules Installed

Removing G-TAP M Series Modules

To remove a G-TAP M Series module, do the following:

1. Hold the module by the handle and pull it forward to release it from the magnets inside the chassis.
2. Gently slide the module out of its slot.

Connecting G-TAP M Series Modules

Links are tapped with G-TAP M Series by disconnecting an existing link between two network devices (for example, the connection between an access switch and a distribution network) and reconnecting the link so that network data flows through one TAP.

Disconnecting Fiber from the Modules

LC Duplex or MPO/MTP connectors are easily accessed when connected to the module. Merely pull the TAP module out of the G-TAP M Series chassis by 3in or 4in. This alleviates the need for special connector latches or extraction tools.

Routing and Port Labels

A module has a set of either three, four, or six TAPs, depending on which module is used. Each TAP has an X port, a Y port, and two TAP ports. The ports are indicated by the orange label on the top panel to assist with the proper connections of the TAP to the network. Each module also has a routing diagram on the top panel. The breakout panels PNL-M341 and PNL-M343 also have routing and port labels.

There are two types of TAPs—Fused TAPs and Thin Film TAPs. Following table provides the list of TAPs under each type:

Table 1-1: Fused and Thin Film TAPs

Fused TAPs	Thin Film TAPs
M251	M251T, M251LT, and M251ULT
M253	M253T, M253LT, and M253ULT
M271	M271T, M271LT, M271ULT
M273	M273T, M273LT, and M273ULT
M473	M252LT, M261LT, M262LT, M263LT, and M272LT
	M451T, M451ULT, M453T, and M473T
	M471, M471T, M471ULT, and M471-SR10

Routing Labels

Figure 1-8 shows the routing diagram that is on the top panel of the Fused type G-TAP models. Refer to the Table 1-1 for the list of Fused TAPs.

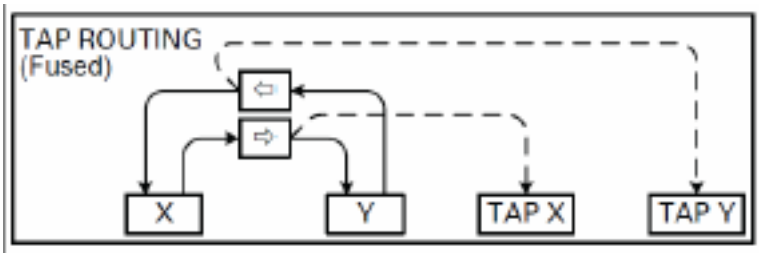


Figure 1-8: Routing Diagram for Fused Type TAPs

Figure 1-9 shows the routing diagram that is on the top panel of Thin Film type G-TAP models. Refer to the Table 1-1 for the list of Thin Film TAPs.

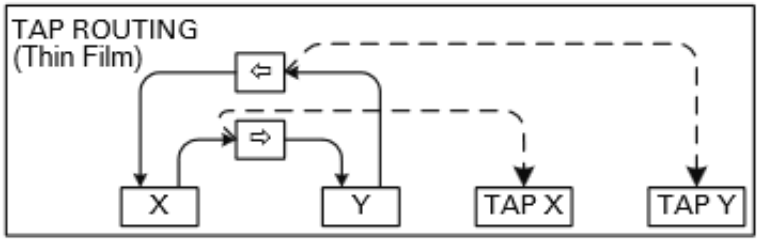


Figure 1-9: Routing Diagram for Thin Film Type TAPs

Figure 1-10 on page 10 shows the routing diagram that is on the top panel of the G-TAP M506A or G-TAP M506T.

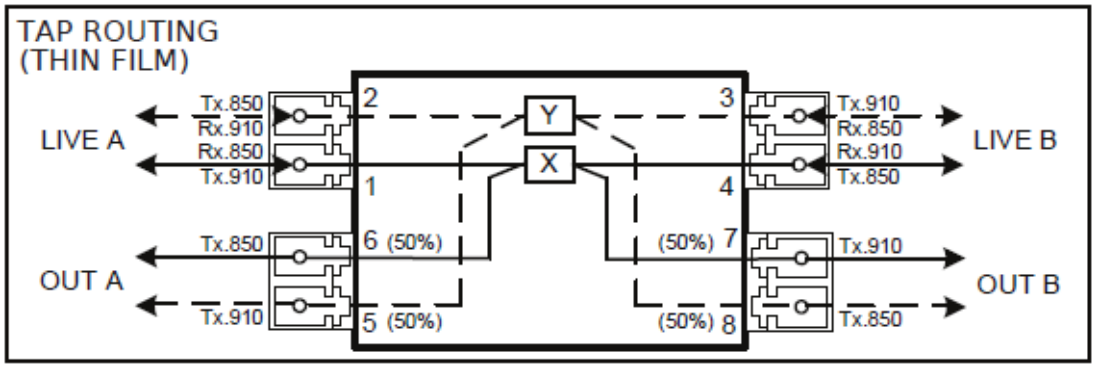


Figure 1-10: Routing Diagram for G-TAP M506A or G-TAP M506T

Figure 1-11 on page 11 shows the routing diagram that is on the top panel of breakout panels PNL-M341, PNL-M341T, PNL-M343, and PNL-M343T.

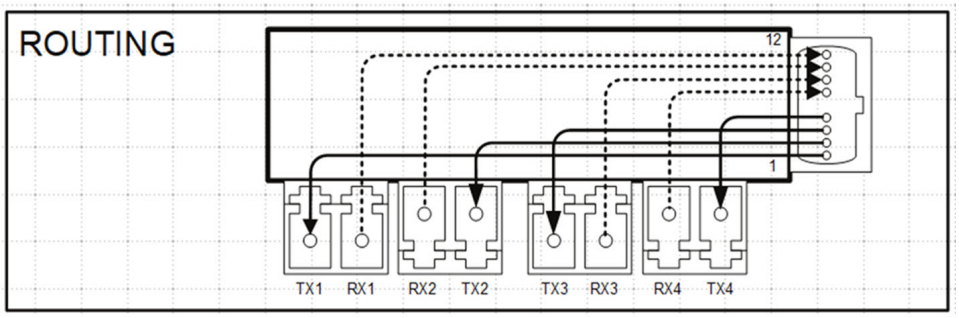


Figure 1-11: Routing Diagram for Breakout Panels PNL-M341, PNL-M341T, PNL-M343, and PNL-M343T

Port Labels

Figure 1-12 on page 11 shows the port label that is on the top panel of G-TAP models M251, M251T, M253T, M271, M271T, M273, M273T, M453, and M473.

