Software Version 7.13.2

GeoProbe® G10

G10 Media Probe Installation Guide

Supports

IIC200/IAP320
IIC200/IAP200
IIC100/IAP320
IIC100/IAP200

Tektronix communications

Tektronix Communications
3033 W President George Bush Highway
Plano, Texas 75075
+1 469-330-4000 (voice)
www.tekcomms.com Web site

uadocfeedback@tektronix.com (Technical Publications email)

Plano, Texas USA - serves North America, South America, Latin America
+1 469-330-4581 (Customer Support voice)
uaservice@tek.com (Customer Support USA email)

London, England UK - serves Northern Europe, Middle East, and Africa
+44-1344-767-100 (Customer Support voice)
uaservice-uk@tek.com (Customer Support UK email)

Frankfurt, Germany DE - serves Central Europe and Middle East
+49-6196-9519-250 (Customer Support voice)
uaservice-de@tek.com (Customer Support DE email)

Padova, Italy IT - serves Southern Europe and Middle East
+39-049-762-3832 (Customer Support voice)
uaservice-it@tek.com (Customer Support IT email)

Melbourne, Australia - serves Australia
+61 396 330 400 (Customer Support voice)
uaservice-ap@tek.com (Customer Support Australia and APAC email)

Singapore - serves Asia and the Pacific Rim
+65 6356 3900 (Customer Support voice)
uaservice-ap@tek.com (Customer Support APAC and Australia email)

Tektronix Communications, Inc. Proprietary Information
992-0451-08-005-140228

WHAT'S NEW IN G10 MEDIA PROBE 7.13.2?

Feature ID	Description	Refer to:
F-02470	**New IAP320 Applications Blade** The G10 probe supports the new IAP320 application blade.	■ Upgrade Applications Blade (IAP) ■ IIC200 + IAP200/IAP320 + SA200R Media Probe Cabling ■ IIC200 + IAP200/IAP320 + SA100R Media Probe Cabling ■ IIC100 + IAP200/IAP320 + SA200R/SA100R Media Probe Cabling ■ Comprehensive RTP Media Capture SAS Cabling

Table of Contents

1 G10 New Installation and Upgrade Workflows

Refer to the following sections for installation or upgrade details:

- G10 Media Probe New Installation Workflow
- G10 Media Probe Upgrade Workflow

Installation and upgrades of the G10 units must be performed by persons with advanced technical knowledge of electrical wiring. The installer will be stripping wires, attaching lugs, and wiring several components together. Wiring the components incorrectly can result in damage to the G10 and other components.

The following table lists the supported components in a control plane probe configuration. Refer to G10 Media Probe New Installation Workflow or G10 Media Probe Upgrade Workflow for install and upgrade details.

G10 Media Probe Primary Chassis	
Slot 1 (Bottom)	▪ IAP320 blade (front) and PRM300 RTM (rear) *OR* ▪ IAP200 blade (front) and PRM200 RTM (rear)
Slot 2 (Top)	▪ IIC200 blade (front) and SRM200 RTM (rear) *OR* ▪ IIC100 blade (front) and TRM100 RTM (rear)
G10 Media Probe Expansion Chassis	
Slot 1 (Bottom)	▪ IIC200 blade (front) and SRM200 RTM (rear) *OR* ▪ IIC100 blade (front) and TRM100 RTM (rear)
Slot 2 (Top)	▪ IIC200 blade (front) and SRM200 RTM (rear) *OR* ▪ IIC100 blade (front) and TRM100 RTM (rear)
Fuse Panel (DC units only)	
SAS Storage Enclosures (Controller and Expansion) ▪ SA200R - One controller enclosure supports seven JBOD expansion enclosures. *Due to the increased performance of the SA200R, only one controller enclosure is required for a deployment using this model.* ▪ SA100R - One controller enclosure supports three JBOD expansion enclosures.	

IIC200 CONFIGURATION

Figure 1.1 shows the front view of the G10 media probe components for the IIC200 configuration.

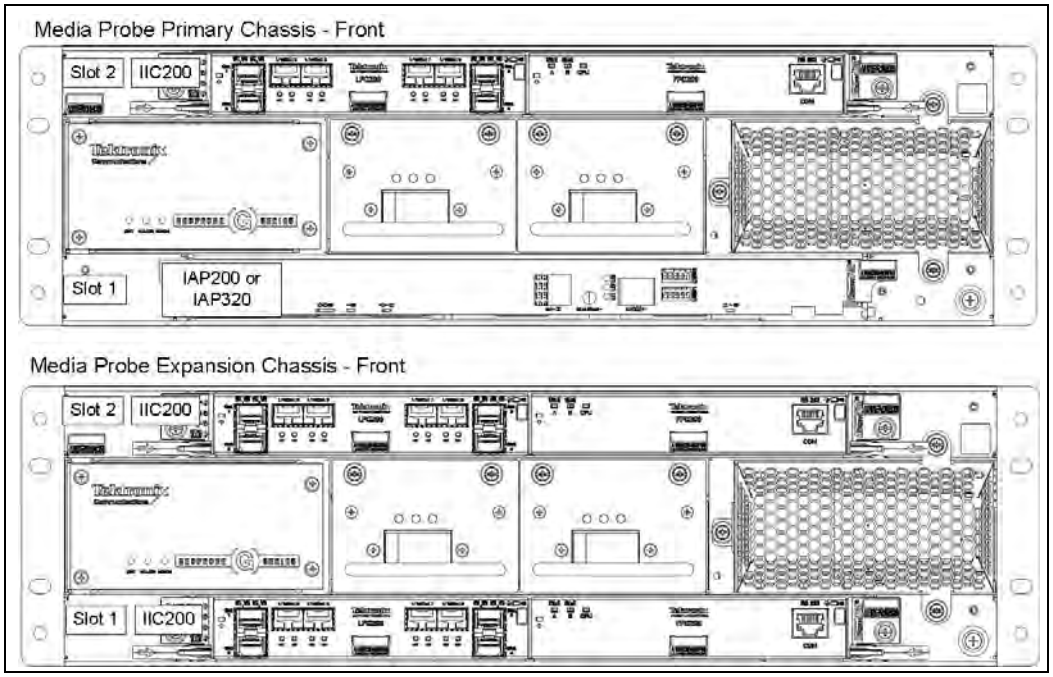


Figure 1.1 - Media Probe Front (IIC200 Configuration)

Figure 1.2 shows the rear view of the G10 media probe components for the IIC200 configuration.

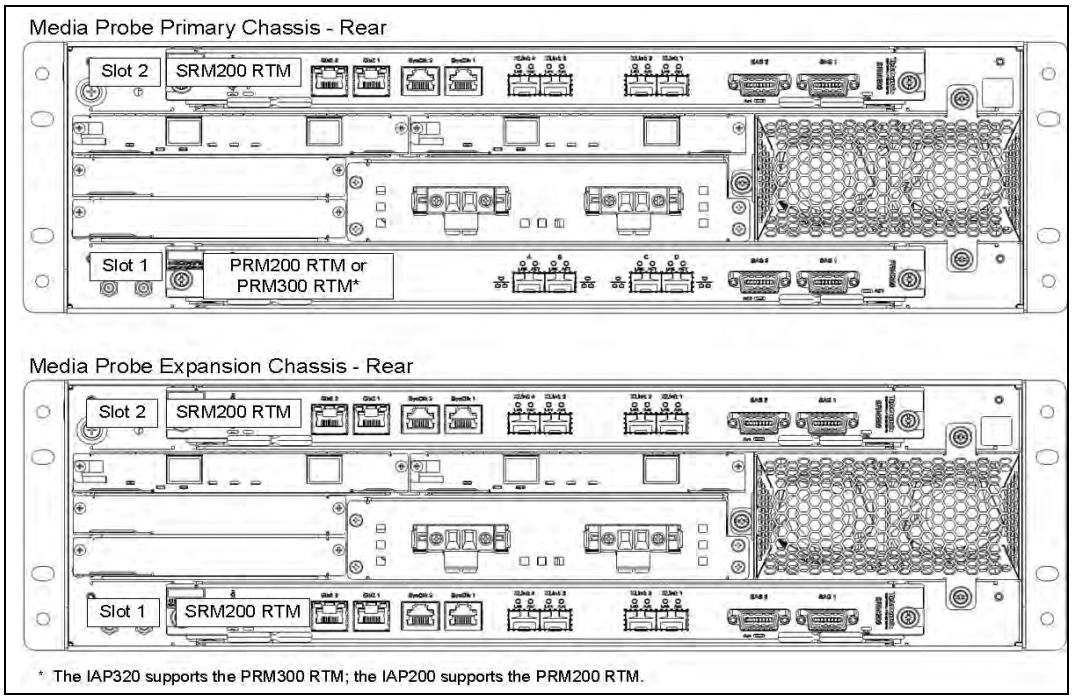


Figure 1.2 - Media Probe Rear (IIC200 Configuration)

IIC100 CONFIGURATION

Figure 1.3 shows the front view of the G10 media probe components for the IIC100 configuration.

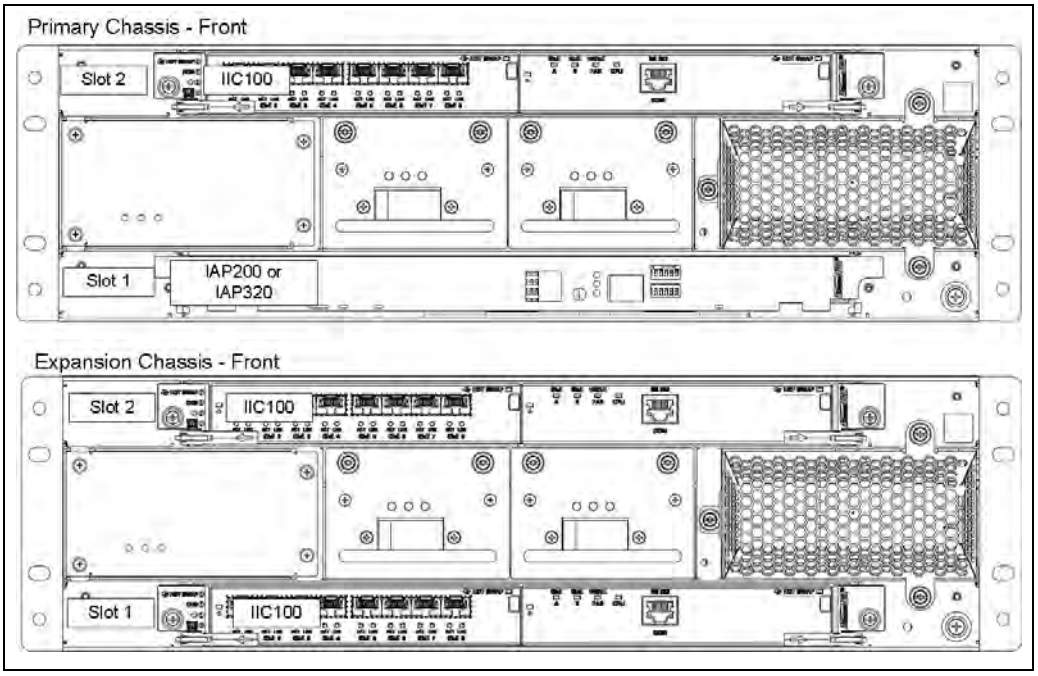


Figure 1.3 - Media Probe Front (IIC100 Configuration)

Figure 1.4 shows the rear view of the G10 media probe components for the IIC100 configuration.

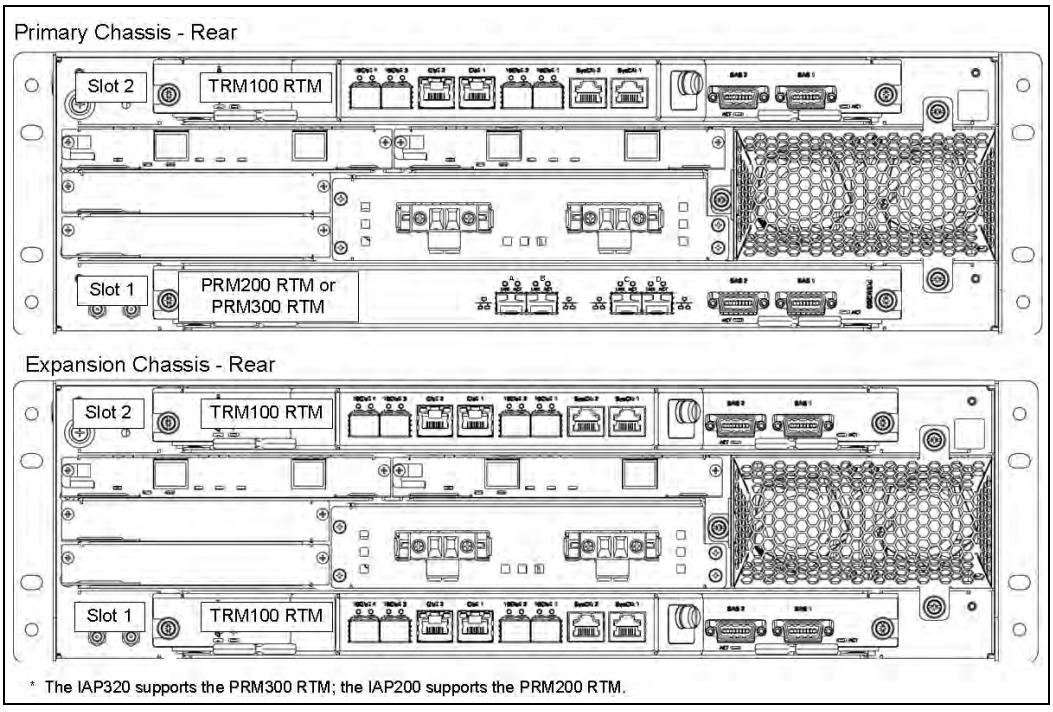


Figure 1.4 - Media Probe Rear (IIC100 Configuration)

G10 Media Probe New Installation Workflow

To protect the G10 from electrostatic discharge (ESD) damage, be sure to wear an anti-static device while working with the hardware. An anti-static wrist strap is provided with the G10.

Table 1.1 summarizes the installation steps for a G10 media probe. Refer to the respective chapter for more details. See also **Appendix A, G10 Media Probe Operating Specifications** for details.

Table 1.1 - G10 Installation Summary

Step	Installation Step	Refer to:
1	Install Hardware and Power Cabling	Chapter 2
2	Connect Ethernet and SAS Cabling	Chapter 3
3	Power On G10 and Configure Network Connectivity	Chapter 4
4	Connect Control Plane Probe to Monitored Network	Chapter 5

Refer to **Appendix C, Maintenance Guidelines** for procedures for removing and replacing G10 hardware components such as the blades and RTMs.

G10 Media Probe Upgrade Workflow

Table 1.2 summarizes the steps for upgrading G10 control plane probes. Refer to the respective page for details. See also **Appendix A, G10 Media Probe Operating Specifications** for details.

Table 1.2 - G10 Upgrade Workflow

Step	Upgrade Step	Refer to:
1	Pre-Deployment Planning	Page 14
2	Upgrade Iris Server and Probe Software	Page 16
3	Upgrade hardware:	
	Upgrade Applications Blade (IAP)	Page 16
	Upgrade IIC Blade	Page 17
4	Connect Ethernet and SAS Cabling	Page 51
5	Connect G10 to the Monitored Network	Page 110
6	Configure Probe Setup	Page 18

PRE-DEPLOYMENT PLANNING

To ensure minimal probe downtime, you must plan for and complete the following requirements BEFORE upgrading a G10 probe to the media probe primary chassis.

Prior to hardware upgrades, the Iris server and G10 probe MUST:

- ***Have the minimum software version required for the installed blades. Contact Tektronix Customer Support for assistance.***
- ***Be on the same version of software; Iris server version must match G10 probe version.***

G10 Monitored Ports

By design, the G10 media probe primary chassis supports monitoring control plane and media traffic as described in **Table 1.3**. ***For control plane traffic over SCTP on the IIC100, the traffic MUST BE SEGREGATED by port type; you cannot mix media traffic and control plane traffic on the same port type (1G or 10G). For IIC100 configurations refer to Monitored Link Cabling (IIC100).***

The G10 Media probe IIC200 configuration primary chassis can monitor both control plane and media traffic on both 1G and/or 10G ports. For IIC200 configurations, refer to Monitored Link Cabling (IIC200) for details.

Table 1.3 - Monitored Traffic Support per Port Type

IIC	Traffic Type	Monitored Port Support
IIC100	Control Plane over TCP or UDP	1G or 10G
	Control Plane over SCTP	**1G only**
	Media	**10G only**
IIC200	Control Plane	1G or 10G
	Media	1G or 10G

IIC100 CONFIGURATIONS ONLY: Due to the required media probe configuration, only two 10G ports on the primary chassis TRM100 RTM are used to monitor RTP/RTCP media traffic. If you are converting a deployed G10 that uses all FOUR of the 10G ports on the TRM100 RTM, you must reallocate the 10G traffic to the TWO available ports (labeled 10GbE 1 and 10GbE 3). Refer to Monitored Link Cabling (IIC100) for details.

Ethernet Connections

- The expansion chassis requires **two** additional physical Ethernet connections and associated IP addresses for network connectivity (see Network Connectivity for details). This is required of SHMM network access.
- If upgrading the **primary** chassis from the IAP100 to the IAP200, Ethernet connections will be moved from the front of the chassis to the rear of the chassis. ***Verify that the current Ethernet cabling can reach the rear of the chassis; you may need to pull extra cabling.***

Required Cables

Refer to **Chapter 3**, **Connect Ethernet and SAS Cabling** for required Ethernet and SAS cabling details. Cabling varies depending on the IIC version and the storage controller version.

Install Expansion Chassis

- Determine an appropriate location for the media probe G10 chassis and storage enclosures (see Rack Space Considerations for details). *Depending on available rack space, you may need to move the G10 chassis that will be upgraded to the primary chassis to a new rack location.*

IIC100 CONFIGURATIONS: Before installing the G10 chassis, verify that the SYSCLK DIP switch settings are TERMINATED on all THREE TRM100 RTMs prior to installing the chassis in the rack (see IIC100: TRM100 RTM SYSCLK Settings for details).

- Install the expansion chassis near the G10 that will be upgraded to be the primary chassis. Refer to Install G10 Chassis for hardware installation details.
- Install *power* cabling for the expansion chassis; refer to Connect Power Cabling. ***DO NOT power up the expansion chassis at this time.***

The AC PEMs do not have breaker switches; therefore, DO NOT connect the G10 AC cables to the rack power outlet. Connect only the AC power cables into the AC PEMs on the rear of the G10 unit. You will not connect the AC cables into the rack power outlet until AFTER the storage enclosures are powered up (see Power On the System for details).

Upgrade Iris Server and Probe Software

Before upgrading a probe's hardware, you must upgrade the Iris Server and Probe software to the minimum software version your upgrade scenario requires (see **Table 1.4**).***The Iris server and G10 probe MUST be on the same version of software.***

- Upgrade Iris Server first. Contact Tektronix Communications customer support for assistance.
- Upgrade probe software using the Software Management GUI in Iris Admin. Refer to the ***Iris Operations, Administration, and Maintenance Guide*** or Admin online help for detailed procedures.

Table 1.4 - Minimum Software Version Required

Probe Configuration	Minimum Version (both Probe and Server MUST match)
IIC100 + IAP200	7.11.3
IIC200 + IAP200	7.12.2
IIC100 + IAP320 IIC200 + IAP320	7.13.1 SP6

Upgrade Applications Blade (IAP)

The Iris server and probe software must be upgraded to the minimum software version that your expansion scenario requires BEFORE performing this procedure (see Table 1.4). The Iris server and G10 probe MUST be on the same version of software.

This procedure explains how to replace an IAP100 blade and PRM100 RTM with an IAP200 blade and PRM200 RTM or an IAP320 blade and PRM300 RTM. Refer to **Figure 1.1** through **Figure 1.4** for component location.

This upgrade procedure applies only when the G10 chassis will be used in a media probe configuration. If you are upgrading a G10 that will be used in a single probe configuration, refer to the G10 Installation Guide for details about upgrading.

Step	Action
1.	Shut down the probe and arrays as described in **Shut Down Procedure**.
2.	**IIC100 Configurations Only:** On the TRM100 RTM (rear top slot of G10), set the DIP switch settings to TERMINATED. ***All eight DIP switches must be set to the DOWN position for both the primary chassis and the expansion chassis.*** See IIC100: TRM100 RTM SYSCLK Settings for details.

If the G10 is supporting two controller disk arrays, prior to removing the cabling, identify and label the controllers on the disk array attached to the currently installed IAP100 SAS AMC in the front of the probe. Label Controller 0 as "Controller 0 to SAS Port 1" and Controller 1 as "Controller 1 to SAS Port 2". You will be reconnecting the SAS cables to the PRM200 RTM on the rear of the probe after its install.

3. Remove SAS and Ethernet cabling from the IAP and RTM and remove the blades from the chassis. This cabling will be reconnected to the PRM200 RTM on the rear of the probe. ***For IAP100, verify the current Ethernet cabling can reach the rear of the chassis; pull extra cabling if necessary.***

4. Perform one of the following:

   - **IAP200 configurations**: Insert the PRM200 RTM in the rear bottom slot of the chassis and tighten its thumbscrews.

   - **IAP320 configurations**: Insert the PRM300 RTM in the rear bottom slot of the chassis and tighten its thumbscrews.

5. Reconnect the SAS cabling (that you removed from the IAP100) to SAS Ports on the PRM200/PRM300 RTM (rear of G10). SAS 1 should connect to Controller 0 and SAS 2 should connect to Controller 1 (see **Chapter 3**, **Connect Ethernet and SAS Cabling** for cabling diagrams).

6. Insert an RJ45 (or optional fiber) SFP into Port A on the PRM200/PRM300 RTM (rear).

7. Connect the Ethernet cable you removed from the IAP100 to Port A on the PRM200/PRM300 RTM (rear).

8. Insert the IAP200/IAP320 in the front bottom slot of the G10. ***DO NOT power up the primary chassis at this time.***

9. Continue with the upgrade workflow defined in **Table 1.2**.

UPGRADE IIC BLADE

Perform the following steps to upgrade one or more IIC100/TRM100 RTMs to the IIC200/SRM200 RTM configuration. ***You cannot mix IIC100s and IIC200s within the same media probe; all IICs must be the same model within the media probe.***

Prerequisites

- ***The Iris server and probe software must be upgraded to the minimum software version that your expansion scenario requires before performing this procedure (see Table 1.4). The Iris server and G10 probe MUST be on the same version of software.***

When upgrading to the SRM200 RTM on the primary chassis, the 10G monitored network Ethernet connections will be moved from the rear of the chassis to the front of the chassis on the IIC200. Verify that the current Ethernet cabling can reach the front of the chassis; you may need to pull extra cabling.

- Verify the J8 jumper setting on the SRM200 RTM prior to installation (see the IIC200: SRM200 RTM SYSCLK Settings for details).

Step	Action
1.	Shut down the probe and arrays (see **Shut Down Procedure** or details). Wait until the IIC100 H/S LED is solid blue (for all three IIC100s if upgrading an existing media probe). See **Figure 1.5**.