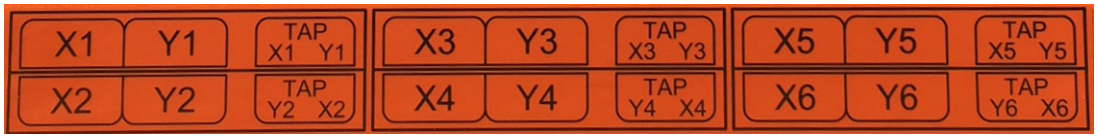


Figure 1-12: Port Label for G-TAP M251, M 251T, M253T, M271, M271T, M273, M273T, M453, and M473

Figure 1-13 on page 11 shows the port label that is on the top panel of G-TAP models M451, M451T, M453T, M471, M471T, M471-SR10, and M473T.

Figure 1-13: Port Label for G-TAP M451, M451T, M453T, M471, M471T, *M471-SR10, and M473T*

Figure 1-14 on page 11 shows the port label that is on the top panel of G-TAP models M251LT, M252LT, M253LT, M253ULT, M261LT, M262LT, M263LT, M271LT, M272LT, M273LT, and M273ULT.

Figure 1-14: Port Label for G-TAP M251LT, M252LT, M253LT, M253ULT, M261LT, M262LT, M263LT, M271LT, M272LT, M273LT, and M273ULT

Figure 1-15 on page 11 shows the port label that is on top of G-TAP model M251ULT and M271ULT.

Figure 1-15: Port Label for G-TAP M251ULT and M271ULT

Figure 1-16 on page 12 shows the port label that is on top of G-TAP model M451ULT and M471ULT.

Figure 1-16: Port Label for G-TAP M451ULT and M471ULT

Figure 1-17 on page 12 shows the port label that is on top of G-TAP model M506A and M506T.

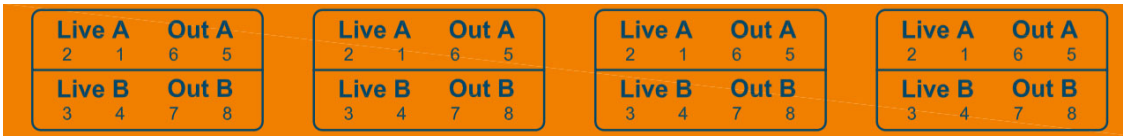


Figure 1-17: Port Label for G-TAP M506A and G-TAP M506T

Figure 1-18 on page 12 shows the port label that is on the top panel of breakout panels PNL-M341, PNL-M341T, PNL-M343, and PNL-M343T.

Figure 1-18: Port Label for Breakout Panels PNL-M341, PNL-M341T, PNL-M343, and PNL-M343T

G-TAP M Series TAP Connections

In Figure 1-19 on page 13, the module has three TAPS. Traffic arriving at the X port is tapped and sent out on the TAP X port to the GigaVUE node, while traffic arriving at the

Y port is tapped and sent out to the node on the TAP Y port. The connections in this case is MPO to MPO.

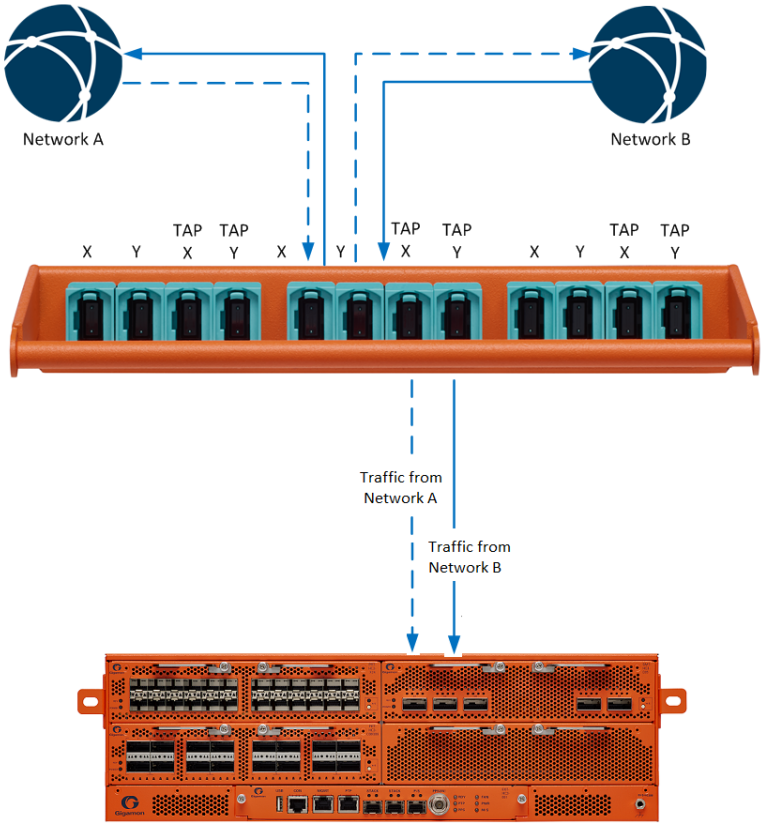


Figure 1-19: G-TAP M Series Module Connections, MPO to MPO

NOTE: For MPO to MPO TAPs, use Type B MPO cables for connecting the TAP to a transceiver from any leg of the module.

In Figure 1-20 on page 14, the module has six TAPS. Traffic arriving at the X ports is tapped and sent out on the TAP X ports to the GigaVUE node, while traffic arriving at the Y port is tapped and sent out to the node on the TAP Y ports. The connections in this case is *LC to LC*.

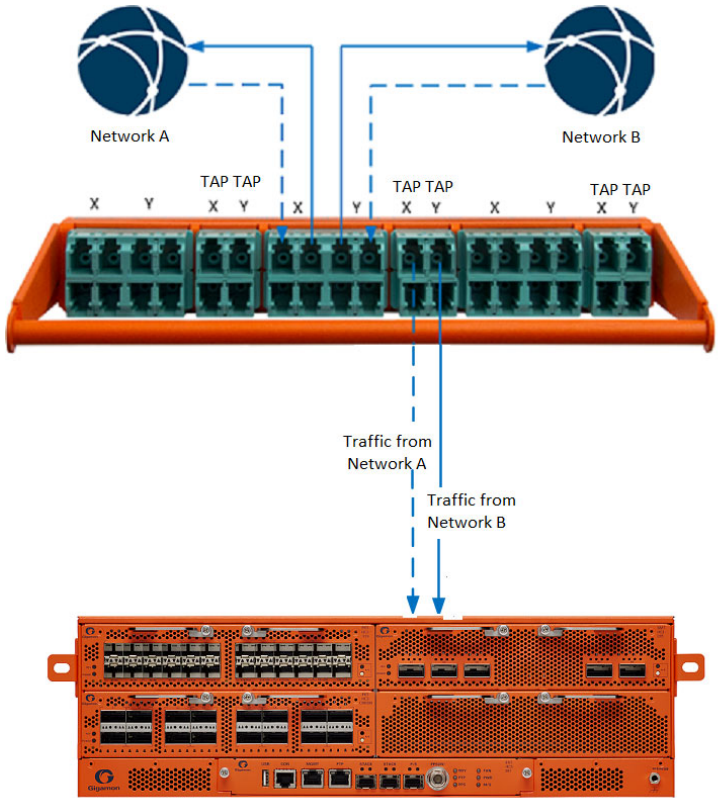


Figure 1-20: G-TAP M Series Module Connections, LC to LC

In Figure 1-21, the module has four bi-directional TAPS.

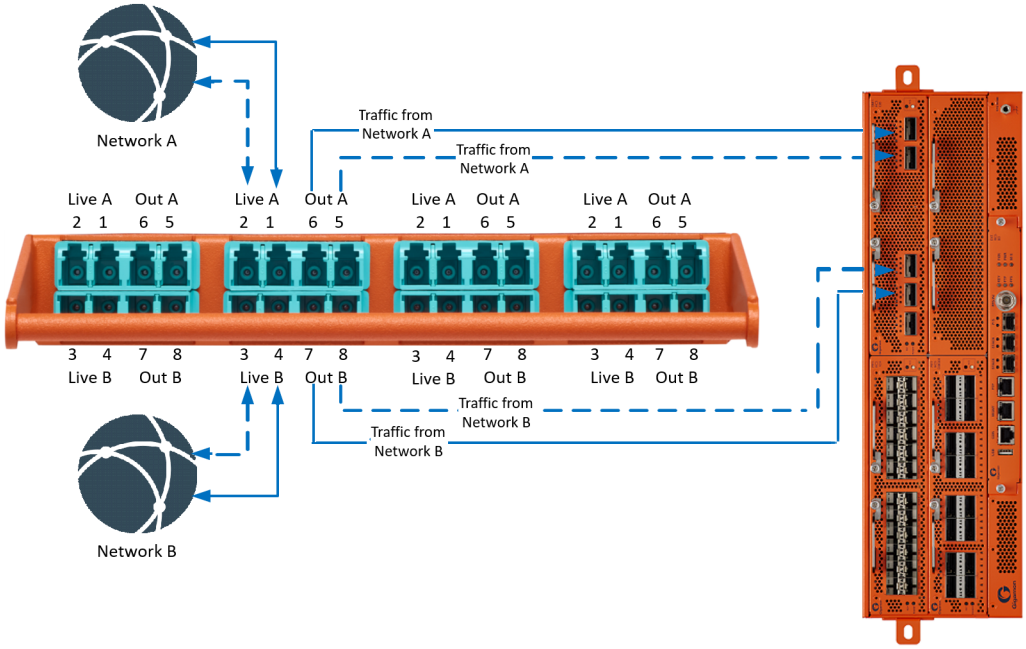


Figure 1-21: G-TAP M Series Module Connections for G-TAP M506A

Traffic arrives from the networks and is sent out to the ports in the following manner:

- Traffic arriving from network A on port 1 is tapped to the node on port 6. The traffic continues to network B through port 4.
- Traffic arriving from network A on port 2 is tapped to the node on port 5. The traffic continues to network B through port 3.
- Traffic arriving from network B on port 3 is tapped to the node on port 8. The traffic continues to network A through port 2.
- Traffic arriving from network B on port 4 is tapped to the node on port 7. The traffic continues to network A through port 1.

NOTE: Live A and Live B ports should be connected to BiDi Rx/Tx optics whereas the Out A and Out B ports must be connected to BiDi Rx-Only optics. Connecting Rx/Tx optics to the Out ports will corrupt the traffic and cause failure.

Connecting G-TAP M Series TAPs to a Live Network

To connect a G-TAP M Series module to a live network, do the following:

1. Select the X and Y ports on the module.
2. Connect one network device to the X port of the TAP on the module.
3. Connect the other network device to the Y port of the TAP on the module.
4. Connect the TAP X port to a network port on the GigaVUE H Series node to monitor the traffic received on the TAP X port.
5. Connect the TAP Y port to a network port on a GigaVUE H Series node to monitor the traffic received on the TAP Y port.

NOTE: The multimode dual fiber cable used for TAPS with LC style ports must be terminated with an LC-duplex connector with a UPC polish. The LC-duplex connector fits only in one direction.

Connecting G-TAP M Series TAPs to GigaVUE Nodes

To connect a TAP on the G-TAP M Series module to a GigaVUE nodes, do the following:

1. Connect the X and Y ports to the network to be monitored.
2. Connect the TAP X and TAP Y ports to the ports on GigaVUE H Series node with a single fiber for each.
3. Make sure that the receiving ports on the GigaVUE H Series node are set as network ports.