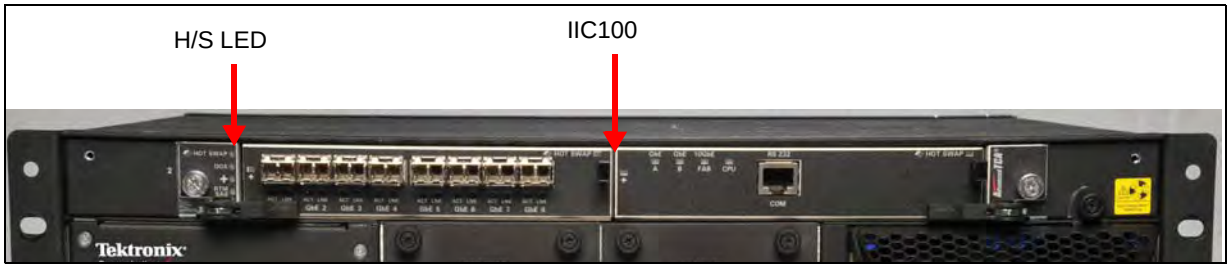


Figure 1.5 - G10 IIC100 Primary Chassis (Before Upgrade)

Before removing the TRM100 RTMs, if the G10 is supporting two controller disk arrays, label the SAS cables to the appropriate controllers before removing cabling (for example, "Controller 0 to SRM200 RTM SAS Port 2" and "Controller 1 to SRM200 RTM SAS Port 1"). You will be reconnecting the SAS cables to the SRM200 RTM on the rear of the probe after its install.

2. Remove the SAS and Ethernet cabling from the TRM100 RTM(s) and remove them from the chassis.
3. Remove the Ethernet cabling from the IIC100(s) and remove the blades from the chassis.
4. Install the SRM200 RTM(s) and tighten thumbscrews.
5. Insert all three IIC200s and tighten thumbscrews.
6. Continue with the upgrade workflow defined in **Table 1.2**.

***Ethernet cabling from the G10 to one storage controller is different between an IIC100 configuration and an IIC200 configuration. Make sure you use the proper cabling diagram once you upgrade to the IIC200 configuration; refer to* Chapter 3, Connect Ethernet and SAS Cabling.**

CONFIGURE PROBE SETUP

Probe configuration procedures must be performed by Tektronix personnel. All expansion procedures must be completed prior to performing probe configuration procedures. Refer to *Table 1.2* for the upgrade workflow.

Power On Media Probe

After all of the hardware is upgraded and the cabling is complete, you can power on the media probe. Refer to Power On the System for details.

Media Probe Setup

After completing the hardware upgrades, call Customer Support to continue with the media probe setup process.

Probe setup (using probeSetup utility or G10 Web Configuration GUI) is required to properly integrate the replacement blade(s) into the media probe and to perform cabling validation.

IrisView OAM Configuration Updates

- Check the probe configuration on Probe Management GUI in Iris Admin.
- **For ALL Media Probe expansion scenarios,** reconfigure the physical ports on Probe Management GUI in Iris Admin and re-provision links.
- Reconfigure the disk array by applying the appropriate stacked probe storage array configuration profile to the probe; ***ALL call records stored on the probe will be lost.***

Application and Data Verification

- Verify that all G10 applications are running.
- Verify traffic on ISA and IPA.

2 Install Hardware and Power Cabling

Before You Begin

Installation of the G10 units must be performed by persons with advanced technical knowledge of electrical wiring. The installer will be stripping wires, attaching lugs, and wiring several components together. Wiring the components incorrectly can result in damage to the G10 and other components.

A switch or circuit breaker must be included in the building installation, and it must be in close proximity to the equipment and within easy reach of the operator. It must be marked as the disconnecting device for the equipment.

You will need the following supplies for G10 installations:

- ❒ A Phillips head screwdriver #1 and #2 (10-inch length or longer recommended for two-post rack installs)
- ❒ A Flat head screwdriver
- ❒ A laptop or PC with an Ethernet cable to connect to the G10 probe, which requires Web access for probe configuration
- ❒ Rackmount screws for mounting equipment to the rack/cabinet (Tektronix provides brackets for two-post and four-post racks)
- ❒ Wire cutter
- ❒ Wire stripper

- ❒ Wire crimp tool
- ❒ Power cables for connecting the fuse panel to the power supply
  (The fuse panel input terminals accept up to #2 AWG two-hole lug connectors on 1/4” screw terminals with 5/8” spacing—torque to 62 in-lbs)

Verify SYSCLK Settings

The G10 primary and expansion chassis use the SYSCLK jumper settings for cage-to-cage timing distribution. You must verify these settings prior to hardware installation; location of these jumpers varies per IIC configuration:

- IIC200: SRM200 RTM SYSCLK Settings
- IIC100: TRM100 RTM SYSCLK Settings

IIC200: SRM200 RTM SYSCLK Settings

For IIC200 configurations, the G10 primary and expansion chassis use the SYSCLK jumper settings on the SRM200 RTM for cage-to-cage timing distribution. There are THREE SYSCLK jumpers (J8) on the media probe: one on the primary chassis SRM200 RTM, and two on the expansion chassis SRM200 RTMs.

ALL THREE SRM200 RTM J8 jumper settings MUST be set to TERMINATED.

- Tektronix ships every expansion chassis with both SRM200 RTMs set to TERMINATED.
- Verify the primary chassis’ SRM200RTM is set to TERMINATED.
- If replacing SRM200 RTMs during maintenance, you must verify the J8 jumper is set to TERMINATED prior to installation (see **Figure 2.1** for details).

The J8 jumper settings are only accessible when the board is removed from the chassis. Contact Customer Support for assistance in configuring the J8 jumper settings.

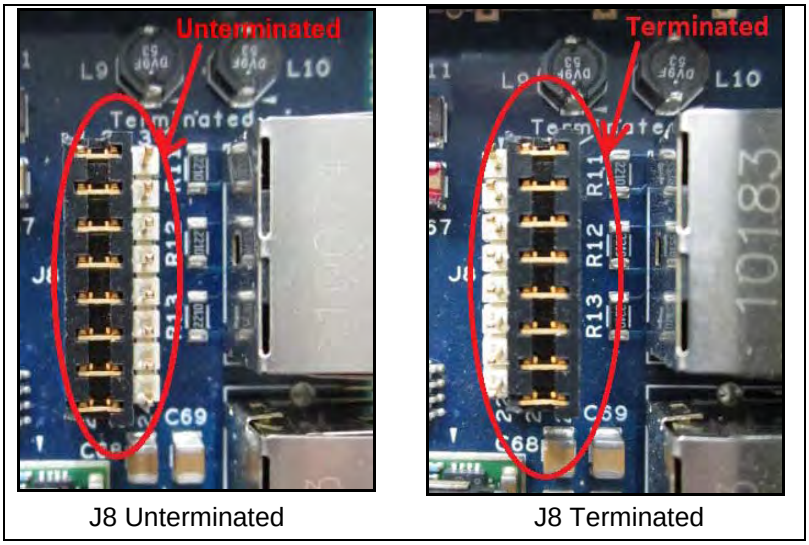


Figure 2.1 - SRM200 RTM SYSCLK Jumper (J8) Settings

IIC100: TRM100 RTM SYSCLK Settings

Before cabling the media probe, you must verify that the SYSCLK settings on the TRM100 RTMs on both chassis are set correctly.

The primary and expansion chassis use the SYSCLK connectors for cage-to-cage timing distribution. You must verify proper settings for the SYSCLK DIP switches on each TRM100 RTM (1 RTM on the primary chassis and 2 RTMs on the expansion chassis). The TRM100 RTM provides access to the SYSCLK termination switch behind a faceplate (**Figure 2.2**). Loosen the thumbscrew to access the DIP switches.

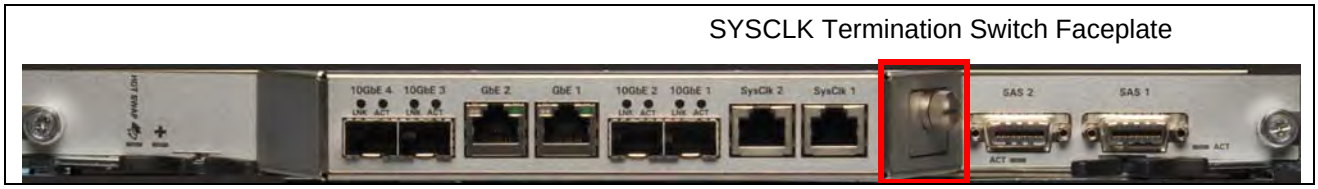


Figure 2.2 - TRM100 SYSCLK Termination Switch

There are THREE SYSCLK termination switches on the media probe: two on the expansion chassis and one on the primary chassis. Verify the DIP switch settings are ALL set to TERMINATED as shown below. All eight DIP switches must be set to the DOWN position.

	**Up (open/off) BRIDGED**	***INCORRECT DIP switch setting for the Media Probe.***
	**Down (closed/on) TERMINATED**	***CORRECT DIP switch setting for the Media Probe. ALL THREE TRM100 RTM SYSCLK switches on the Media probe primary and expansion chassis must use this setting.***

G10 Media Probe Hardware Installation Workflow

To protect the G10 from electrostatic discharge (ESD) damage, be sure to wear an anti-static device while working with the hardware. An anti-static wrist strap is provided with the G10.

Table 2.1 summarizes the installation steps for each type of unit. Refer to the respective pages for each step for more details. See also **Appendix A**, **G10 Media Probe Operating Specifications** for details.

Table 2.1 - G10 Installation Summary

Step	Installation Steps	Refer to Page:
1	**Install G10 Chassis**	**Page 24**
2	**Install Storage Enclosures**	**Page 31**
3	**Install Fuse Panel**[a]	**Page 40**
4	**Connect Power Cabling**	**Page 43**

a. A fuse panel is required only for DC power configurations.

Refer to **Appendix C**, **Maintenance Guidelines**for procedures for removing and replacing G10 hardware components such as the blades and RTMs.

INSTALL G10 CHASSIS

Steps to install the G10 chassis vary depending on the type of rack. Refer to the appropriate section for your type of rack.

- Four-Post Rack, Front Mount
- Two-Post Rack, Mid Mount

G10 probes normally ship with blades and RTMs inserted into the chassis. If the blades and RTMs shipped separately from the chassis, refer to **Appendix C**, **Maintenance Guidelines** for procedures for inserting blades and RTMs.

Four-Post Rack, Front Mount

The G10 chassis must be securely mounted to the front of the four-post rack (also known as flush mount). Brackets shipped with the G10 provide labels for installing in 30-inch, 36-inch, 42-inch, and 1000 four-post racks. Please note that these values reflect general rack/cabinet sizes and do not represent specific distances.

The system is heavy and improper handling may lead to muscle strain or back injury. Have two people lift the system or use lifting aids and proper lifting techniques when handling the system. Do not use the PEM or Fan Tray handles to lift the chassis.

Step	Action

1. Determine the location in the rack in which you will install the G10 chassis (see Rack Space Considerations). Mark the location on the front and back of the rack posts or note the height measurement of the rack label. This will enable you to correctly align the front and rear brackets.

2. Align the side brackets and secure them to the sides of the G10 chassis using Phillips flat-head screws. Alignment varies per rack type:

   - 30-inch rack (see **Figure 2.3**)
   - 36-inch rack (see **Figure 2.4**)
   - 1000 mm rack (see **Figure 2.4**)
   - 42-inch rack (see **Figure 2.5**)

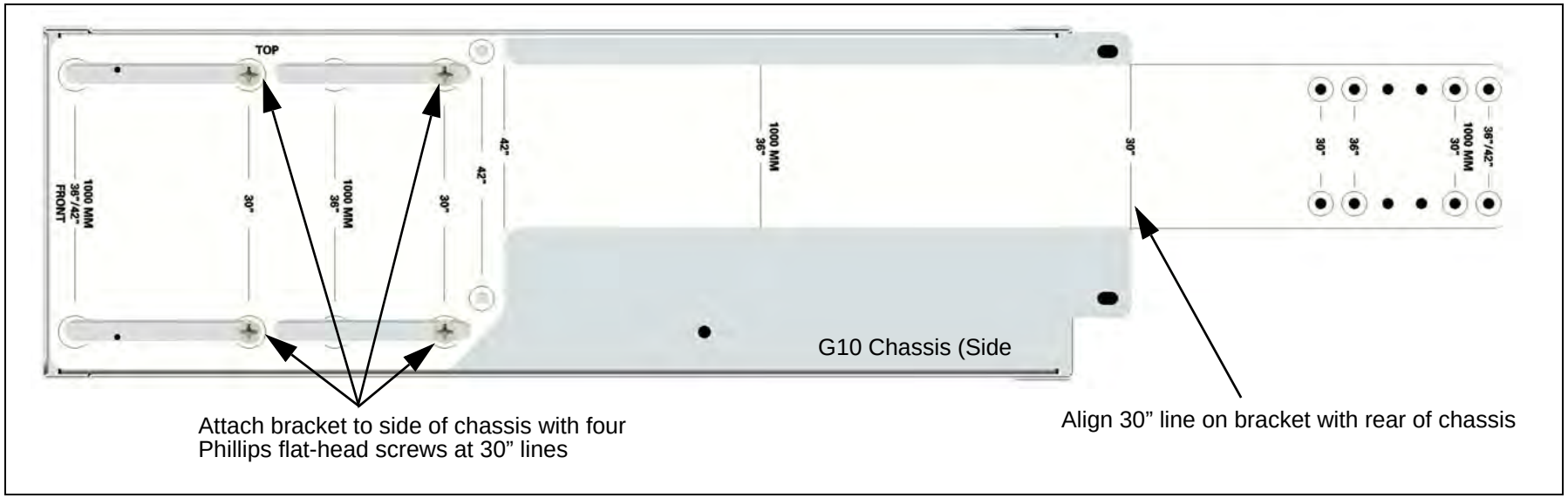


Figure 2.3 - G10 Chassis Install, Four-Post Rack, Front Mount (30-inch Rack)

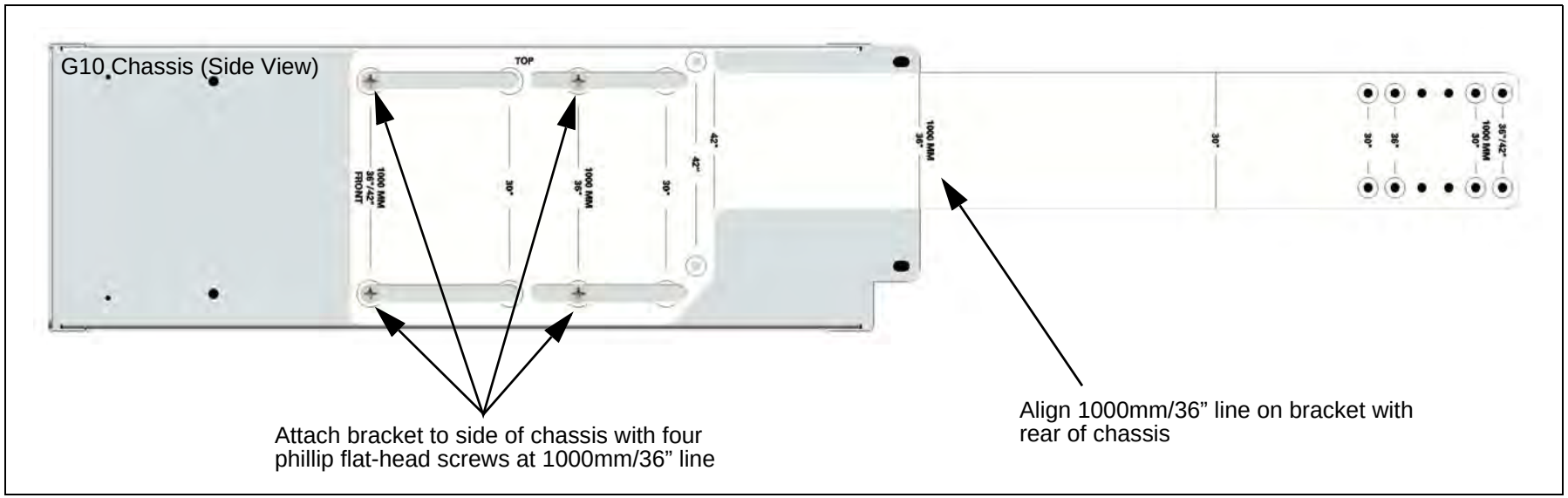


Figure 2.4 - G10 Chassis Install, Four-Post Rack, Front Mount (36-inch and 1000 mm Racks)

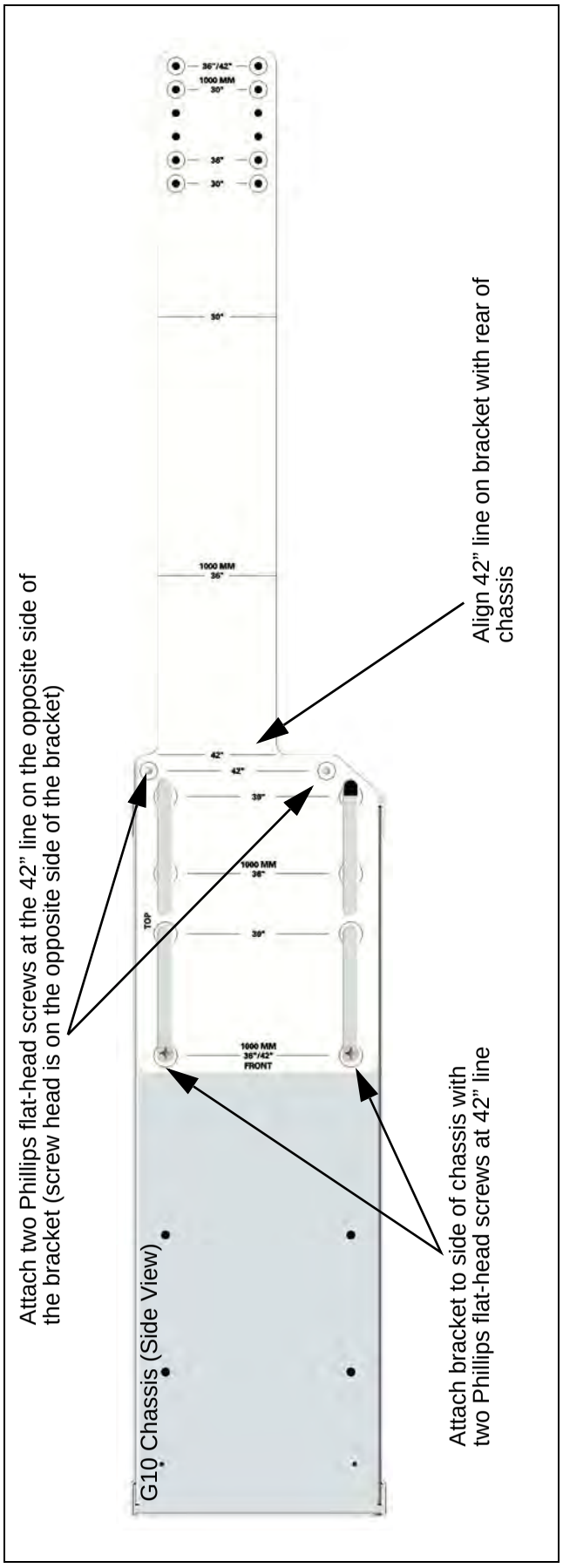


Figure 2.5 - G10 Chassis Install, Four-Post Rack, Front Mount (42-inch Rack)

3. Attach the rear brackets to the rear rack posts using two rackmount screws (**Figure 2.6**).

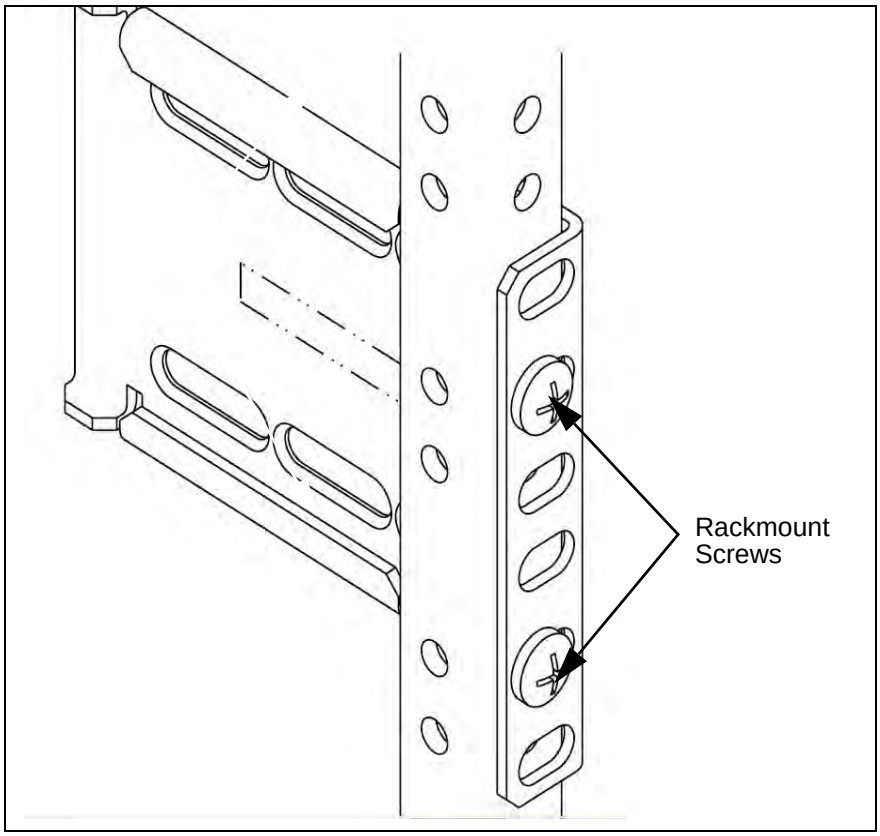


Figure 2.6 - Rear Bracket on Rack (Left)

Refer to **Figure 2.7** for the following steps (the 30-inch rack install is used as an example):

4. Two people: Position the G10 chassis in the rack and carefully slide the side brackets into the rear brackets. Slide the chassis until the front brackets are flush with the front rack posts.

5. Secure the front of the G10 chassis to the front rack posts using four rackmount screws.

6. Secure the side brackets to the rear brackets with Phillips pan-head screws and washers at the lines corresponding to your rack (30”, 36”, 42” or 1000 mm). Two or four screws are used depending on the rack.