Connecting G-TAP M Series Breakout Panels

Breakout panels are used to breakout single ports to multiple ports or to aggregate multiple ports to a single port.

There are two G-TAP M Series breakout panels available:

- PNL-M341

- PNL-M343

This section provides the following information:

PNL-M341 Breakout Panel Connection

The PNL-M341 is a Multimode (MM) breakout panel with a granularity of three breakouts per module. It provides three MPO ports for 40Gb/100Gb SR4 optics and 12 LC ports for 10Gb/25Gb SR optics.

NOTE: Purchase MPO and LC patch cables separately.

The PNL-M341 breakout panel contains three breakout modules labeled A, B, and C, and can be used for the breakout of a 40Gb port to four 10Gb links or for the aggregation of four 10Gb links to a 40Gb port, or for the breakout of a 100Gb port to four 25Gb links or for the aggregation of four 25Gb links to a 100Gb port.

Refer to Figure 1-22 on page 16 for an example of using the PNL-M341 breakout panel to breakout a single 40Gb tool port to multiple 10Gb fiber outputs.

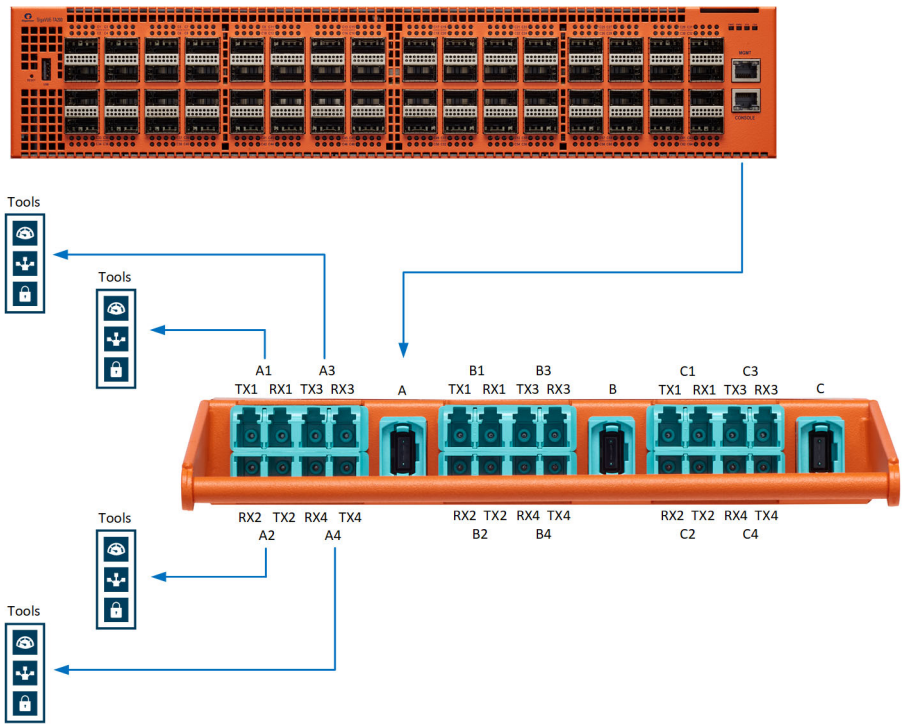


Figure 1-22: PNL-M341 Connections for Breakout

Refer to Figure 1-23 on page 17 for an example of using the PNL-M341 breakout panel to aggregate multiple ports to a single tool port.

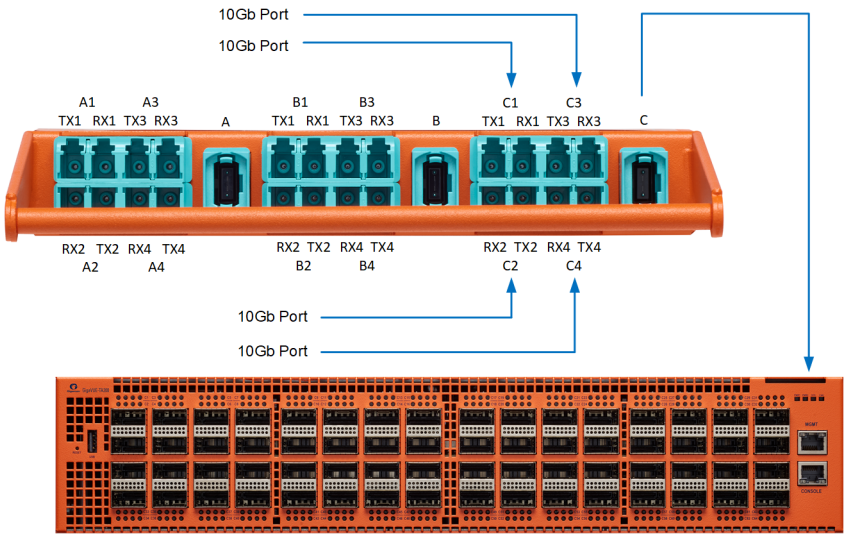


Figure 1-23: PNL-M341 Connected to a TA10 for Aggregation

MPO and LC Connectors and Cabling

The PNL-M341 breakout panel has three MPO connectors, each going to four LC duplexes. The MPO ports are MTP (UPC with pin-male), aqua color. The LC ports are LC (UPC), aqua color.

The MPO port connectors support 40Gb/100Gb SR4 MM QSFP+/QSFP28 transceivers. The LC port connectors support 10Gb/25Gb SR MM SFP+/SFP28 transceivers.

The MPO port connectors take MM QSFP MTP(F)/UPC-MTP(F)/UPC cabling. The LC port connectors take MM LC/UPC-LC/UPC duplex cabling.

PNL-M343 Breakout Panel Connection

The PNL-M343 is a Singlemode (SM) breakout panel with a granularity of three breakouts per module. It provides three MPO ports for 40Gb PLR4 optics and twelve LC ports for 10Gb LR optics.

NOTE: Purchase MPO and LC patch cables separately.

The PNL-M343 breakout panel contains three breakout modules labeled A, B, and C, and can be used for the breakout of a 40Gb port to four 10Gb links or for the aggregation of four 10Gb links to a 40Gb port.

Refer to Figure 1-24 on page 18 for an example of using the PNL-M343 breakout panel to breakout a single 40Gb tool port to multiple 10Gb fiber outputs.

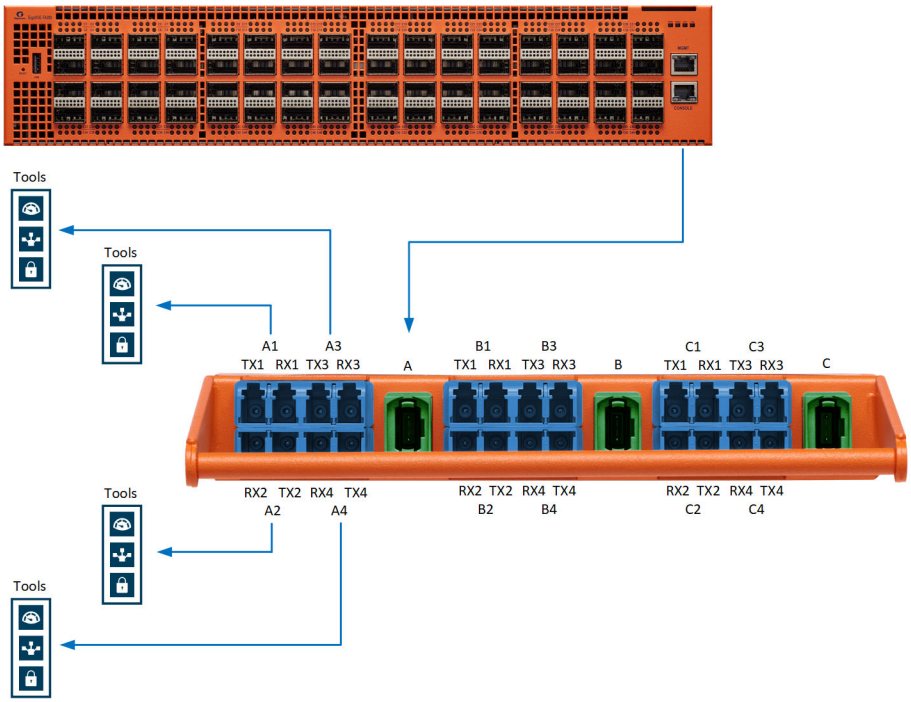


Figure 1-24: PNL-M343 Connections for Breakout

Refer to Figure 1-25 on page 18 for an example of using the PNL-M343 breakout panel to aggregate multiple ports to a single tool port.

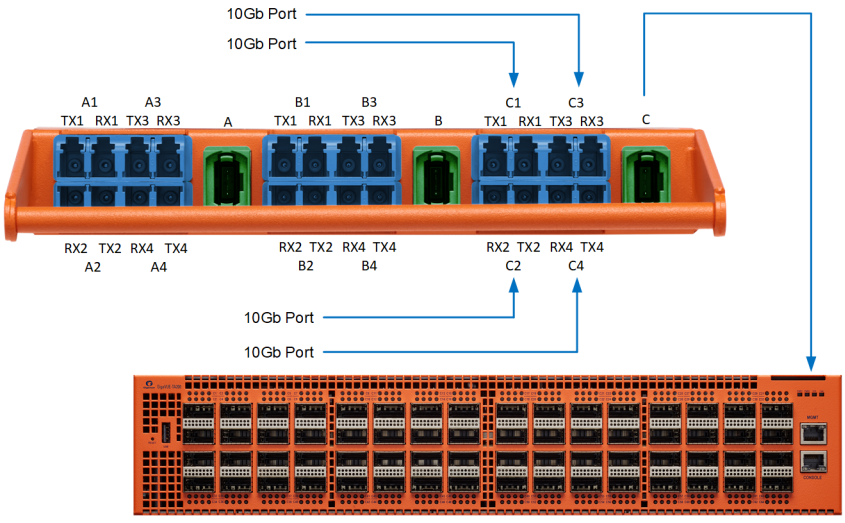


Figure 1-25: PNL-M343 Connected to a TA10 for Aggregation

MPO and LC Connectors and Cabling

The PNL-M343 breakout panel has three MPO connectors, each going to four LC duplexes. The MPO ports are MTP (APC with pin-male), green color. The LC ports are LC (UPC), blue color.

The MPO port connectors support 40Gb/100Gb PLR4 SM QSFP+ transceivers. The LC port connectors support 10Gb/25Gb LR SM SFP+ transceivers.

The MPO port connectors take SM QSFP MTP(F)/APC-MTP(F)/APC cabling.
The LC port connectors take SM LC/UPC-LC/UPC duplex cabling.

Connecting the PNL-M341 or PNL-M343 for Breakout

To use the PNL-M341 or PNL-M343 to breakout a single port to multiple ports:

1. On the GigaVUE node, set the port mode to **4x** for the 40Gb ports that will connect to the breakout panel. You can change the mode using GigaVUE-OS CLI or GigaVUE-FM.
2. Use a patch cable to connect the GigaVUE node to an MPO port (such as A) on the breakout panel. The traffic on MPO Port A is sent to four different transmitting LC ports, such as TX1 to TX4 on A1 to A4.
3. Connect the LC ports (such as A1 to A4) on the breakout panel to tools.

Refer to Figure 1-22 on page 16 or Figure 1-24 on page 18.

Connecting the PNL-M341 or PNL-M343 for Aggregation

To use the PNL-M341 or PNL-M343 breakout panel to aggregate multiple GigaVUE 10Gb ports (from a network port or 10Gb tool port) to a single 40Gb fiber output:

1. Connect the GigaVUE 10Gb port to any of the receiving LC ports on the breakout panel, such as Rx1 to RX4 on C1 to C4. These ports are aggregated to the corresponding MPO port (C).
2. Connect the MPO port (C) on the breakout panel, to the destination 40Gb port.