7. Continue with Install Storage Enclosures.

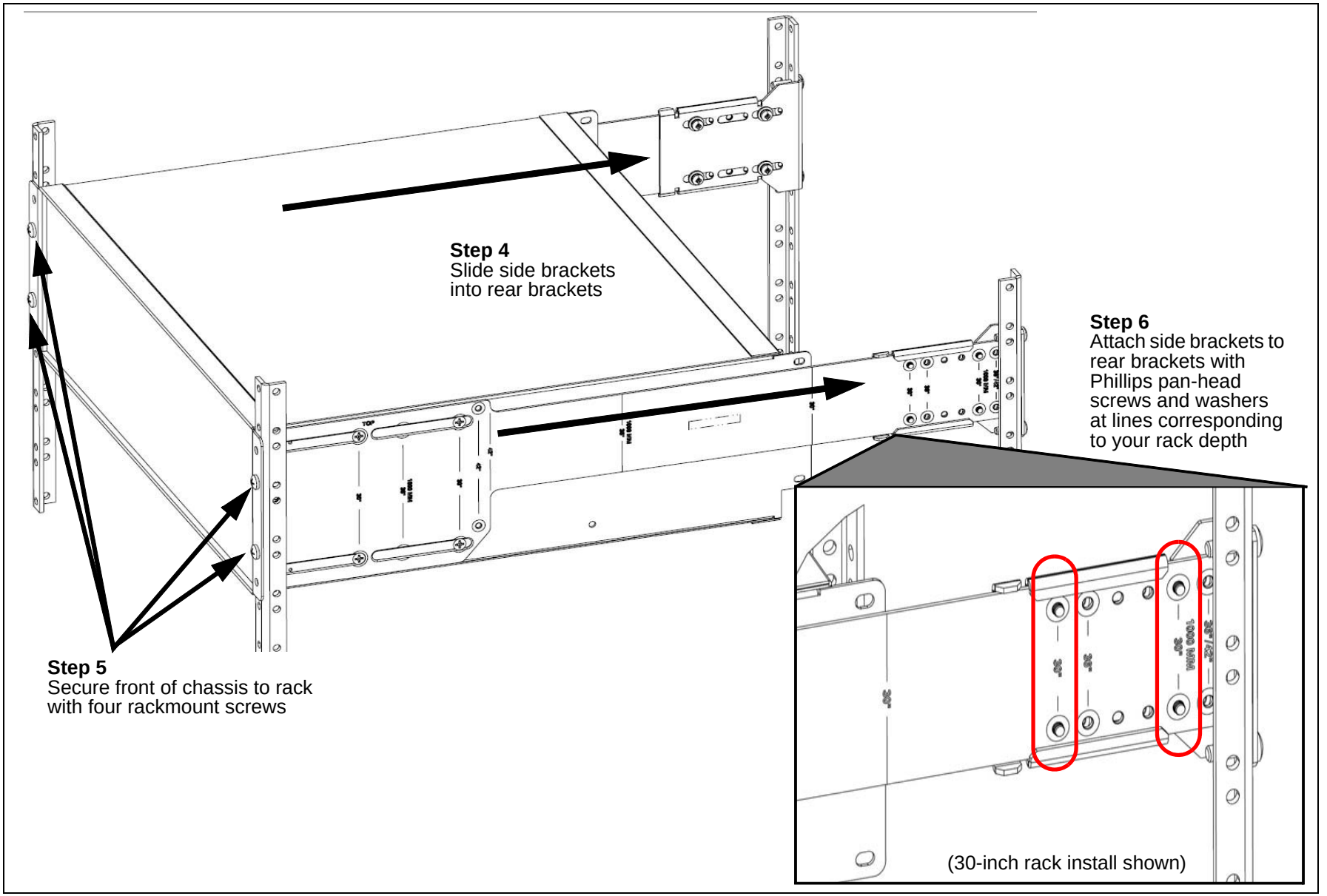


Figure 2.7 - G10 Chassis Install, Four-Post Rack, Front Mount (30-inch Rack Shown)

Two-Post Rack, Mid Mount

The G10 chassis must be securely mid-mounted to the two-post rack (also known as center mount). The provided brackets support mounting in a standard 19-inch wide rack. If mounting the chassis to a 23-inch wide rack, you must first install extension brackets before securing it to the rack.

The system is heavy and improper handling may lead to muscle strain or back injury. Have two people lift the system or use lifting aids and proper lifting techniques when handling the system. Do not use the PEM or Fan Tray handles to lift the shelf.

Step	Action
1.	Determine the location in the rack in which you will install the G10 chassis (see Rack Space Considerations).
2.	Install the front brackets to the sides of the G10 chassis using two Phillips flat head screws (**Figure 2.8**).

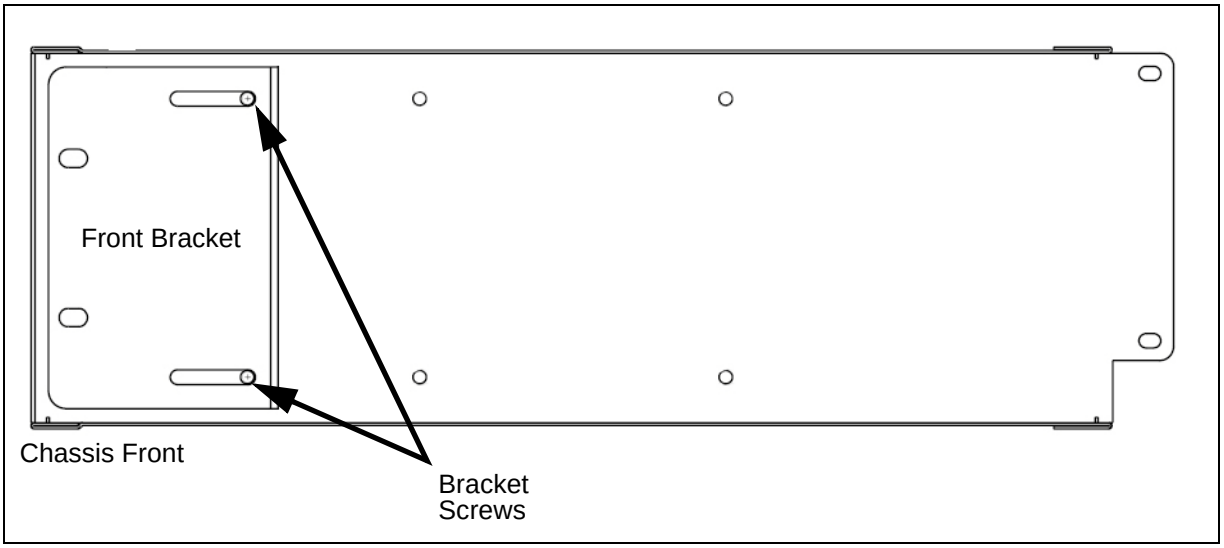


Figure 2.8 - G10 Chassis - Side View with Front Bracket

3. Two people: Position the G10 probe in the rack and secure the front brackets to the front of the rack post with two rackmount screws (**Figure 2.9**).

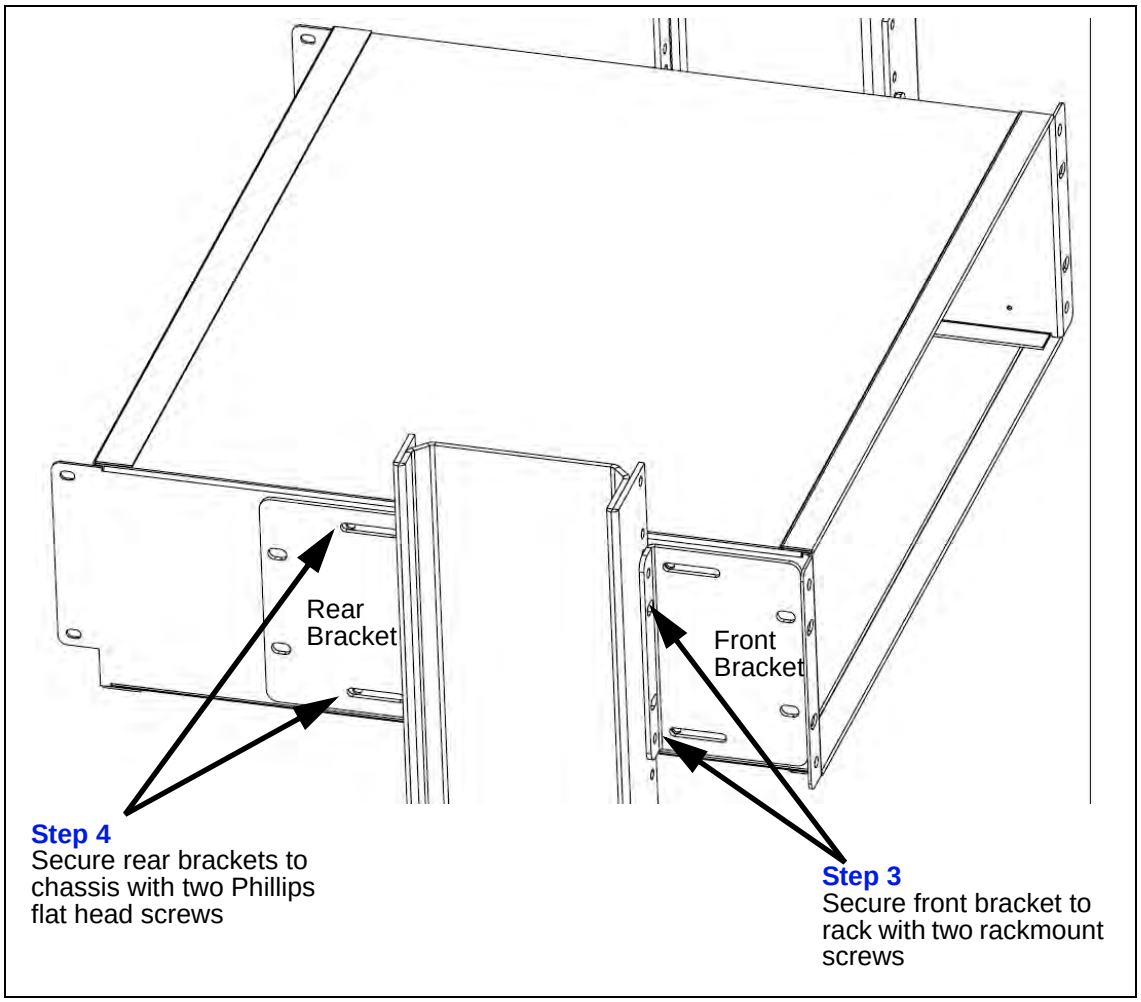


Figure 2.9 - Securing Front and Rear Brackets to Rack

4. Secure the rear brackets to the sides of the G10 chassis using two Phillips flat head screws (**Figure 2.9**).

5. Secure the rear bracket to the back of the rack with two rackmount screws.

6. Continue with Install Storage Enclosures.

INSTALL STORAGE ENCLOSURES

If installing several enclosures, refer to Rack Space Considerations for more information about positioning several enclosures in a rack.

Four-Post Rack, Front Mount

The storage enclosures must be securely mounted to the front of the four-post rack (also known as flush mount). Brackets shipped with the storage enclosure provide labels for installing in 30-inch, 36-inch, 42-inch, and 1000 MM four-post racks. Please note that these values reflect general rack/cabinet sizes and do not represent specific distances.

Step	Action
1.	Determine the location in the rack in which you will install the storage enclosure (see Rack Space Considerations). Mark the location on the front and back of the rack posts or note the height measurement of the rack label. This will enable you to correctly align the front and rear brackets.
2.	**SA100R, SA100J, SA200R, and SA200J:** Remove the two plastic ear caps (**Figure 2.10**) from each side of the front of the storage enclosure by grasping the top and bottom of each cap and pulling it straight off the enclosure.

Figure 2.10 - SA100R, SA100J, SA200R, and SA200J Storage Enclosure Ear Caps

3. **SA210J**: Remove the enclosure front bezel (**Figure 2.11**).

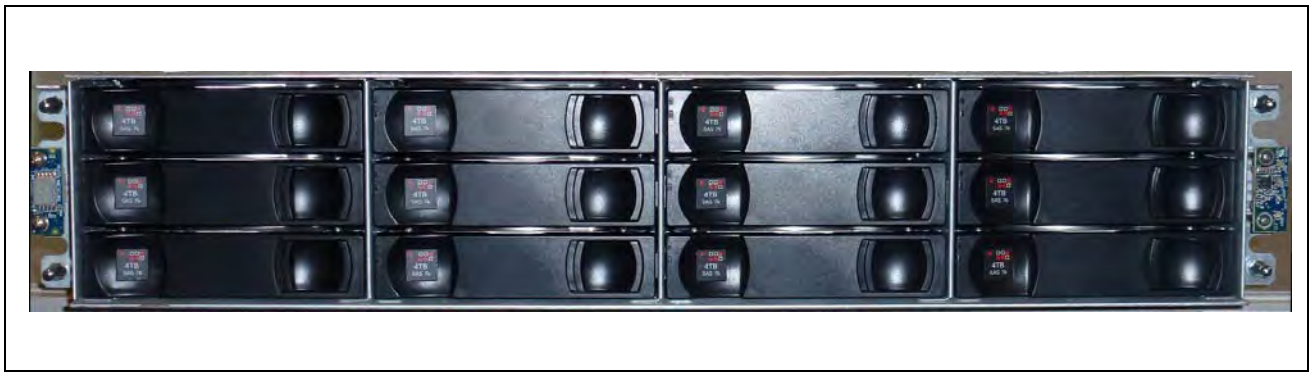


Figure 2.11 - SA210J Storage Enclosure (Bezel Removed)

4. Align the side brackets on the sides of the storage enclosure and secure them using six to eight Phillips flat head screws. Alignment varies per rack depth:

   - 30-inch rack (does not use the side bracket)
   - 36-inch rack (see **Figure 2.12**)
   - 1000 MM rack (see **Figure 2.13**)
   - 42-inch rack (see **Figure 2.14**)

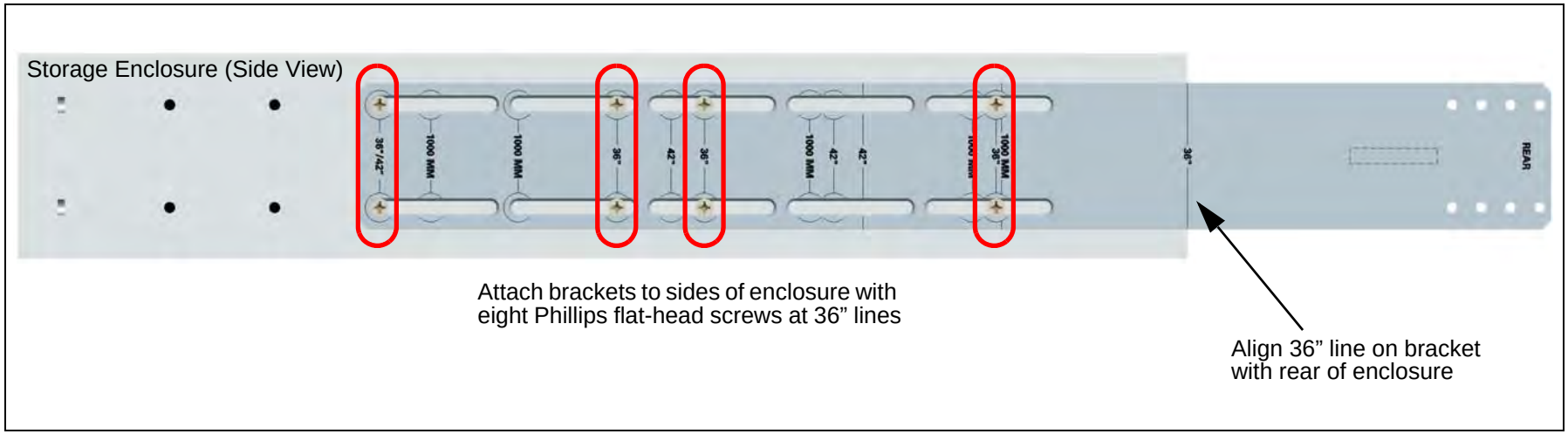


Figure 2.12 - Storage Enclosure Install, Four-Post Rack, Front Mount (36-inch Rack)

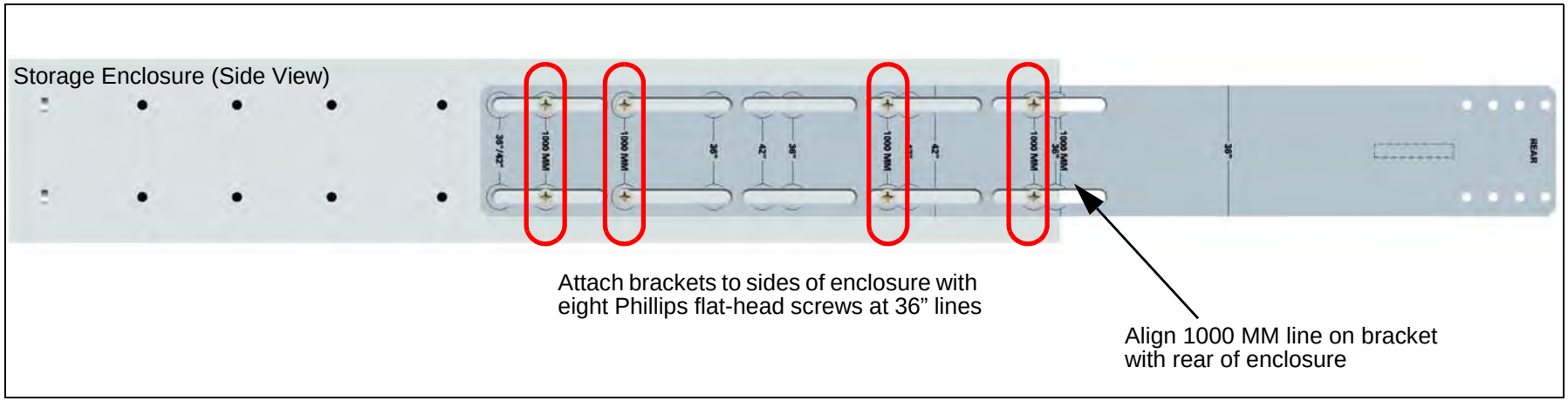


Figure 2.13 - Storage Enclosure Install, Four-Post Rack, Front Mount (1000 MM Rack)

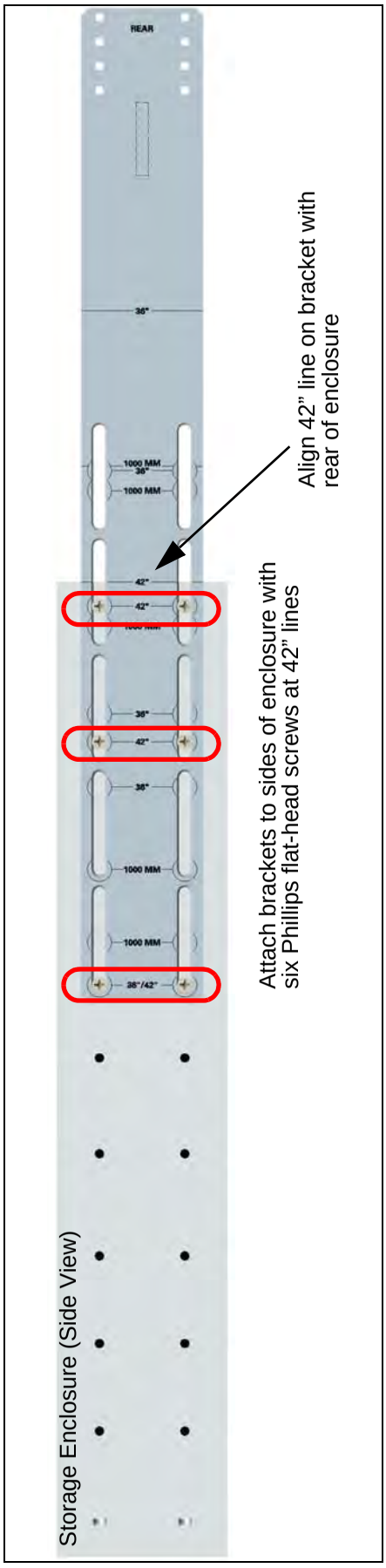


Figure 2.14 - Storage Enclosure Install, Four-Post Rack, Front Mount (42-inch Rack)

5. Attach the rear brackets to the rear rack posts using two rackmount screws (**Figure 2.15**). Enclosures installed in 30-inch racks attach directly to the rear bracket.

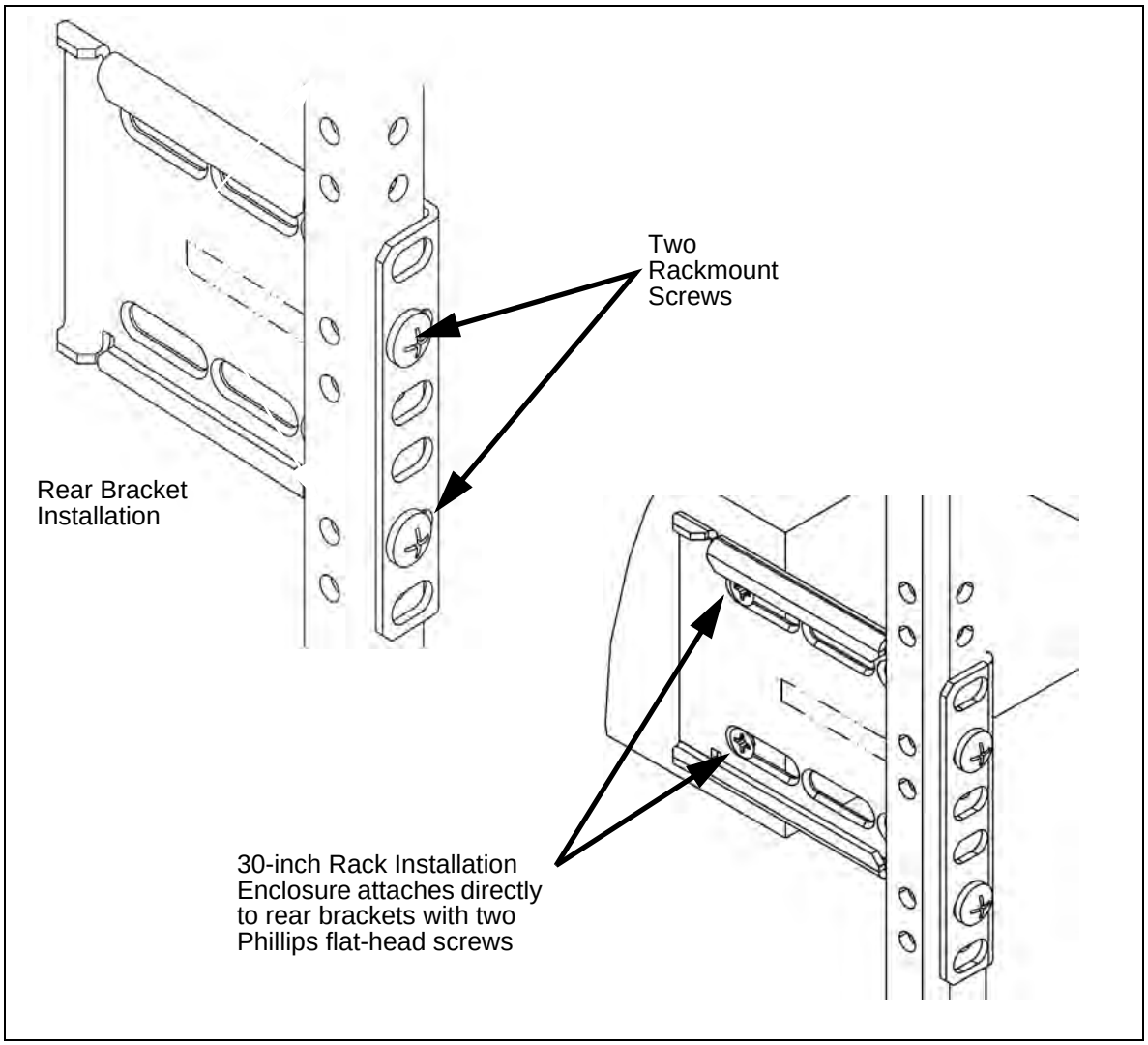


Figure 2.15 - Rear Bracket on Rack (Left)

Refer to **Figure 2.16** for the following steps for 36-inch, 1000 MM, and 42-inch racks:

6. Two people: Position the enclosure in the rack and carefully slide the side brackets into the rear brackets. Slide the enclosure until the front brackets are flush with the front rack posts.

7. Secure the front of the enclosure to the front rack posts using four rackmount screws (not shown).

8. Secure the side brackets to the rear brackets with Phillips pan-head screws and washers at holes appropriate for your rack depth. Two or four screws are used depending on the rack depth.