NOTE: If the destination port is a 40Gb network port on a GigaVUE H Series or GigaVUE TA Series visibility node, the port must be in **4x** mode.

Refer to Figure 1-23 on page 17 or Figure 1-25 on page 18.

Chapter 2

G-TAP M Series Module Specifications

This chapter describes the following:

Features and Benefits

Feature	Benefit
Powerful Traffic Mirroring Capabilities	The G-TAP M Series modules passively mirror 100% of network traffic including errors, non-standard network traffic, and network packets that do not conform to established protocol standards enabling detailed analysis, security, and monitoring.
Completely Passive TAP	The G-TAP M Series modules rely on passive full duplex fiber optic splitters, which results in non-point-of-failure operation. It requires no power source to operate.
GigaVUE® Integration	Easy integration with the full family of GigaVUE® Visibility Fabric™ nodes for maximum flexibility. Connect the G-TAP M Series modules to network ports on a GigaVUE fabric node to take advantage of powerful intelligent traffic filtering, aggregation, and modification offered through Visibility Fabric architecture.

G-TAP M Series TAP Module Specifications

Gigamon provides three types of G-TAP M Series modules:

Type	Products
Multimode (MM)	• Short Reach (SR) for 10Gbps, 40Gbps, and 100Gbps products • Short Wavelength (SX) for 1.25Gbps products
Single-mode (SM)	• Long Reach (LR) for 10Gbps, 40Gbps, and 100Gbps products • Long Wavelength (LX) for 1.25Gbps products
Bi-directional (BiDi)	• Cisco BiDi for 40Gbps and 100Gbps products

Table 2-1 describes the MM, SR TAP modules.

Table 2-1: MM, SR TAP Modules

G-TAP M Series Module	Speed	Split Ratio	Max Network Loss	Max TAP Loss	Connector	Mounting Chassis	Fiber Type
TAP-M251	1G/10G	50/50	3.9dB	3.9dB	LC (UPC)	TAP-M100T/ TAP-M200	MM (50/125 micron) for 850nm wavelength
TAP-M251T	1G/10G	50/50	3.9dB	3.9dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M251LT	1G/10G/ 25G	50/50	3.9dB	3.9dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M251ULT	1G/10G/ 25G	50/50	3.9dB	5.1dB	LC (UPC)	TAP-M202ULT	
TAP-M261LT	1G/10G/ 25G	60/40	3.15dB	5.15dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M271	1G/10G	70/30	2.2dB	6.2dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M271T	1G/10G	70/30	2.2dB	6.2dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M271LT	1G/10G/ 25G	70/30	2.2dB	6.2dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M271ULT	1G/10G/ 25G	70/30	2.2dB	7.4dB	LC (UPC)	TAP-M202ULT	
TAP-M451	40G/100G	50/50	4.3dB	4.3dB	MPO/MTP (UPC)	TAP-M100T/ TAP-M200	
TAP-M451T	40G/100G	50/50	4.3dB	4.3dB	MPO/MTP (UPC)	TAP-M100T/ TAP-M200	
TAP-M451ULT	40G/100G	50/50	4.3dB	5.5dB	MPO/MTP (UPC)	TAP-M202ULT	
TAP-M471	40G/100G	70/30	2.8dB	6.4dB	MPO/MTP (UPC)	TAP-M100T/ TAP-M200	
TAP-M471-SR10	100G	70/30	2.8dB	6.6dB	MPO/MTP (UPC)	TAP-M100T/ TAP-M200	
TAP-M471T	40G/100G	70/30	2.8dB	6.4dB	MPO/MTP (UPC)	TAP-M100T/ TAP-M200	
TAP-M471ULT	40G/100G	70/30	2.8dB	7.4dB	MPO/MTP (UPC)	TAP-M202ULT	
TAP-M252LT	100M/1G	50/50	3.9dB	3.9dB	LC (UPC)	TAP-M100T/ TAP-M200	MM (62.5/125 micron) for 850nm wavelength
TAP-M262LT	100M/1G	60/40	3.15dB	5.15dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M272LT	100M/1G	70/30	2.2dB	6.2dB	LC (UPC)	TAP-M100T/ TAP-M200	

Table 2-2 describes the SM, LR TAP modules, and Table 2-3 describes the BiDi TAP module[1].

Table 2-2: SM, LR TAP Modules

G-TAP M Series Module	Speed	Split Ratio	Max Network Loss	Max TAP Loss	Connector	Mounting Chassis	Fiber Type
TAP-M253	1G/10GBase	50/50	3.7dB	3.7dB	LC (UPC)	TAP-M100T/ TAP-M200	SM (9/125 micron) for 1310nm or 1550nm wavelength
TAP-M253T	1G/10G/25G/ 40G/ 100GBase	50/50	3.7dB	3.7dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M253LT	1G/10G/25G/ 40G/ 100GBase	50/50	3.7dB	3.7dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M253ULT	1G/10G/25G/ 40G/ 100GBase	50/50	3.7dB	4.2dB	LC (UPC)	TAP-M202ULT	
TAP-M263LT	1G/10G/25G/ 40G/ 100GBase	60/40	3.05dB	4.95dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M273	1G/10GBase	70/30	2.0dB	6.1dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M273T	1G/10G/25G/ 40G/ 100GBase	70/30	2.0dB	6.1dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M273LT	1G/10G/25G/ 40G/ 100GBase	70/30	2.0dB	6.1dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M273ULT	1G/10G/25G/ 40G/ 100GBase	70/30	2.0dB	6.6dB	LC (UPC)	TAP-M202ULT	
TAP-M453	40G/100G	50/50	3.7B	3.7dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M453T	40G/100G	50/50	4.3dB	4.3dB	MPO/MTP (UPC)	TAP-M100T/ TAP-M200	
TAP-M473	40G/100G	70/30	2.0dB	6.1dB	LC (UPC)	TAP-M100T/ TAP-M200	
TAP-M473T	40G/100G	70/30	2.8dB	6.7dB	MPO/MTP (UPC)	TAP-M100T/ TAP-M200	

NOTE: TAP-M453 and TAP-M473 support 100Gb CWDM4, in addition to LR4.