9. For DC configurations, continue with Install Fuse Panel.
For AC configurations, continue with Connect Power Cabling.

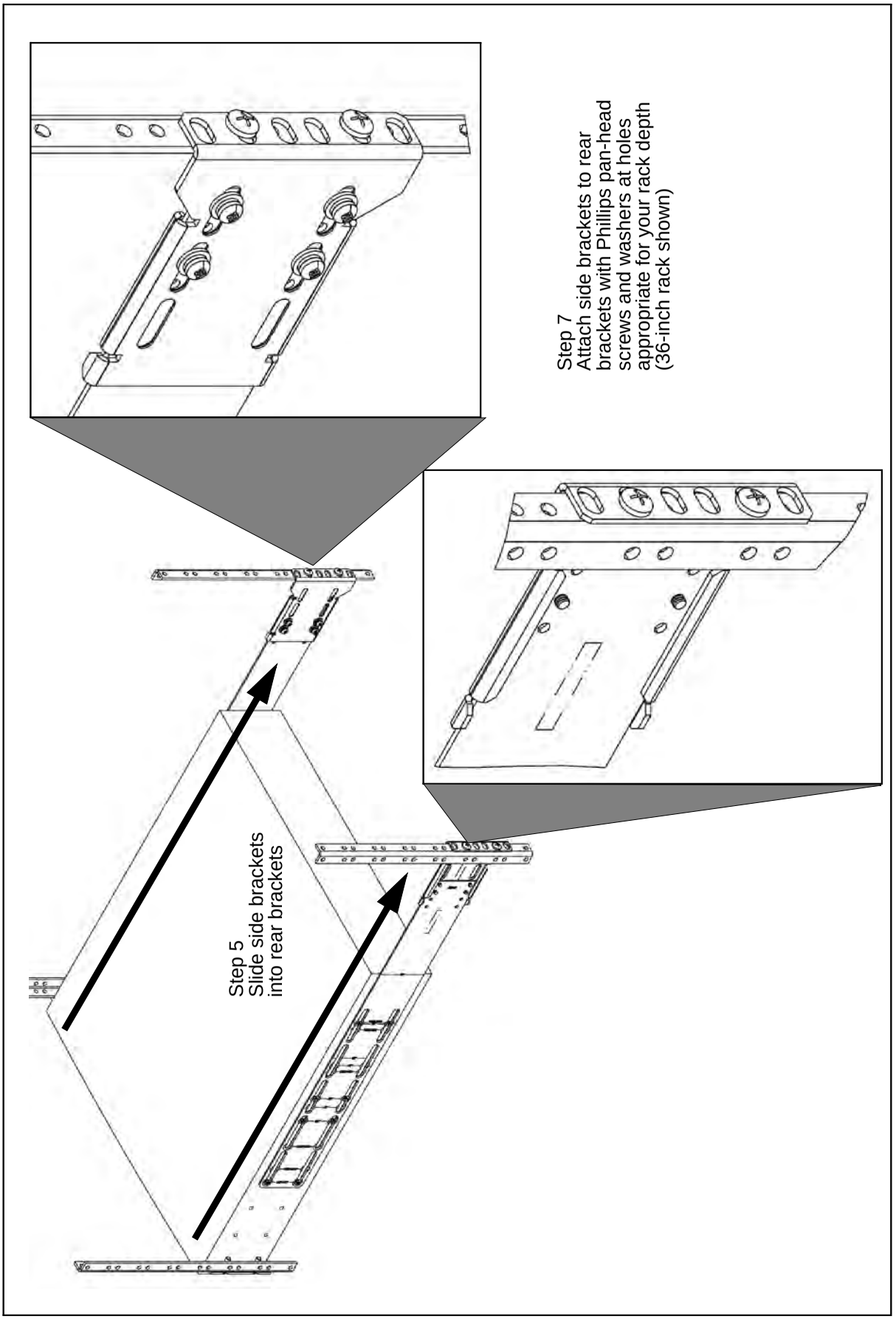


Figure 2.16 - Storage Enclosure Install, Four-Post Rack, Front Mount (36-inch Rack Shown)

Two-Post Rack, Mid Mount

The storage enclosures must be securely mid-mounted to the two-post rack (also known as center mount). The provided brackets support mounting in a standard 19-inch wide rack. If mounting the chassis to a 23-inch wide rack, you must first install extension brackets before securing it to the rack.

Step	Action
1.	Determine the location in the rack in where you will install the storage enclosure (see Rack Space Considerations).
2.	Install the main bracket onto the side of the storage enclosure using four bracket screws (**Figure 2.17**). The bracket position shown is for 3” to 4” rack post depth. For rack post depths of 5” to 7”, align the front bracket screws at the third screw position.

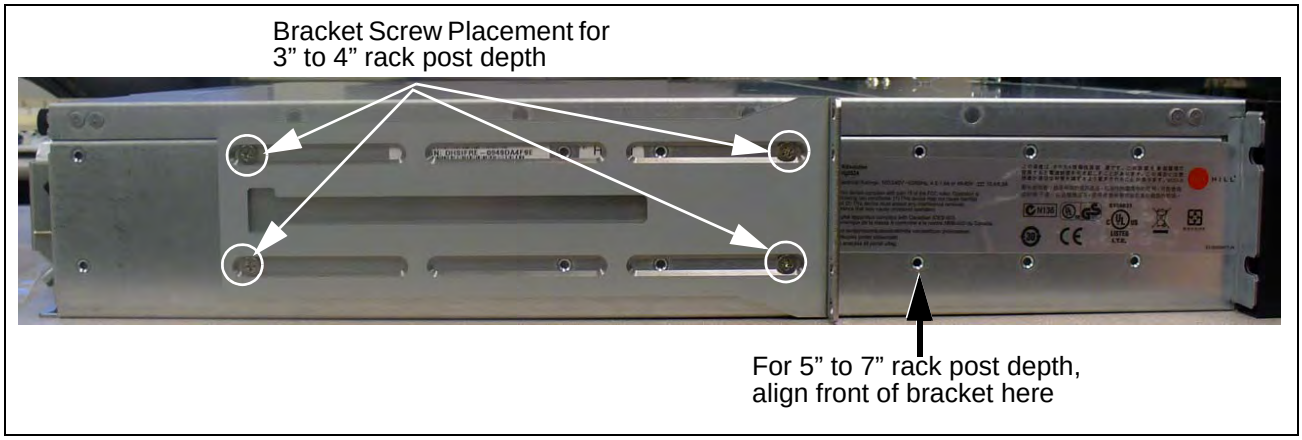


Figure 2.17 - Front Rackmount Bracket Placement on G10 Chassis

3. Position the enclosure into the rack and attach the front bracket to the rack with two rackmount screws (**Figure 2.18**).

Figure 2.18 - Securing Front Bracket to Rack

4. Insert the rear brackets into the main bracket as shown in **Figure 2.19**.

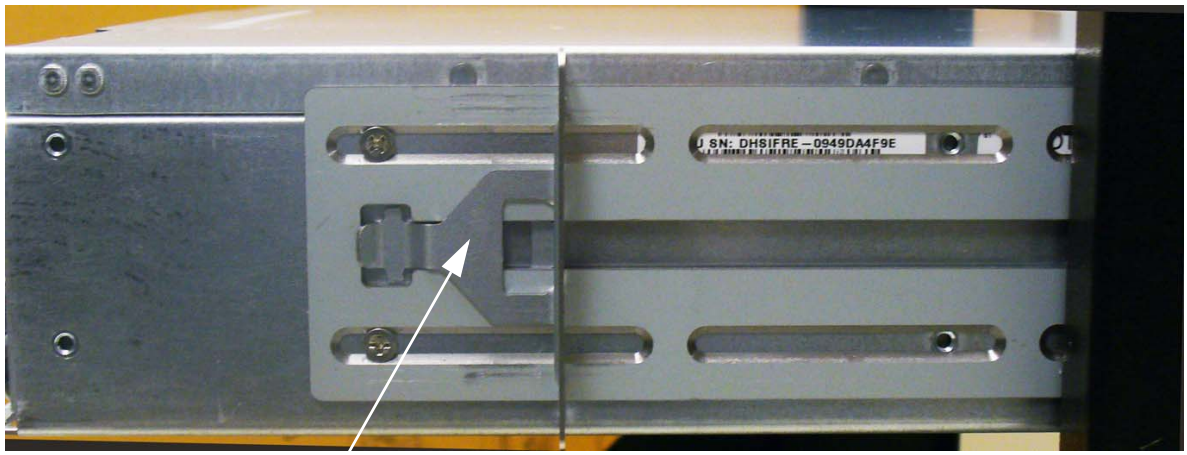


Figure 2.19 - Inserting Rear Bracket into Enclosure Main Bracket

5. Slide the rear brackets into place to align with the post's mounting holes (**Figure 2.20**). Secure the rear bracket to the post with two rackmount screws.

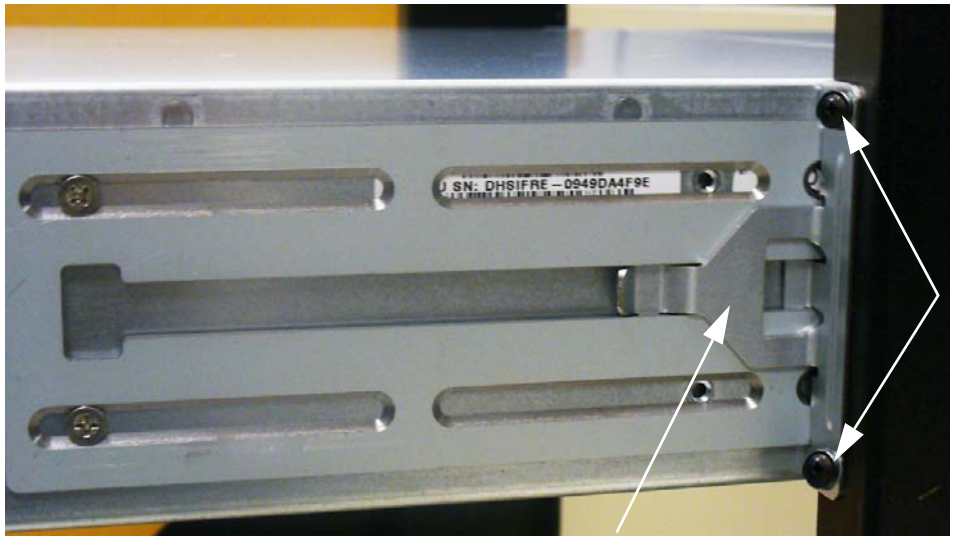


Figure 2.20 - Attaching Rear Bracket to Rack Post

6. For DC configurations, continue with Install Fuse Panel.
For AC configurations, continue with Connect Power Cabling.

INSTALL FUSE PANEL

If a fuse panel is not provided already, the FP100 Fuse Panel must be installed for DC configurations. Tektronix recommends using the FP100 Fuse Panel or equivalent device for providing circuit protection for the G10 probe and SAS storage enclosure. Ensure the device is installed in the same rack as the equipment.

Four-Post Rack, Front Mount

The FP100 fuse panel ships with brackets installed for mid-mount. You must move the brackets to the front position in order to mount it to the front of the rack.

Step	Action
1.	Determine the location in the rack in which you will install the fuse panel (see Rack Space Considerations).
2.	Reposition the brackets on each side of the fuse panel to the front mount position (**Figure 2.21**).

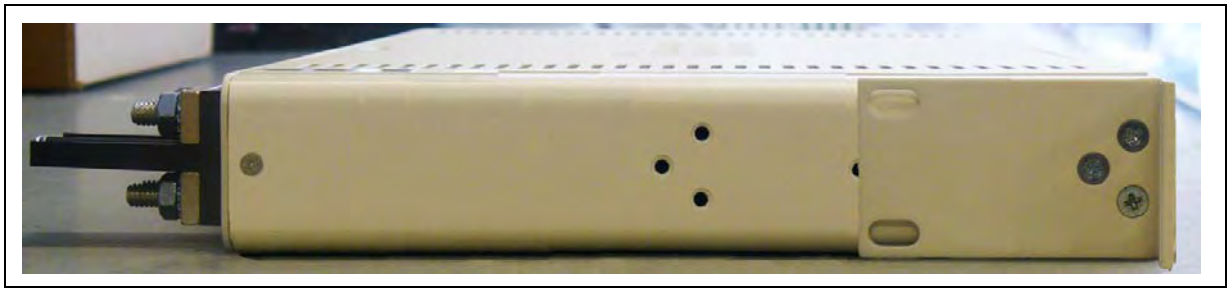


Figure 2.21 - Attaching Fuse Panel to Rack Post

3. Attach the fuse panel to the front of the rack with two rackmount screws on each side (**Figure 2.22**).

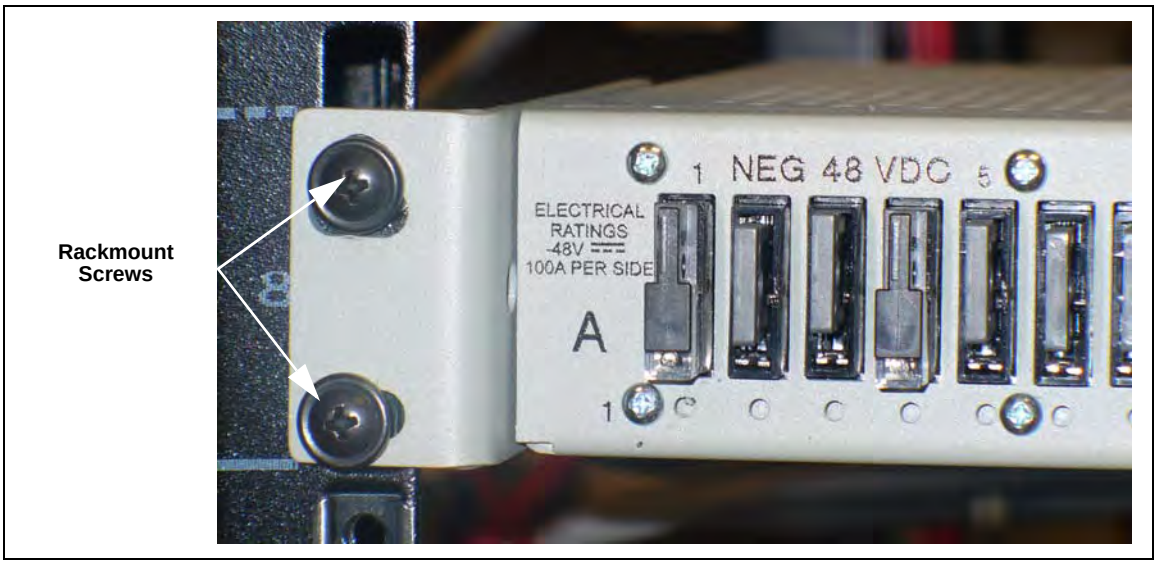


Figure 2.22 - Attaching Fuse Panel to Rack Post

4. Continue with Connect Power Cabling.

Two-Post Rack, Mid Mount

The FP100 Fuse Panel ships with brackets installed for mid-mount (**Figure 2.23**) on a 19-inch wide rack. Screw holes for an alternate mid-mount option are also available. If installing in a 23-inch wide rack, remove the side brackets and reattach the short sides of the brackets to the fuse panel to accommodate the 23-inch racks.

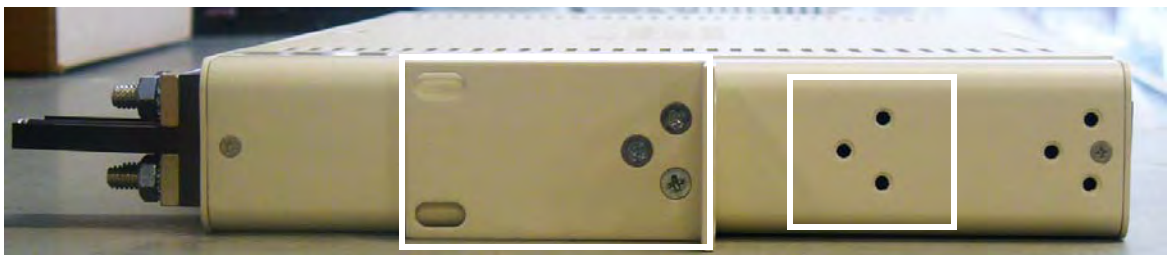


Figure 2.23 - Fuse Panel Bracket

Step	Action

1. Determine the location in the rack where you will install the fuse panel (see Rack Space Considerations). If you prefer the alternate mid-mount option, reposition the brackets on each side of the fuse panel.

2. Attach the fuse panel to the front of the rack with two rackmount screws on each side.

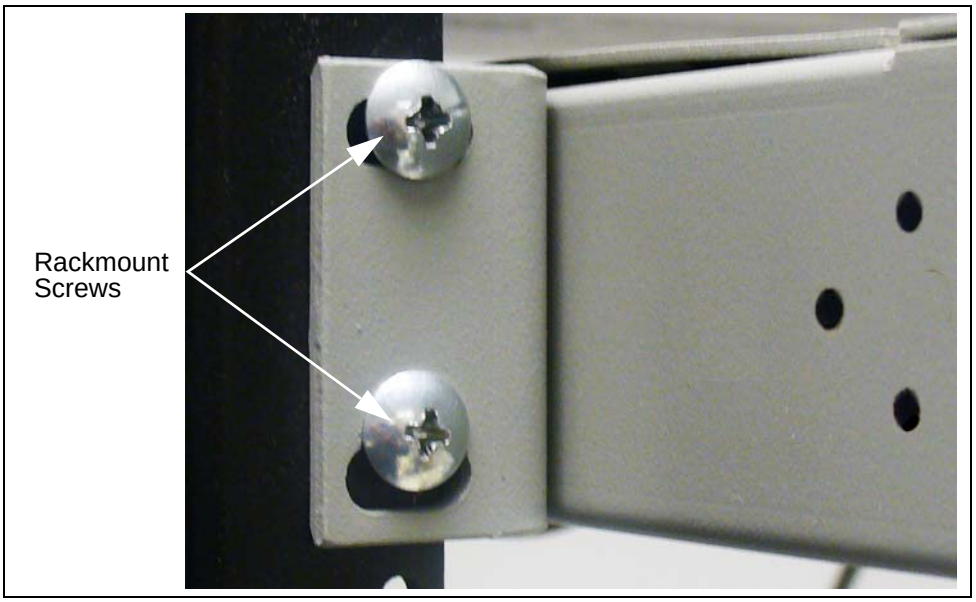


Figure 2.24 - Attaching Fuse Panel to Rack Post

3. Continue with Connect Power Cabling.

CONNECT POWER CABLING

This section provides instructions for connecting power cabling for the G10 probe and storage enclosures.

G10 Probe Power Cabling

AC Units

The AC PEMs do not have breaker switches; therefore, DO NOT connect the G10 AC cables to the rack power outlet. Connect only the AC power cables into the AC PEMs on the rear of the G10 unit. You will not connect the AC cables into the rack power outlet until AFTER the storage enclosures are powered up (see Power On the System).

Perform the following to ground the G10 AC unit:

Step	Action
1.	Connect the rack ground lug to the G10 chassis ground at the bottom left rear of the chassis. The lugs are marked with the corresponding grounding symbol. It is recommended that you use an earth grounding cable with a two-hole lug, distance 5/8” (15.9 mm).

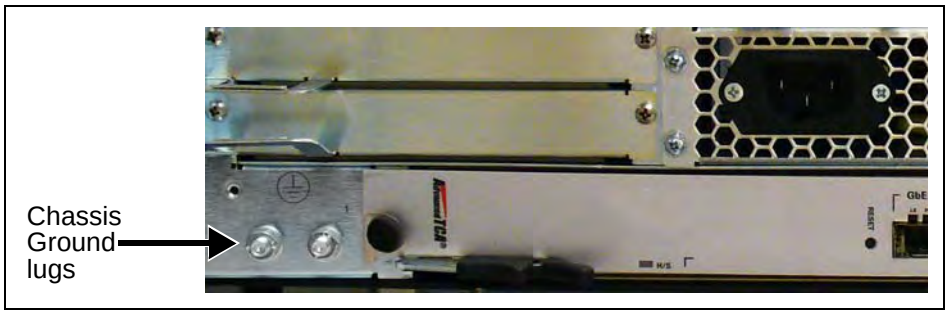


Figure 2.25 - G10 Chassis Ground

2.	Tighten the chassis ground lug nuts until the rack ground lug is secure.
3.	Proceed to AC storage enclosure power cabling on **page 45****.**

DC Units

The DC power cables for the G10 probe need to be attached to the plugs on the back of the unit.

Connect all cabling on the G10 and storage enclosure before connecting the cables to the fuse panel to minimize the risk of electrical hazard.

Step	Action
1.	Set the breakers on the PEM face plates to the OFF (tripped) position if they are not already in this position.

Ensure that the external power feeds that you plan to attach are powered off and cannot be switched on while you are working.

2.	Remove the insulation from the ends of the power cables by stripping the ends of the cables 10mm.
3.	Loosen the screws on both sides of the pluggable screw terminals on the rear of the G10 chassis and remove the pluggable screw terminals (**Figure 2.26**).

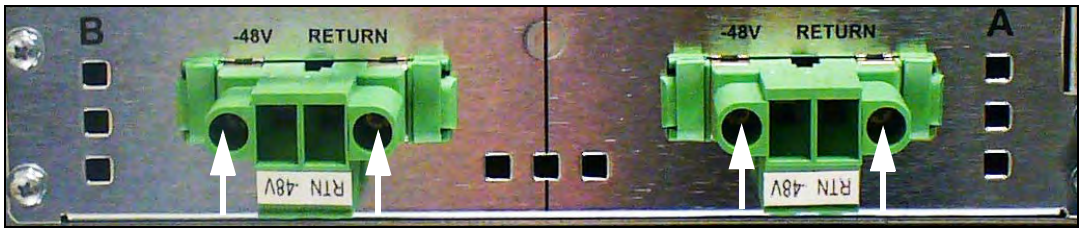


Figure 2.26 - G10 DC Pluggable Screw Terminals

4.	Insert the ends of the power cables into the rectangular openings (3.5 mm x 3.5 mm wide) of the pluggable screw terminals. Insert the red wire into the RTN opening and insert the black wire into the -48V opening (**Figure 2.27**).

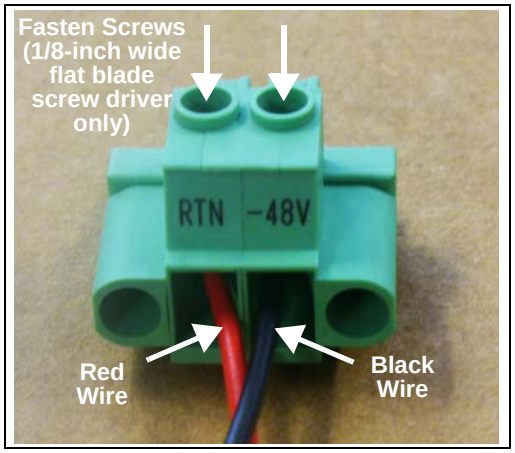


Figure 2.27 - G10 DC Pluggable Screw Terminals

5. Using only a 1/8-inch wide (3.5 mm wide) flat blade screw driver, fasten the screws above the wires to secure the wires to the pluggable screw terminals (**Figure 2.27**). Tighten the wire retention screws to 0.7Nm to 0.8Nm. Gently tug the wires to ensure they are secure.

Tektronix equipment, cables, and wiring diagrams comply with industry standard DC electrical color coding. Please ensure proper cabling if your equipment and cabling uses nonstandard DC electrical color coding. Improper cabling can cause damage to equipment or personal injury.

6. Plug the screw terminals (including the attached power cables) to the power connectors.

7. Fasten the screws on both sides of the pluggable screw terminals.

8. Proceed to DC storage enclosure power cabling on **page 46.**

Storage Enclosure Power Cabling

AC Units

Step	Action

1. Ensure that the AC Module power switches are in the OFF position.

2. Connect the AC power cables into the AC power connectors on the rear of the storage enclosure.

Enclosures are shipped with a grounding-type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet. Site wiring must include an earth ground connection to the AC power source. Grounding must comply with local, national, or other applicable government codes and regulations.

3. Connect the other end of the AC power cables into the rack power outlet.

4. Proceed to **Chapter 3, Connect Ethernet and SAS Cabling.**

DC Units

The DC power cables for the storage enclosure are shipped with plugs already attached. Refer to Storage Enclosure Bonding and Grounding Requirements in **Appendix D** for details about NEBS requirements.

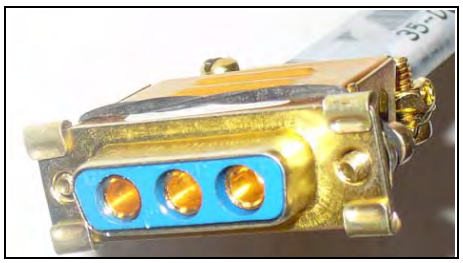


Figure 2.28 - Storage Enclosure DC Plugs

Connect all cabling on the G10 and storage enclosure before connecting the cables to the fuse panel to minimize risk of electrical hazard. Ensure that the external power feeds that you plan to attach are powered off and cannot be switched on while you are working.

Step	Action
1.	Ensure that the DC Module power switches are in the OFF position (**Figure 2.29**).
2.	Plug the DC power cables into the power connectors on the rear of the storage enclosure (**Figure 2.29**).

Be sure the DC Plugs do not touch the Grounding Posts (located under the power switches) to minimize risk of electrical hazard.

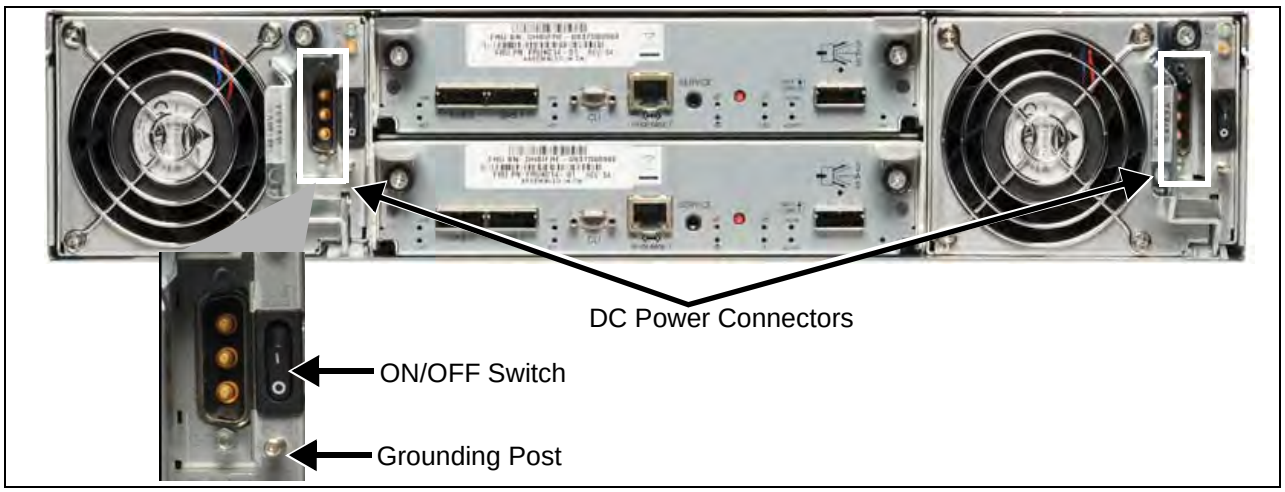


Figure 2.29 - Storage Enclosure Rear View

3. Fasten the screws on both sides of the plugs to secure them to the unit.
4. Proceed to Fuse panel power cabling on **page 47.**

Fuse Panel Power Cabling (DC Units Only)

After the power cabling is connected to the G10 probe and the storage enclosure, you connect the equipment power cabling to the fuse panel. This applies to G10 DC units only. The G10 probe and storage enclosure connect to the fuse panel that contains two separate circuits: A and B. The maximum output loading of the fuse panel is 100A per side (A and B). In each circuit, current flows from the input through the fuse bus. When you install a fuse in a fuse holder, it completes the circuit to the output connector. When a fuse fails, it sends a fail signal to the Fuse Fail Alarm circuit.

Connect all cabling on the G10 and storage enclosure before connecting the cables to the fuse panel to minimize the risk of electrical hazard. Do not connect more than five components (G10s or storage enclosures) to a single fuse panel.

Please note the following when wiring the G10 and storage enclosures to the fuse panel:

- Use the input wire size appropriate for the total output loading of the fuse panel. For 100A input, use at least a #2 AWG wire.
- An input branch circuit protector (fuse or circuit breaker) must be provided and rated to meet local codes and installation requirements. For a 100A input, use a 125A protector or as directed by local codes.
- A switch or means to disconnect from the input must be provided in the building installation which is easily accessible and identified as the disconnect device.

Refer to Storage Enclosure Bonding and Grounding Requirements in Appendix D for details about NEBS requirements.

Step	Action
1.	Refer to **Figure 2.30** and **Figure 2.31** and the following bullets and connect each power feed for each G10 and storage enclosure to the fuse panel. Refer to the **Table 2.2** and **Table 2.3** for additional wiring and lug recommendations.

- Connect G10 DC Power A to Fuse Panel A Output Terminals and Ground
- Connect G10 DC Power B to Fuse Panel B Output Terminals and Ground
- Connect Storage Enclosure DC Power A to Fuse Panel A Output Terminals and Ground
- Connect Storage Enclosure DC Power B to Fuse Panel B Output Terminals and Ground

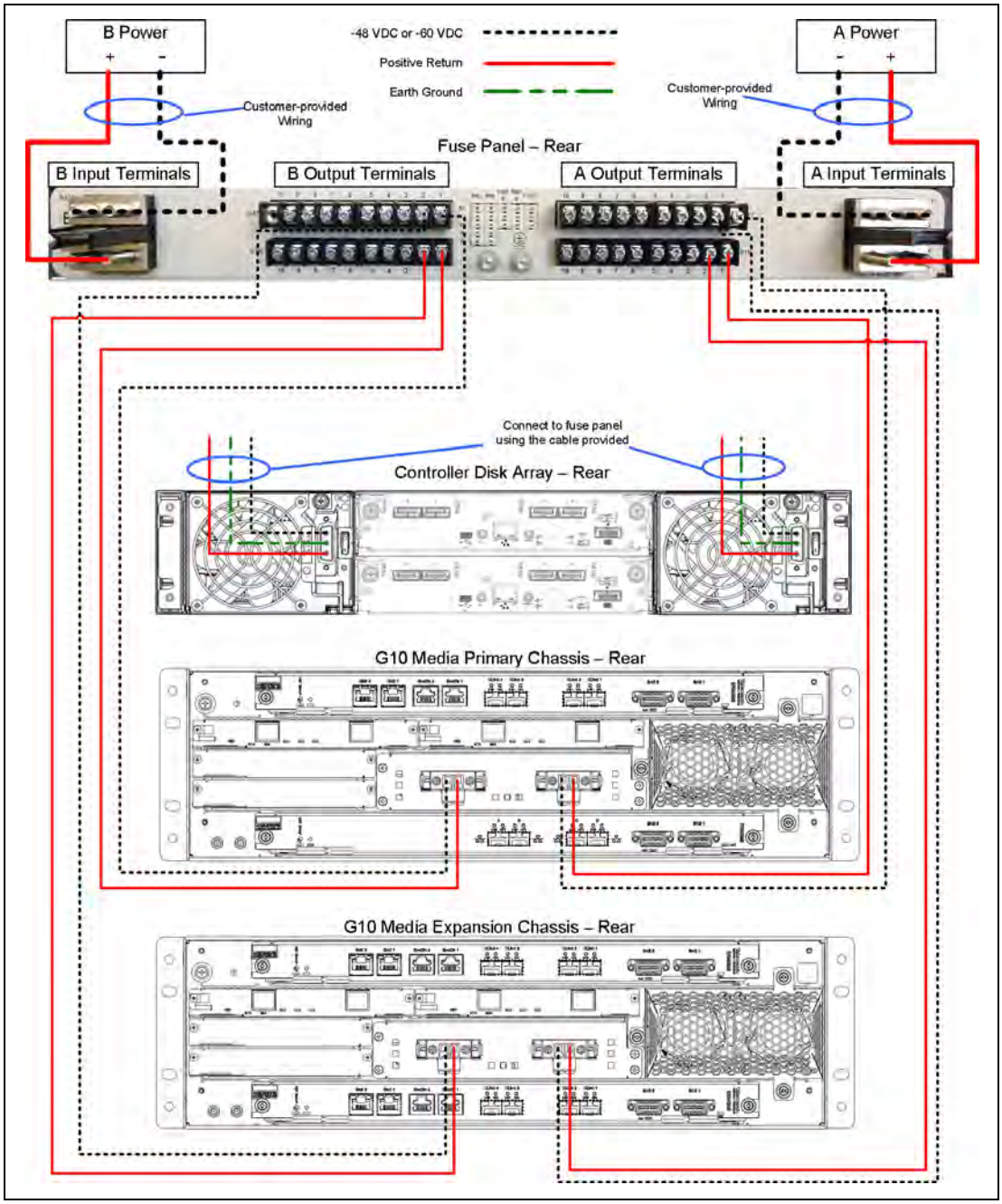


Figure 2.30 - Component Power Cabling

Tektronix equipment, cables, and wiring diagrams comply with industry standard DC electrical color coding. Please ensure proper cabling if your equipment and cabling uses nonstandard DC electrical color coding. Improper cabling can cause damage to equipment or personal injury. Contact Tektronix to request specially labeled power cables (-48V = Red, Return = Black) for the G10 chassis and the storage enclosures.

Figure 2.31 shows an example grounding solution using a grounding bar. Note that Figure 2.31 only shows grounding cabling from the components to the grounding bar; refer to Figure 2.30 for power cabling from the components to the fuse panel.

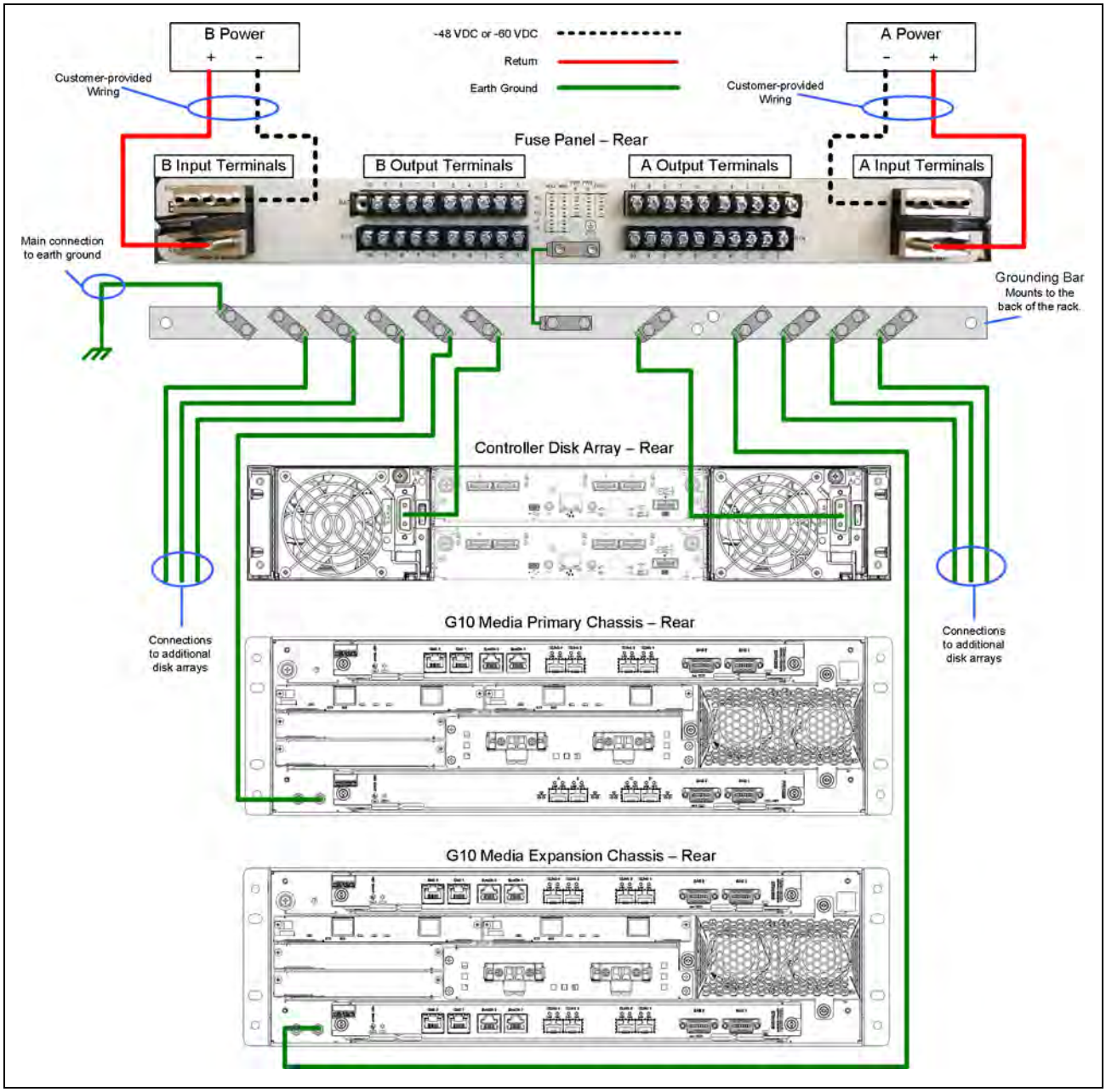


Figure 2.31 - Example Grounding Solution

Tektronix equipment, cables, and wiring diagrams comply with industry standard DC electrical color coding. Please ensure proper cabling if your equipment and cabling uses nonstandard DC electrical color coding. Improper cabling can cause damage to equipment or personal injury.

2. Insert 15 A GMT fuses into the slots on the front of the fuse panel corresponding to the output terminals that you used for the G10 and the storage enclosures at the rear of the fuse panel.

3. Continue with **Chapter 3**, **Connect Ethernet and SAS Cabling**.

Terminal and Wiring Recommendations

This section provides wiring and lug recommendations for the fuse panel. Refer to the G10 Hardware Maintenance Guide for technical specifications of the fuse panel. **Table 2.2** provides specifications for wiring and lugs that Tektronix provides with the G10.

Table 2.2 - G10 to Fuse Panel Wiring and Lug Specifications

G10 Terminal	Wire Specifications	Fuse Panel Lug Specifications
Power Input (-48VDC or -60VDC) Connect to - Terminal (negative)	#12 AWG	Tyco 329697 or equivalent Connect to the #6 screw on the fuse panel
Return Connect to + Terminal (positive)	#12 AWG	Tyco 329697 or equivalent Connect to the #6 screw on the fuse panel
Earth Ground Connect to Burndy YAV102TC10-90 lug	#12 AWG	Burndy YAV102TC10-90 or equivalent

Table 2.3 contains wiring and lug recommendations for the fuse panel.

Table 2.3 - Fuse Panel Wiring and Lug Recommendations

Terminal	Wire Recommendations (Customer Provides)	Lug Recommendations (Tektronix Provides)
Power Input (-48VDC or -60VDC)	Use input wire size appropriate for total output loading on panel Use #2 AWG for 100A input	Straight dual-hole lugs for 1/4” studs on 5/8” centers (Panduit LCDN2-14A-Q for #2 AWG or equivalent)
Return	Use input wire size appropriate for total output loading on panel Use #2 AWG for 100A input	Straight dual-hole lugs for 1/4” studs on 5/8” centers (Panduit LCDN2-14A-Q for #2 AWG or equivalent)
Earth Ground	Use #8 AWG or greater	90° dual-hole lugs for #10 studs on 5/8” centers (Burndy YA8CL2TC10-90 or equivalent)

3 Connect Ethernet and SAS Cabling

Cabling varies depending on your specific configuration. Find your current configuration in the following table to access the relevant Ethernet and SAS cabling diagrams.

Table 3.1 - Media Probe Cabling

IIC		IAP		Storage Array	Refer to:
IIC200	SRM200	IAP320	PRM300	SA200R	IIC200 + IAP200/IAP320 + SA200R Media Probe Cabling Comprehensive RTP Media Capture SAS Cabling
		IAP200	PRM200		
IIC200	SRM200	IAP320	PRM300	SA100R	IIC200 + IAP200/IAP320 + SA100R Media Probe Cabling
		IAP200	PRM200		
IIC100	TRM100	IAP320	PRM300	SA200R	IIC100 + IAP200/IAP320 + SA200R/SA100R Media Probe Cabling
				SA100R	
IIC100	TRM100	IAP200	PRM200	SA200R	
				SA100R	

The G10 primary and expansion chassis use the SYSCLK settings for cage-to-cage timing distribution. If you have not done so already, you must verify these settings prior to cabling. See Verify SYSCLK Settings for details.

IIC200 + IAP200/IAP320 + SA200R Media Probe Cabling

Figure 3.1 shows an overview of the G10 media probe Ethernet and SAS cabling for the IIC200/SA200R configurations. Refer to the cabling diagrams starting on **page 53** for specific cabling details. See **Table 3.1** for a listing of other available cabling diagrams.

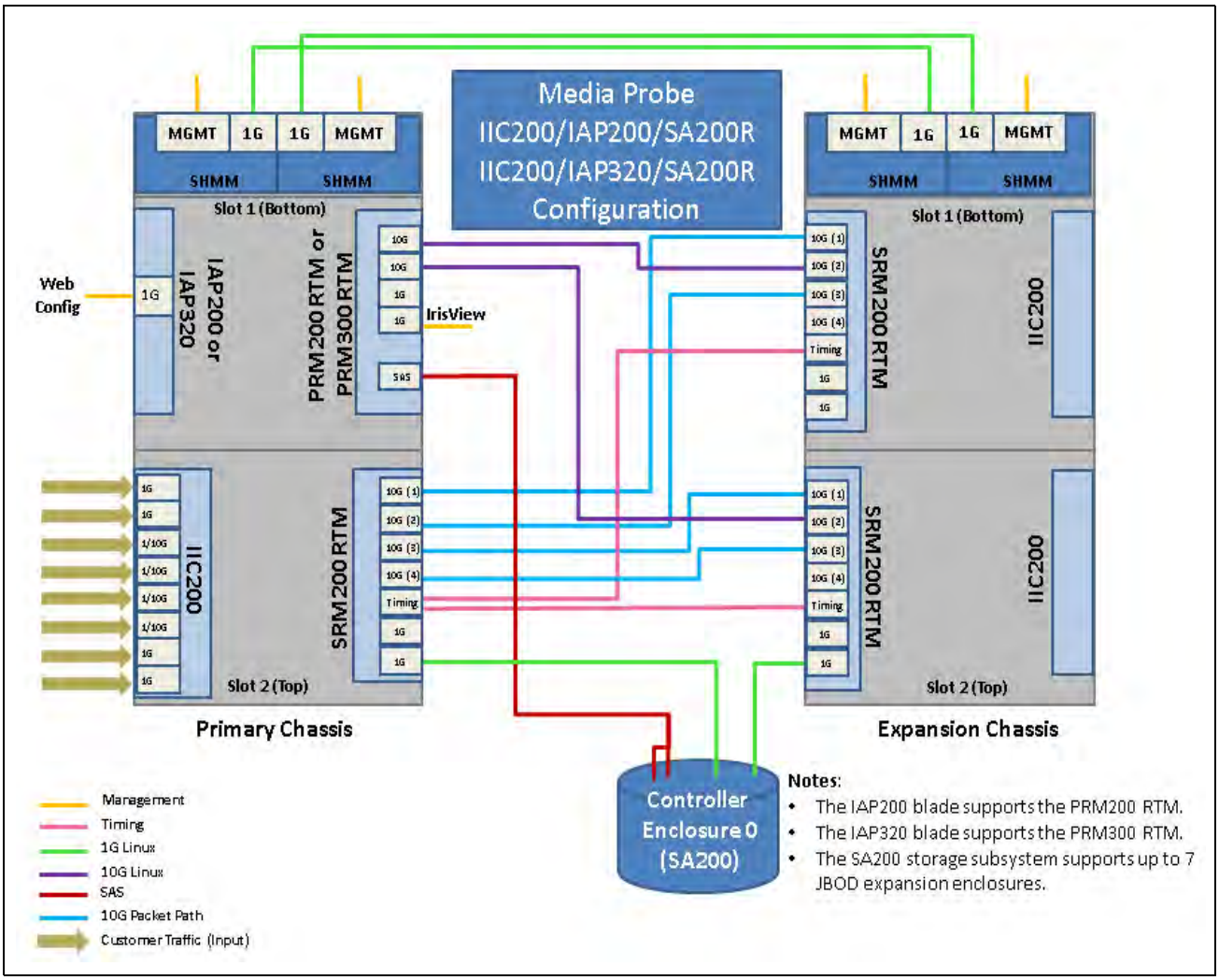


Figure 3.1 - Media Probe Cabling Overview

Table 3.2 summarizes the cables required for communications and data flow between chassis and storage enclosures. Ethernet cables must be shielded.

Table 3.2 - Cabling Summary (IIC200/SA200R Configurations)

Qty.	Cable	Approx. Length	Function	Diagram Reference
6[a]	CAT6 Ethernet Cable (Primary Interfaces can optionally use 1G fiber)	Refer to Ethernet specification	SHMMs to Public OAM LAN Primary interface(s) to Public OAM LAN	**Figure 3.2**
4	CAT6 Ethernet Cable Interchassis communication and timing	1 Meter	SHMMs UPLINK	**Figure 3.2** **Figure 3.3**
2	CAT6 Ethernet Cable	1 Meter	G10 to controller enclosure	**Figure 3.4**
6	Fiber Cable (Single-Mode or Multi-mode) Interchassis communication	2 Meters	10G Data Flow	**Figure 3.5**
1	1-to-2 SAS connector cables (1 per controller enclosure)	2 Meters	G10 to controller enclosure	**Figure 3.6**
2-14	Mini-SAS cables	2 Meters	Controller to expansion and expansion to expansion	**Figure 3.7**

a. Count includes cabling for optional redundant Primary interface.

Connect Ethernet Cabling (IIC200 + IAP200/IAP320+ SA200R)

This section provides information necessary for cabling a G10 media probe with an IIC200/SA200R configuration. See Table 3.1 for a listing of other available cabling diagrams.

Step	Action
1.	Insert RJ45 copper or optional Fiber SFP modules into the following ports (refer to the **Appendix B** for SFP details). ***Port B applies only when configuring a redundant interface.***

- Primary Chassis:
  - PRM200 RTM or PRM300 RTM (Slot 1): Port A and Port B
- Use **Figure 3.2** to connect Ethernet cables from the G10 chassis to your LAN.