1. The insertion loss numbers were tested using MPO/MTP™ cabling.

Table 2-3 describes the BiDi TAP modules[1].

Table 2-3: BiDi TAP Modules

G-TAP M Series Module	Speed	Split Ratio	Max Network Loss	Max TAP Loss	Connector	Fiber Type
TAP-M506	40Gb	50/50	3.9dB	3.9dB	LC (UPC)	MM (50.5/125 micron) for 850nm/ 900nm wavelength
TAP-M506A	40Gb/100Gb	50/50	3.9dB	3.9dB	LC (UPC)	
TAP-M506T	1Gb/10Gb/ 25Gb	50/50	3.9dB	3.9dB	LC (UPC)	

Table 2-4 describes the MM, SR and SM, LR breakout panels.

Table 2-4: MM, SR and SM, LR Breakout Panels

G-TAP M Series Breakout Panel	Speed	Network Loss	Connector	Fiber Type
PNL-M341	40Gb SR4 100Gb SR4	≤0.70dB	MPO-12 (UPC)	MM (50 micron) for 850nm wavelength
	10Gb SR 25Gb SR	≤0.30dB	LC (UPC)	MM (50 micron) for 850nm wavelength
PNL-M341T	40Gb SR4 100Gb SR4	≤0.70dB	MPO-12 (UPC)	MM (50 micron) for 850nm wavelength
	10Gb SR 25Gb SR	≤0.30dB	LC (UPC)	MM (50 micron) for 850nm wavelength
PNL-M343	40Gb PLR4 100Gb PLR4	≤0.75dB	MPO-12 (APC)	SMF-28e for 1270 ~ 1630nm wavelength
	10Gb LR 25Gb LR	≤0.30dB	LC (UPC)	SMF 1310nm wavelength
PNL-M343T	40Gb PLR4 100Gb PLR4	≤0.70dB	MPO-12 (APC)	SMF-28e for 1310/1550nm wavelength
	10Gb LR 25Gb LR	≤0.30dB	LC (UPC)	SMF 1310/1550nm wavelength

Physical Weight and Dimensions

Table 2-5 describes the physical weight and dimensions of Chassis and TAP module.

Table 2-5: Physical Weight and Dimensions of Chassis and TAP module

Feature	Height	Width	Depth	Weight
Chassis	1.72in (4.38cm)	17.3in 44.0cm)	6.10in (15.5cm)	Empty: 3.84lbs (1.7kg) Full: 12.2lbs (5.5kg)
TAP Module	0.84in (2.14cm)	5.38in (13.7cm)	8.94in (22.7cm)	1.4lbs (0.64kg)
Breakout Panel	0.84in (2.14cm)	5.38in (13.7cm)	8.94in (22.7cm)	1.4lbs (0.64kg)

Electrical Characteristics

Table 2-6 describes the electrical characteristics of the G-TAP M Series modules.

Table 2-6: Electrical Characteristics of the G-TAP M Series Modules

Type	Specification
Power Requirements	Not Applicable. The G-TAP M Series modules are passive.
Link TAP Capacity	Each module taps up to six duplex links (three for MPO cabling). Each link produces two outputs: one from each direction in the link. Up to six modules can be housed in the 1 RU G-TAP M Series chassis.
Operating Temperature	32°F to 140°F (0°C to 60°C)
Storage Temperature	-4°F to 158°F (-20°C to 70°C)
Storage Humidity	10% to 90%, relative, non-condensing
Altitude	Up to 15,000ft (4.6km)

Appendix

Troubleshooting and Best Practices

This appendix provides information about some of the common issues that you may face when cabling TAPs and how to troubleshoot the issues. It also lists few best practices that you must follow to ensure smooth cabling. Refer to the following sections for details:

Common Issues and Troubleshooting

This section lists few common issues that you may face when cabling TAPs and how to troubleshoot the issues.

Table 0-1: Common Issues and Troubleshooting

Common Issues	Description	Troubleshooting Tips
Misconnected cabling or using wrong cable types	Sometimes, cables may be mislabeled due to which you may have plugged in the wrong cable.	Each transceiver is designed and optimized to work with specific cables for specified distances. Ensure that you connect the appropriate transceivers and cables on both ends. Refer to the *"Cable Matrix for Copper TAPs and Fiber TAPs"* in the *GigaVUE-OS Compatability and Interoperability Matrix*.
Failure to breakout monitored links	There may be instances when the switch and router connections that use standard duplex cabling are not broken out into simplex fiber cables on the receiving end.	Ensure that both monitor links are broken out into simplex fiber cables and are individually attached to the Rx connections on the receiving end.
Flipped connections	Sometimes, a duplex cable may not be crossed properly such that the Tx on one end is connected to the Rx on the other end. The issue could be anywhere along the cabling path or the patch panels, which means that the light is not passing through the cable.	Disconnect the plastic housing and flip the LC connections on one end of the connection.
Mismatched transceivers	The transceiver type used on both ends of the connection is not identical.	Ensure that the transceiver type is identical on both ends of the connection. For example, a 10G LR4 transceiver that sends traffic from one end must be paired with the same transceiver type on the receiving end.

Table 0-1: (Continued)Common Issues and Troubleshooting

Common Issues	Description	Troubleshooting Tips
Dirty connections	Dust, dirt, and oils all inhibit light and cause poor connections.	Use new cables with dust caps. Clean all connections before use. Refer to the *Best Practices* on page 30.
Bad transceivers	A transceiver is an electronic component that is designed to transmit and receive light. It can malfunction.	Always keep spare transceivers and replace them as required.
Bad TAPs	Passive TAPs are the most reliable networking and security products available because they contain a minimal number of components and do not require any software. But like any hardware, a TAP could be defective.	Always keep spare TAPs and replace them as required.
Crimped Cabling	If a bend is too tight, the fiber will not be able to properly transmit the signal.	Ensure that the bends in the cabling are not tight so that the fiber transmits signal properly.
Bad connections	Light degrades at given rates over distance. Light may also degrade with too many connections. Both these scenarios may cause bad connections	Do not exceed specified maximum distances. Be aware light degrades with each connection; use as few patch panels as possible.