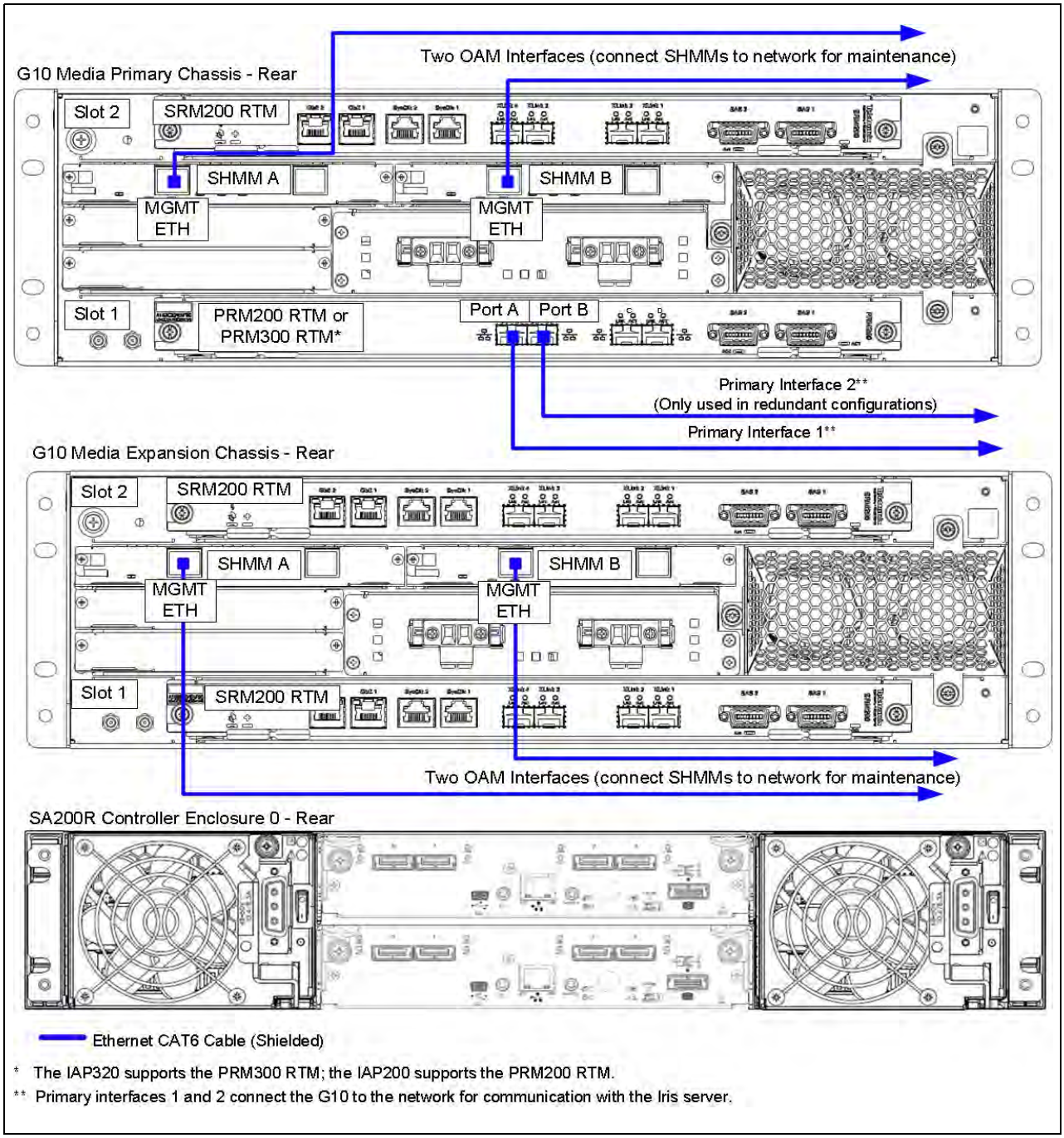


Figure 3.2 - Ethernet Connections from G10 to LAN

2. Connect the Ethernet cables between the G10 chassis as shown in **Figure 3.3** and **Table 3.3**.

The G10 primary and expansion chassis use the SYSCLK jumper settings on the SRM200 RTMs for cage-to-cage timing distribution. See IIC200: SRM200 RTM SYSCLK Settings for details.

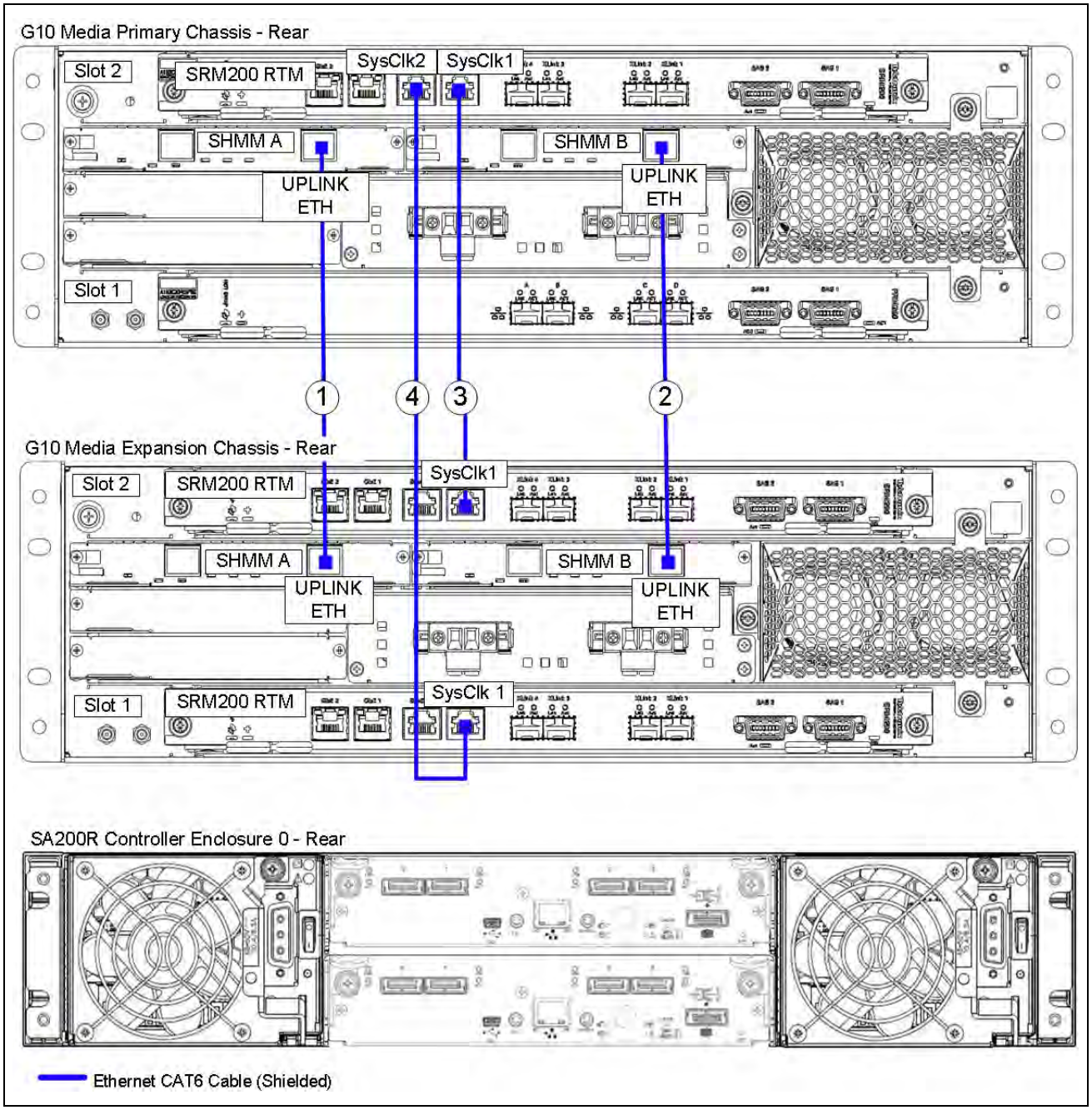


Figure 3.3 - Ethernet Connections between G10 Chassis

Table 3.3 - Ethernet Connections Between G10s

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
1	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SHMM A UPLINK ETH	G10 expansion chassis	SHMM A UPLINK ETH
2	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SHMM B UPLINK ETH	G10 expansion chassis	SHMM B UPLINK ETH
3	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SRM200 RTM Slot 2 SysClk1	G10 expansion chassis	SRM200 RTM Slot 2 SysClk1
4	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SRM200 RTM Slot 2 SysClk2	G10 expansion chassis	SRM200 RTM Slot 1 SysClk1

3. Connect Ethernet cables from the G10 to the SA200R controller storage enclosure as shown in **Figure 3.4** and **Table 3.4**.

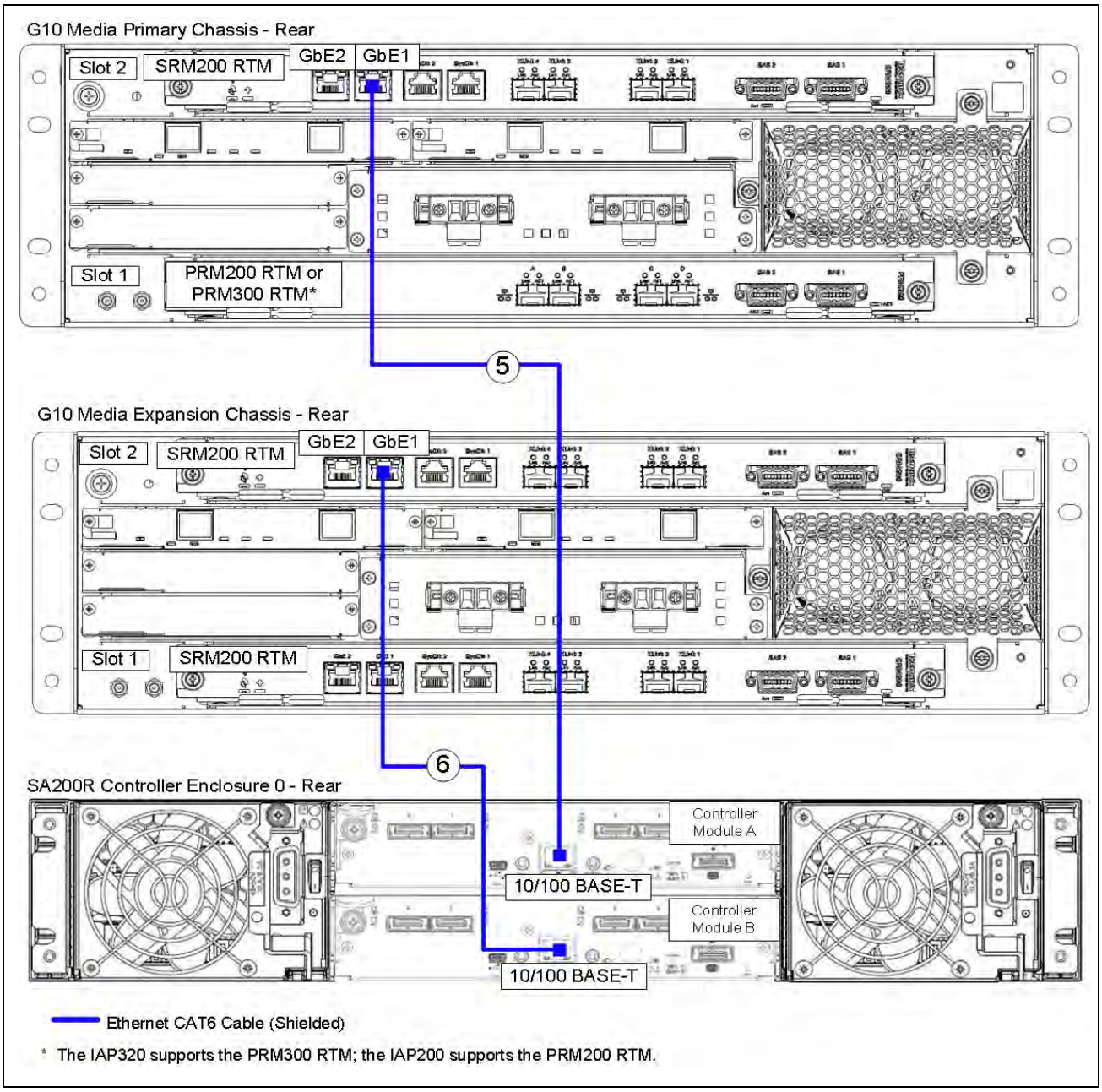


Figure 3.4 - Ethernet Connections - G10 to SA200R Controller Enclosure

Table 3.4 - Ethernet Connections - G10 to SA200R Controller Enclosure

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
5	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SRM200 RTM Slot 2 GbE1	Controller 0	Module A 10/100 BASE-T
6	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 expansion chassis	SRM200 RTM Slot 2 GbE1	Controller 0	Module B 10/100 BASE-T

4. Insert SFPs into the following 10G ports (refer to the **Appendix B** for SFP details).

   - Primary chassis
     - SRM200 RTM (Slot 2): XLink Ports 1-4
     - PRM200 RTM or PRM300 RTM (Slot 1): Ports C and D
   - Expansion chassis
     - SRM200 RTM (Slot 2): XLink Ports 1-3
     - SRM200 RTM (Slot 1): XLink Ports 1-3

5. Connect optical fiber cables between the primary and expansion G10 chassis as shown in **Figure 3.5** and **Table 3.5**.

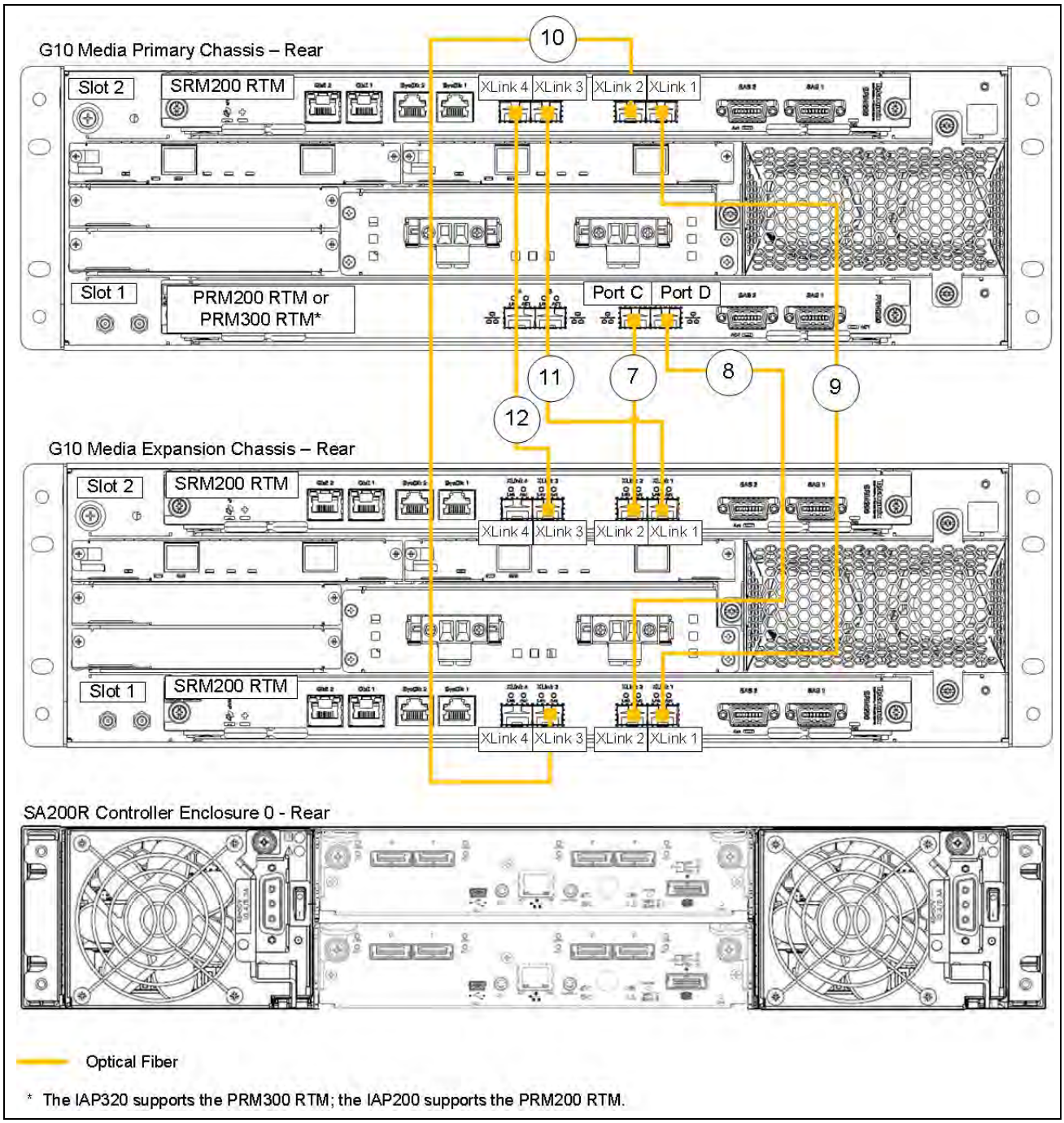


Figure 3.5 - Ethernet Connections - 10 GB Ethernet Between G10 Chassis

Table 3.5 - Ethernet Connections - 10 GB Ethernet Between G10 Chassis

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
7	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 Port C	G10 expansion chassis	SRM200 RTM Slot 2 XLink 2
8	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 Port D	G10 expansion chassis	SRM200 RTM Slot 1 XLink 2
9	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	SRM200 RTM Slot 2 XLink 1	G10 expansion chassis	SRM200 RTM Slot 1 XLink 1
10	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	SRM200 RTM Slot 2 XLink 2	G10 expansion chassis	SRM200 RTM Slot 1 XLink 3
11	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	SRM200 RTM Slot 2 XLink 3	G10 expansion chassis	SRM200 RTM Slot 2 XLink 1
12	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	SRM200 RTM Slot 2 XLink 4	G10 expansion chassis	SRM200 RTM Slot 2 XLink 3

a. The IAP200 blade supports the PRM200 RTM; the IAP320 blade supports the PRM300 RTM.

6. Continue with Connect SAS Cabling (IIC200 + IAP200/IAP320+ SA200R).

Connect SAS Cabling (IIC200 + IAP200/IAP320+ SA200R)

If the media probe will be supporting the Comprehensive Media Capture, see Comprehensive RTP Media Capture SAS Cabling for details.

Use **Figure 3.6** and **Table 3.6** to connect SAS cables from the G10 to the SA200R controller enclosure. This configuration uses 1-to-2 SAS connector cables. The 1-to-2 SAS cables are labeled with “P1” and “P2” on the connector ends that attach to the enclosure to ensure proper cabling. P1 connectors should always attach to Module A; P2 connectors should always connect to Module B. Refer to **Figure 3.7** for information about cabling expansion enclosures, or continue with **Power On the System**.

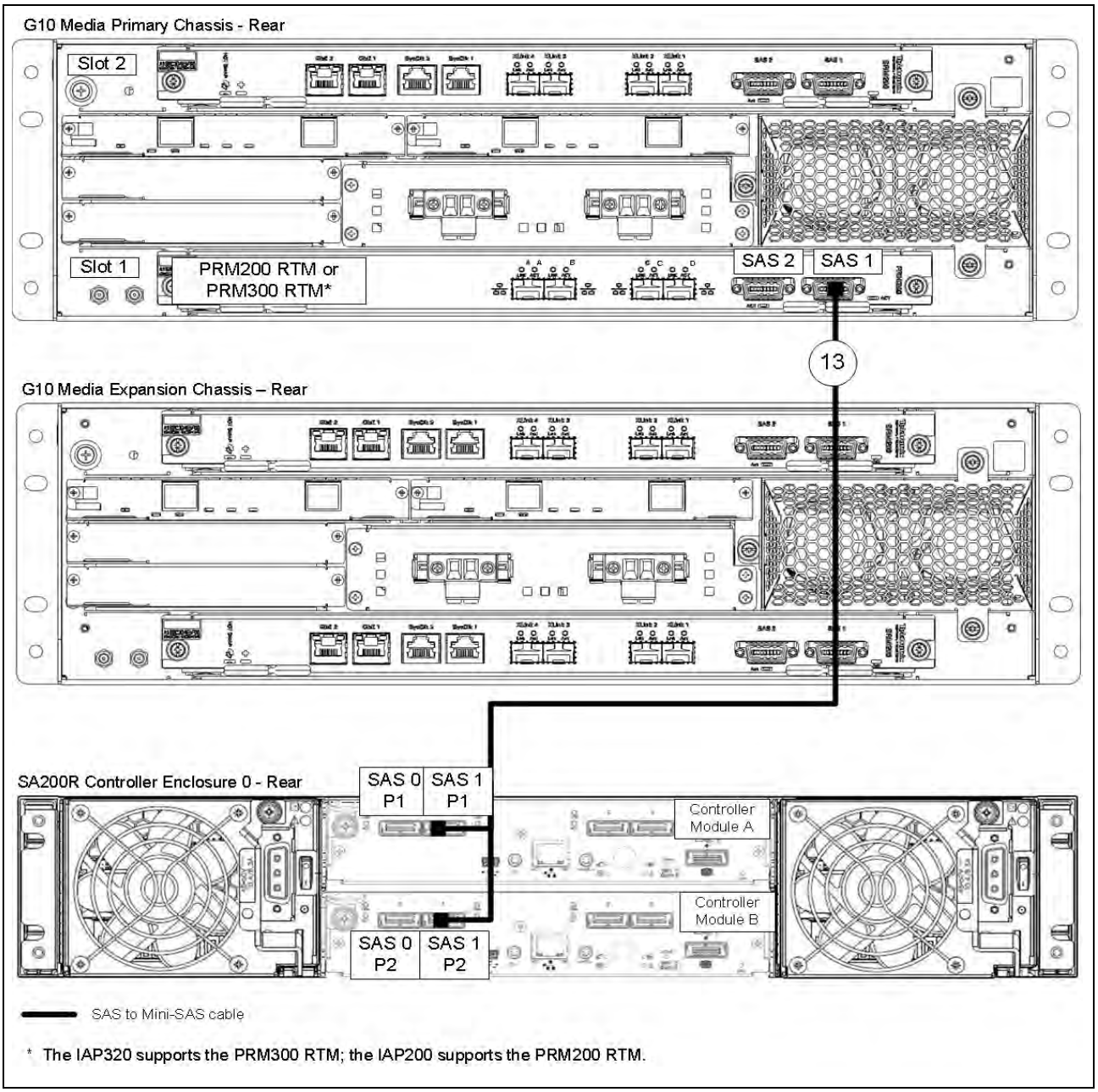


Figure 3.6 - G10 SAS Cabling to Controller 0

Table 3.6 - SAS Connections to Controllers

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
13	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 SAS 1	Controller 0	Module A SAS 1, P1
						Module B SAS 1, P2

a. The IAP200 blade supports the PRM200 RTM; the IAP320 blade supports the PRM300 RTM.

SA200R Controller Enclosure to SA200J Expansion Enclosure Cabling

Use **Figure 3.7** to connect SAS cables from the SA200R controller enclosure to the expansion enclosures. Then continue with **Power On the System**. Each SA200R controller enclosure supports seven (0-6) expansion enclosures. Expansion enclosures are shipped with mini-SAS cables. ***SA200R controller enclosures support both SA200J and SA210J expansion enclosures. If both expansion enclosure models are used, connect the SA200J expansion enclosures first, then connect SA210J expansion enclosures.***

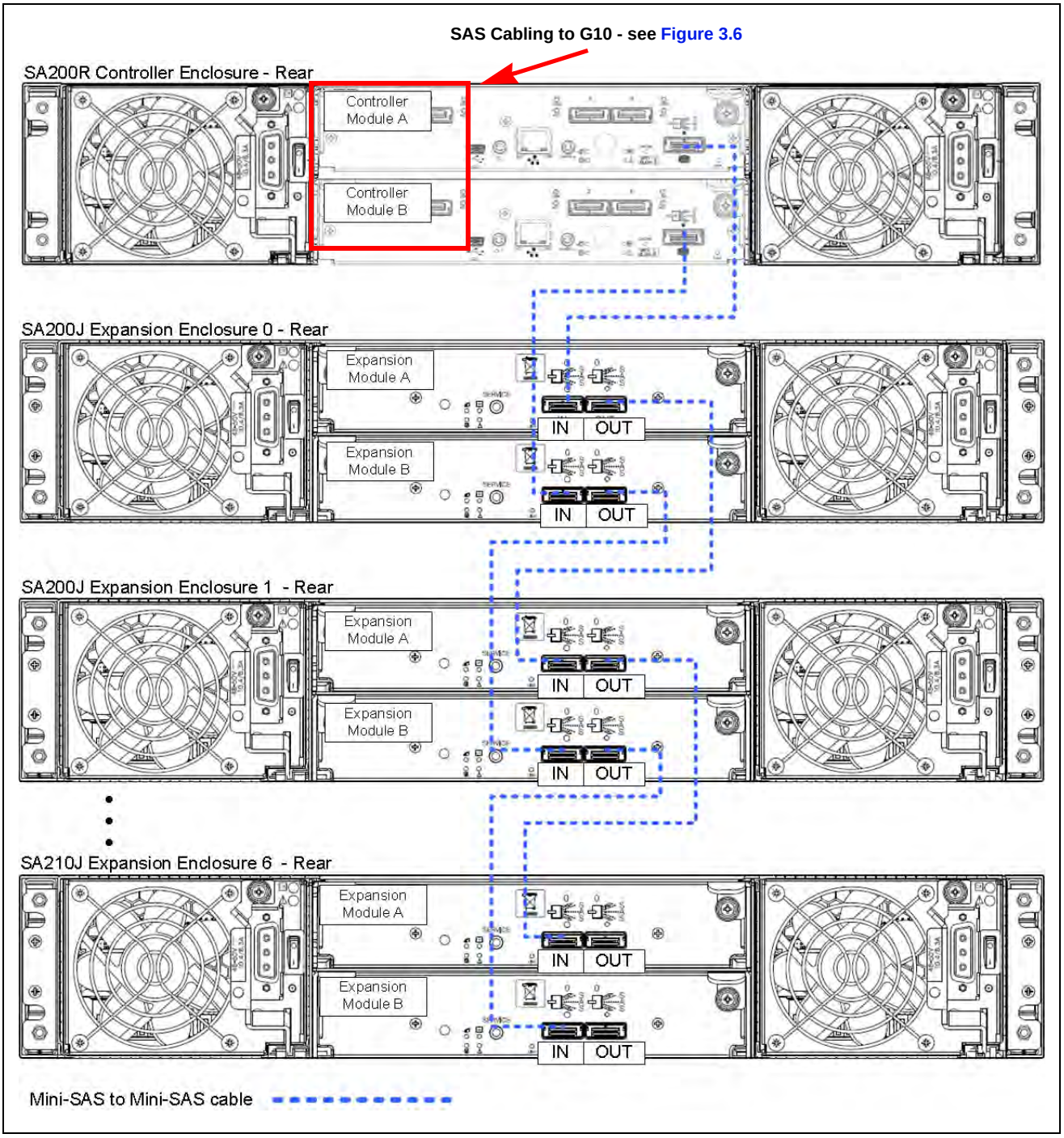


Figure 3.7 - SA200R Controller Enclosure to SA200J Expansion Enclosures

IIC200 + IAP200/IAP320 + SA100R MEDIA PROBE CABLING

Figure 3.8 shows an overview of the G10 Media Probe Ethernet and SAS cabling for the IIC200 + IAP200/IAP320 + SA100R configuration. Refer to the cabling diagrams starting on **page 65** for specific cabling details. See **Table 3.1** for a listing of other available cabling diagrams.

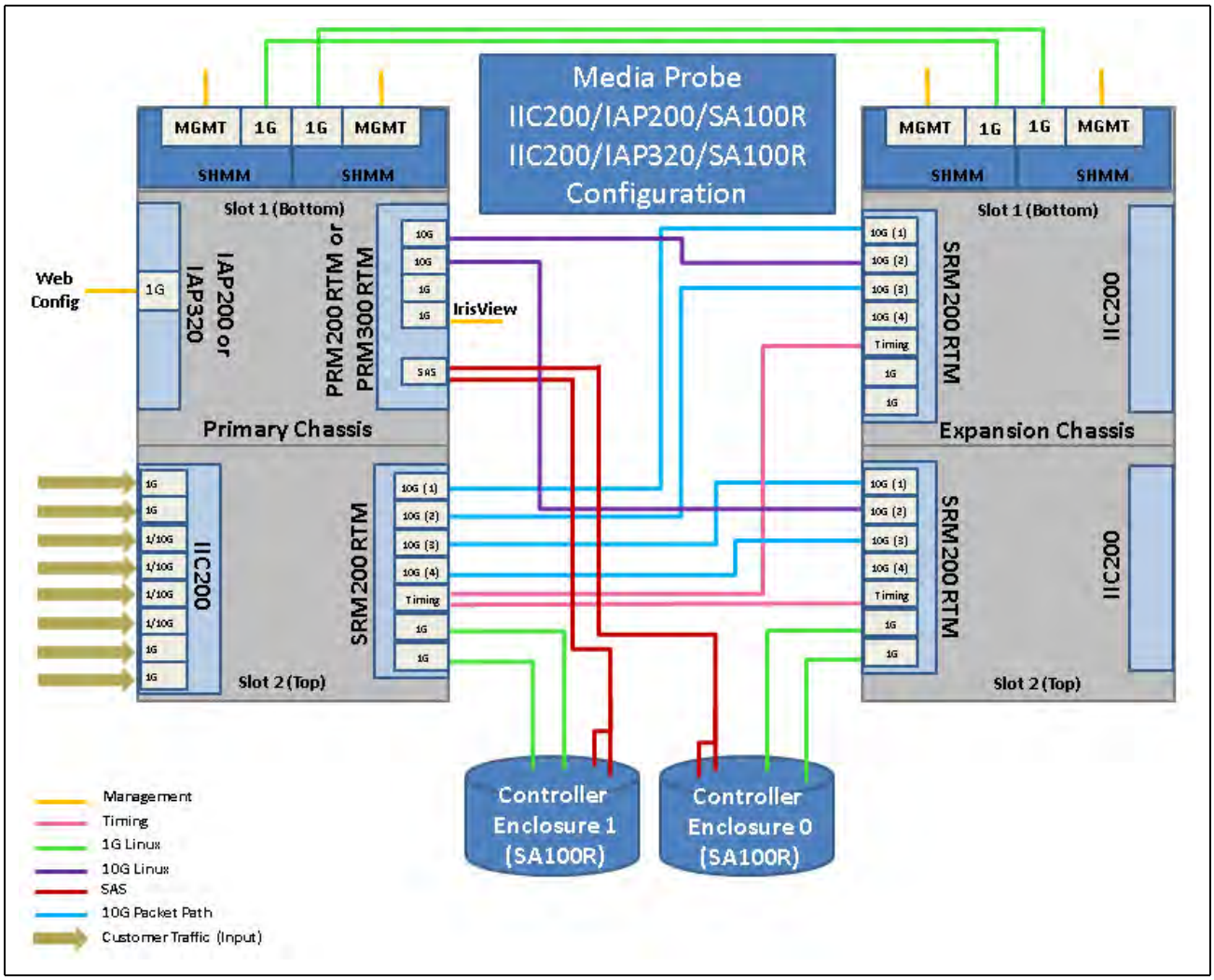


Figure 3.8 - Media Probe Cabling Overview (IIC200/SA100R Configurations)

Table 3.7 summarizes the cables required for communications and data flow between chassis and storage enclosures. Ethernet cables must be shielded.

Table 3.7 - Cabling Summary

Qty.	Cable	Approx. Length	Function	Diagram Reference
6[a]	CAT6 Ethernet Cable (Primary Interfaces can optionally use 1G fiber)	Refer to Ethernet specification	SHMMs to Public OAM LAN Primary interface(s) to Public OAM LAN	**Figure 3.9**
4	CAT6 Ethernet Cable Interchassis communication and timing	1 Meter	SHMMs UPLINK	**Figure 3.9** **Figure 3.10**
2-4	CAT6 Ethernet Cable (2 per enclosure)	1 Meter	G10 to storage enclosure(s)	**Figure 3.11** **Figure 3.12**
6	Fiber Cable (Single-Mode or Multi-mode) Interchassis communication	2 Meters	10G data flow	**Figure 3.13**
1-2	1-to-2 SAS connector cables (1 per controller enclosure)	2 Meters	G10 to controller storage enclosure	**Figure 3.14**
3-6	Mini-SAS cables (2 per controller enclosure)	2 Meters	Controller enclosure to expansion enclosure	**Figure 3.15**

a. Count includes cabling for optional redundant Primary interface.

Connect Ethernet Cabling (IIC200 + IAP200/IAP320+ SA100R)

This section provides information necessary for cabling a media probe with an IIC200/SA100R configuration. See Table 3.1 for a listing of other available cabling diagrams.

Step	Action

1. Insert RJ45 copper or optional Fiber SFP modules into the following ports (refer to the **Appendix B** for SFP details). ***Port B applies only when configuring a redundant interface.***
   - Primary chassis:
     - PRM200 RTM or PRM300 RTM (Slot 1): Port A and Port B
   - Use **Figure 3.9** to connect Ethernet cables from the G10 chassis to your LAN.

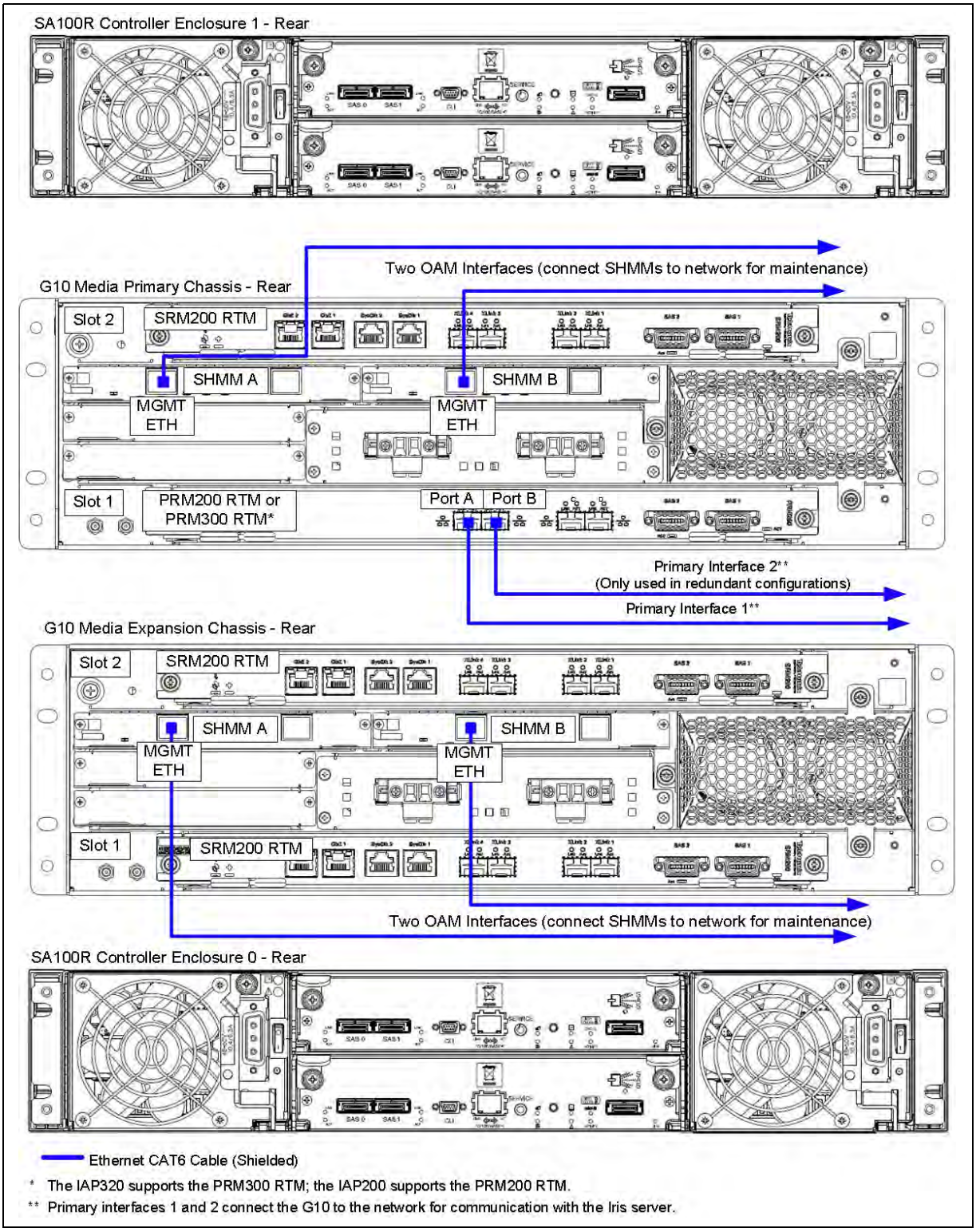


Figure 3.9 - Ethernet Connections from G10 to LAN

2. Connect the Ethernet cables between the G10 chassis as shown in **Figure 3.10** and **Table 3.8**.

The G10 primary and expansion chassis use the SYSCLK jumper settings on the SRM200 RTMs for cage-to-cage timing distribution. See IIC200: SRM200 RTM SYSCLK Settings for details.

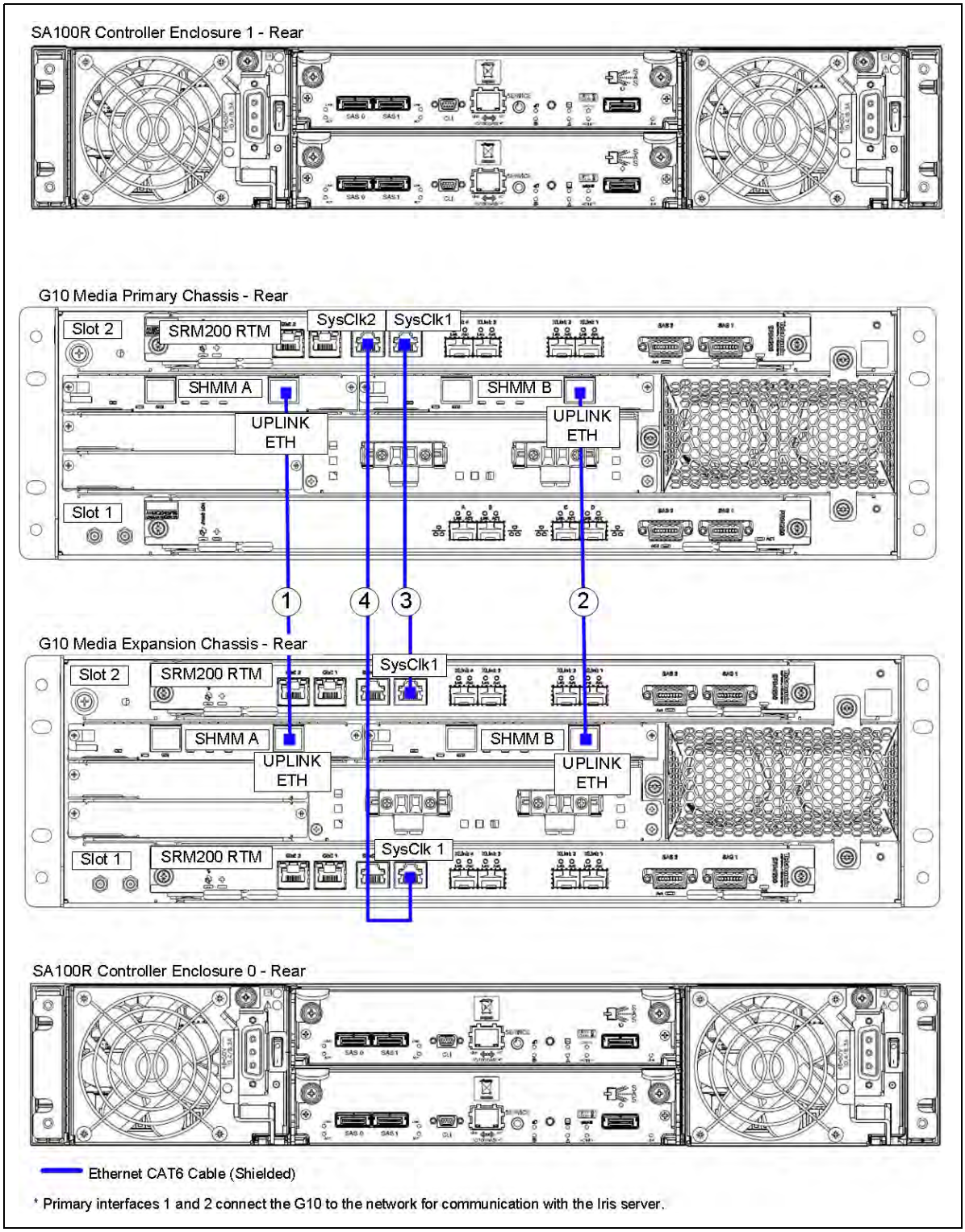


Figure 3.10 - Ethernet Connections between G10 Chassis

Table 3.8 - Ethernet Connections Between G10s

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
1	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SHMM A UPLINK ETH	G10 expansion chassis	SHMM A UPLINK ETH
2	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SHMM B UPLINK ETH	G10 expansion chassis	SHMM B UPLINK ETH
3	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SRM200 RTM Slot 2 SysClk1	G10 expansion chassis	SRM200 RTM Slot 2 SysClk1
4	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SRM200 RTM Slot 2 SysClk2	G10 expansion chassis	SRM200 RTM Slot 1 SysClk1

3. To connect Ethernet cables from the G10 to **ONE** SA100R controller storage enclosure **ONLY**, refer to **Figure 3.11** and **Table 3.9**. ***To connect Ethernet cables from the G10 to TWO SA100R controllers, refer to Figure 3.12.***

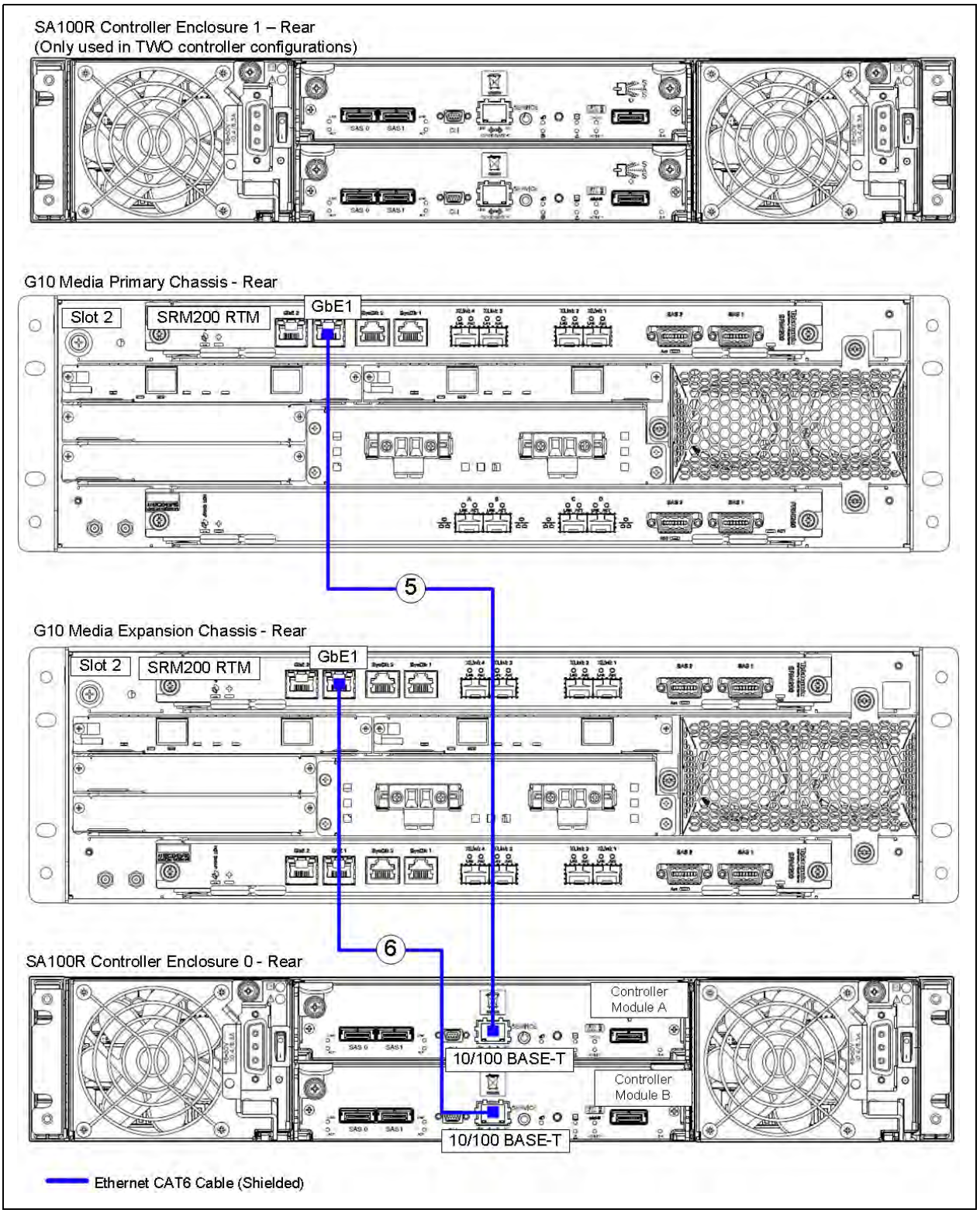


Figure 3.11 - Ethernet Connections - G10 to ONE SA100R Controller Enclosure

Table 3.9 - Ethernet Connections - G10 to ONE SA100R Controller Enclosures

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
5	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SRM200 RTM Slot 2 GbE1	Controller 0	Module A 10/100 BASE-T
6	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 expansion chassis	SRM200 RTM Slot 2 GbE1	Controller 0	Module B 10/100 BASE-T

4. To connect Ethernet cables from the G10 to **TWO** SA100R controller storage enclosures, refer to **Figure 3.12** and **Table 3.10**. ***To connect Ethernet cables from the G10 to ONE controller ONLY, refer to Figure 3.11 and Table 3.9.***

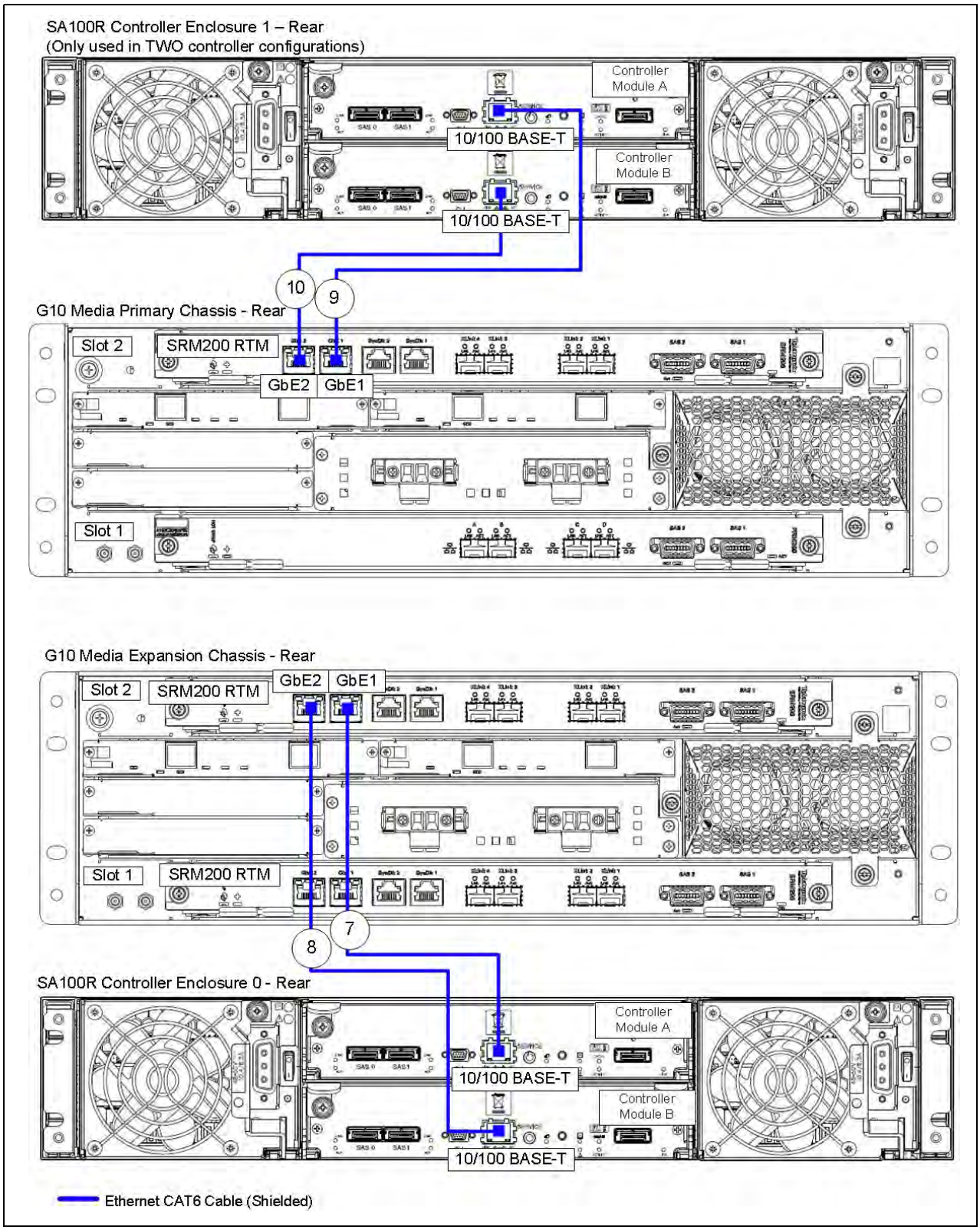


Figure 3.12 - Ethernet Connections - G10 to TWO SA100R Controller Enclosures

Table 3.10 - Ethernet Connections - G10 to Controller Enclosures

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
7	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 expansion chassis	SRM200 RTM Slot 2 GbE1	Controller enclosure 0	Module A 10/100 BASE-T
8	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 expansion chassis	SRM200 RTM Slot 2 GbE2	Controller enclosure 0	Module B 10/100 BASE-T
9	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SRM200 RTM Slot 2 GbE1	Controller enclosure 1	Module A 10/100 BASE-T
10	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SRM200 RTM Slot 2 GbE2	Controller enclosure 1	Module B 10/100 BASE-T

If the G10 is supporting two controller disk arrays, it is recommended that you label the controller enclosures as "Controller 0" and "Controller 1" as soon as you begin cabling so they can be identified easily during the deployment process and for maintenance purposes.