Generic Troubleshooting Steps

Most TAP failures are due to improper cabling. To troubleshoot a TAP failure, you must ensure that the light is not impeded or broken along the way from the beginning till the end of the connection. Figure 0-1 is a flow chart that illustrates the generic steps to troubleshoot TAP failures. Follow the steps provided in the flow chart to isolate the issue and take corrective action.

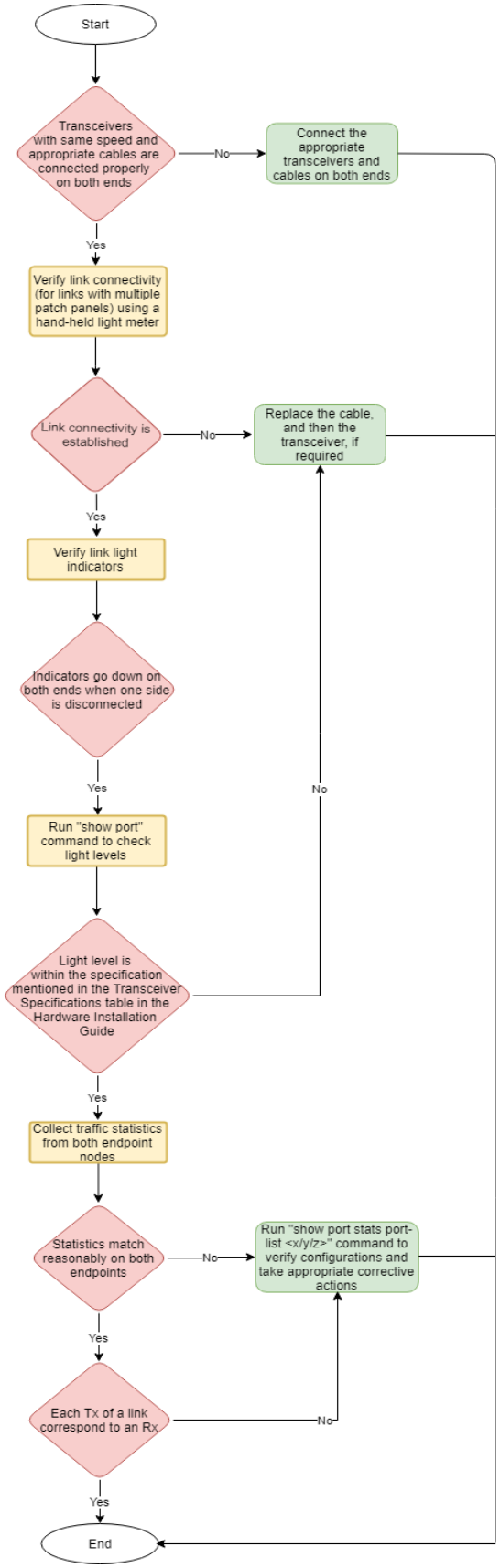


Figure 0-1: Troubleshoot Generic TAP Issues

Best Practices

When connecting TAPs, ensure you adhere to the following best practices:

- Prior to connecting any cable, both the port and cable adapter must be cleaned as follows:
  - Clean each port on the TAP using the optical fiber cleaner pen prior to cable insertion.
  - Clean the MPO/MTP adapters using the MPO/MTP port cleaner pen.
  - Clean the LC adapters using the LC port cleaner pen.
  - Clean each cable adapter using the optical fiber cleaner cassettes prior to cable insertion.
  - Visually inspect cable adapter to ensure no dust particles are present on the adapter front.
  - If dust is clogged in the cable and it is not possible to clean, use a new cable.
- Port caps must be installed when ports on the TAP are not in use.

NOTE: The G-TAP models M471 and M471-SR10 are highly susceptible to dust. Properly clean all connections before use.

Appendix B

Additional Sources of Information

This appendix provides additional sources of information. Refer to the following sections for details:

Documentation

Gigamon provides additional documentation for the GigaVUE H Series on the Gigamon Customer Portal:

Document	Summary
GigaVUE HC3 Hardware Installation Guide	Describes how to unpack, assemble, rack-mount, connect, and perform the initial configuration of GigaVUE-HC3 nodes. Also provides reference information for the GigaVUE-HC3 node, including specifications.
GigaVUE HC2 Hardware Installation Guide	Describes how to unpack, assemble, rack-mount, connect, and perform the initial configuration of GigaVUE-HC2 nodes. Also provides reference information for the GigaVUE-HC2 node, including specifications.
GigaVUE HC1 Hardware Installation Guide	Describes how to unpack, assemble, rack-mount, connect, and perform the initial configuration of GigaVUE-HC1 nodes. Also provides reference information for the GigaVUE-HC1 node, including specifications.
GigaVUE TA Series Hardware Installation Guide	Describes how to unpack, assemble, rack-mount, connect, and perform the initial configuration of GigaVUE-TA10, GigaVUE-TA40, GigaVUE-TA100, GigaVUE-TA100-CXP, and GigaVUE-TA200 nodes. Also provides reference information for these node, including specifications.
GigaVUE-OS CLI Reference Guide	Describes how to configure and operate the GigaVUE-OS software from the command-line interface.
GigaVUE-OS and GigaVUE-FM Administration Guide	Describes how to use the web-based GigaVUE-FM to configure and operate the GigaVUE H Series and GigaVUE TA Series software.
GigaVUE-FM User's Guide	Describes how to use the GigaVUE-FM web-based interface to configure and operate Gigamon nodes. GigaVUE-FM includes the same features and functionality as the H-VUE interface but offers additional features not available in H-VUE.

Document	Summary
GigaVUE Release Notes	Describes new features and known issues in a release.

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