5. Insert SFPs into the following 10G ports (refer to the **Appendix B** for SFP details).

   - Primary chassis
     - SRM200 RTM (Slot 2): XLink Ports 1–4
     - PRM200 RTM or PRM300 RTM (Slot 1): Ports C and D
   - Expansion chassis
     - SRM200 RTM (Slot 2): XLink Ports 1–3
     - SRM200 RTM (Slot 1): XLink Ports 1–3

6. Connect optical fiber cables between the primary and expansion G10 chassis as shown in **Figure 3.13** and **Table 3.11**.

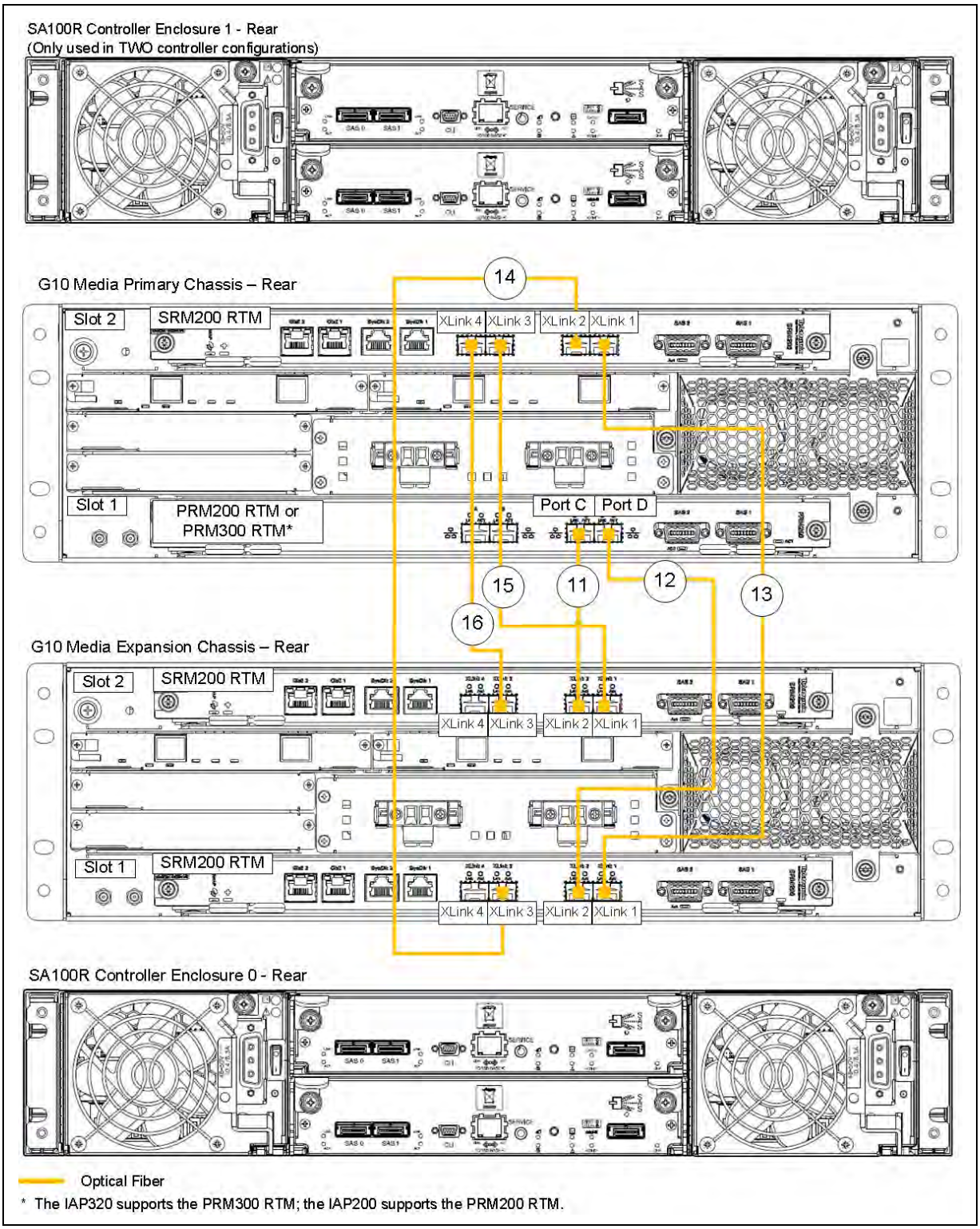


Figure 3.13 - Ethernet Connections - 10 GB Ethernet Between G10 Chassis

Table 3.11 - Ethernet Connections - 10 GB Ethernet Between G10 Chassis

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
11	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 Port C	G10 expansion chassis	SRM200 RTM Slot 2 XLink 2
12	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 Port D	G10 expansion chassis	SRM200 RTM Slot 1 XLink 2
13	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	SRM200 RTM Slot 2 XLink 1	G10 expansion chassis	SRM200 RTM Slot 1 XLink 1
14	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	SRM200 RTM Slot 2 XLink 2	G10 expansion chassis	SRM200 RTM Slot 1 XLink 3
15	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	SRM200 RTM Slot 2 XLink 3	G10 expansion chassis	SRM200 RTM Slot 2 XLink 1
16	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	SRM200 RTM Slot 2 XLink 4	G10 expansion chassis	SRM200 RTM Slot 2 XLink 3

a. The IAP200 blade supports the PRM200 RTM; the IAP320 blade supports the PRM300 RTM.

7. Continue with Connect SAS Cabling (IIC200 + IAP200/IAP320+ SA200R).

IIC200 + IAP200/IAP320+ SA100R SAS Cabling

Use **Figure 3.14** to connect the SAS cables from the G10 to the controller enclosures; ***Controller 1 is used only in dual controller configurations.*** This configuration uses 1-to-2 SAS connector cables. The 1-to-2 SAS cables are labeled with “P1” and “P2” on the connector ends that attach to the enclosures to ensure proper cabling. P1 connectors should always attach to Module A; P2 connectors should always connect to Module B. Refer to **Figure 3.15** for information about cabling expansion enclosures.

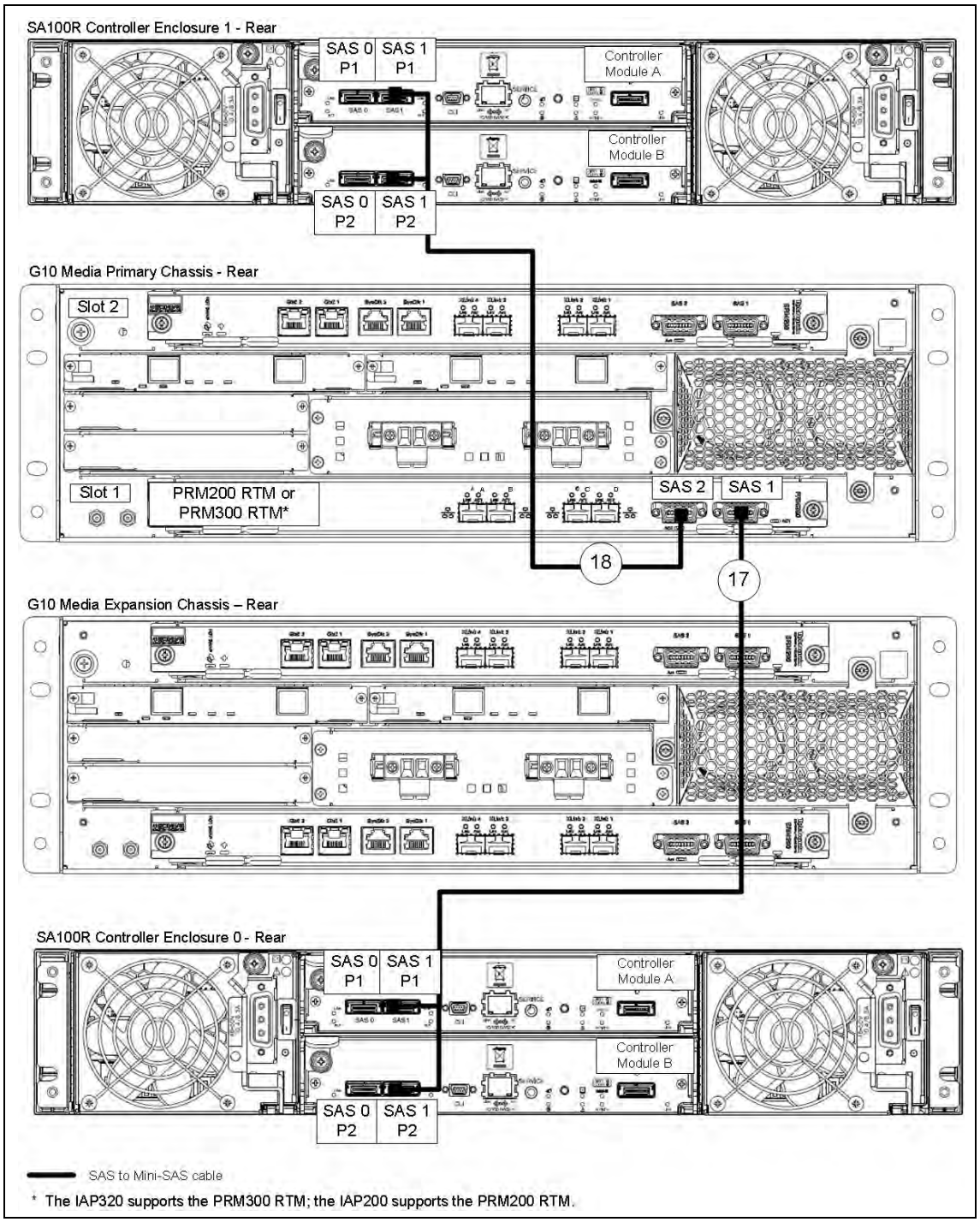


Figure 3.14 - G10 SAS Cabling to Controller 0 and Controller 1

Table 3.12 - SAS Connections to Controllers

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
17	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 SAS 1	Controller Enclosure 0	Module A SAS 1, P1
						Module B SAS 1, P2
18	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 SAS 2	Controller Enclosure 1	Module A SAS 1, P1
						Module B SAS 1, P2

a. The IAP200 blade supports the PRM200 RTM; the IAP320 blade supports the PRM300 RTM.

If the G10 is supporting two controller disk arrays, it is recommended that you label the controller enclosures as "Controller 0" and "Controller 1" as soon as you begin cabling so they can be easily identified during deployment and for maintenance.

SA100R Controller Enclosure to Expansion Enclosures

Use **Figure 3.15** to connect SAS cables from the controller enclosure to the expansion enclosures. Each controller enclosure supports three expansion enclosures. Expansion enclosures are shipped with mini-SAS cables.

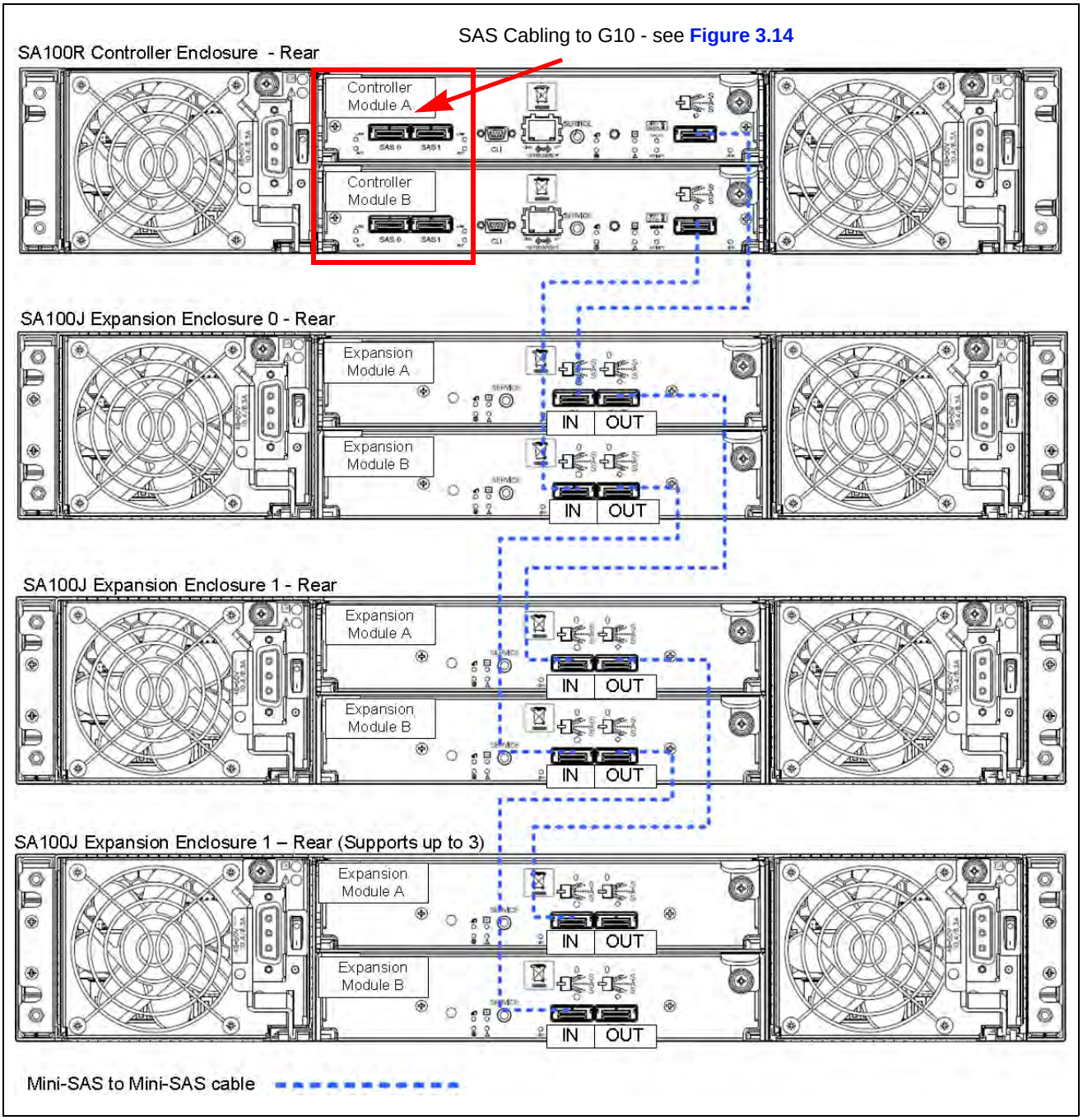


Figure 3.15 - SAS Connections - Controller Enclosure to Expansion Enclosures

IIC100 + IAP200/IAP320 + SA200R/SA100R MEDIA PROBE CABLING

Figure 3.16 shows an overview of the G10 Media Probe Ethernet and SAS cabling for the IIC100 configurations. Refer to the cabling diagrams starting on **page 79** for specific cabling details.

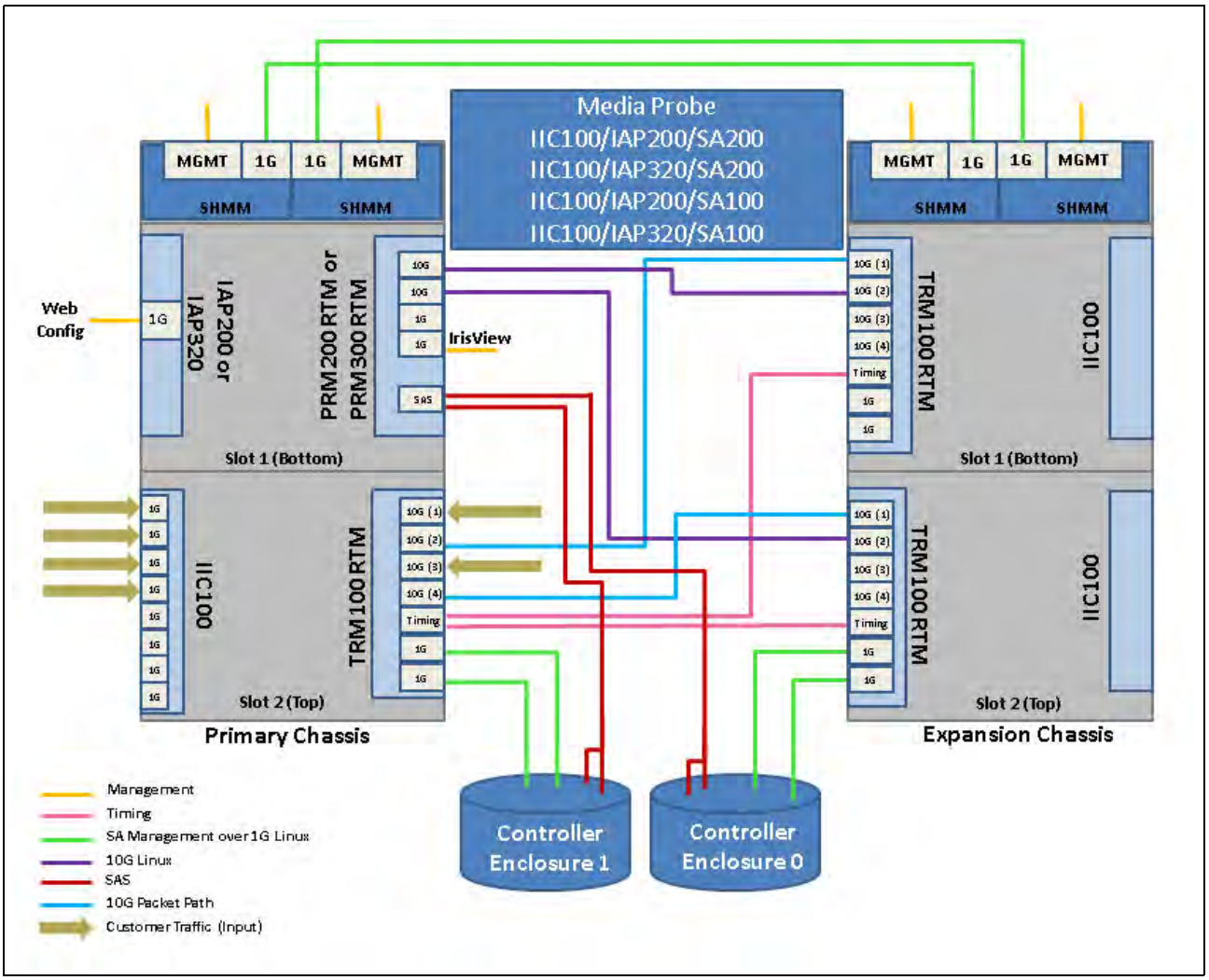


Figure 3.16 - Media Probe Cabling Overview

Table 3.13 summarizes the cables required for communications and data flow between chassis and storage enclosures. Ethernet cables must be shielded.

Table 3.13 - Cabling Summary

Qty.	Cable	Approx. Length	Function	Diagram Reference
6[a]	CAT6 Ethernet Cable (Primary Interfaces can optionally use 1G fiber)	Refer to Ethernet specification	SHMMs to Public OAM LAN Primary interface(s) to Public OAM LAN	**Figure 3.17**
4	CAT6 Ethernet Cable Interchassis communication and timing	1 Meter	SHMMs UPLINK	**Figure 3.17** **Figure 3.18**

Table 3.13 - Cabling Summary (Continued)

Qty.	Cable	Approx. Length	Function	Diagram Reference
2-4	CAT6 Ethernet Cable (2 per enclosure)	1 Meter	G10 to storage enclosure(s)	**Figure 3.19** **Figure 3.20**
4	Fiber Cable (Single-Mode or Multi-mode) Interchassis communication	2 Meters	10G Data Flow	**Figure 3.21**
1-2	1-to-2 SAS connector cables (1 per controller enclosure)	2 Meters	G10 to Controller storage enclosure	**Figure 3.22**
3-6	Mini-SAS cables (2 per controller enclosure)	2 Meters	Controller enclosure to expansion enclosure	**Figure 3.23**

a. Count includes cabling for optional redundant Primary interface.

Connect Ethernet Cabling (IIC100 + IAP200/IAP320 + SA200R/SA100R)

Step Action

1. Insert RJ45 copper or optional Fiber SFP modules into the following ports (refer to the **Appendix B** for SFP details). ***Port B applies only when configuring a redundant interface.***

   - Primary Chassis:

     - PRM200 RTM or PRM300 RTM (Slot 1): Port A and Port B

   - Use **Figure 3.17** to connect Ethernet cables from the G10 chassis to your LAN.

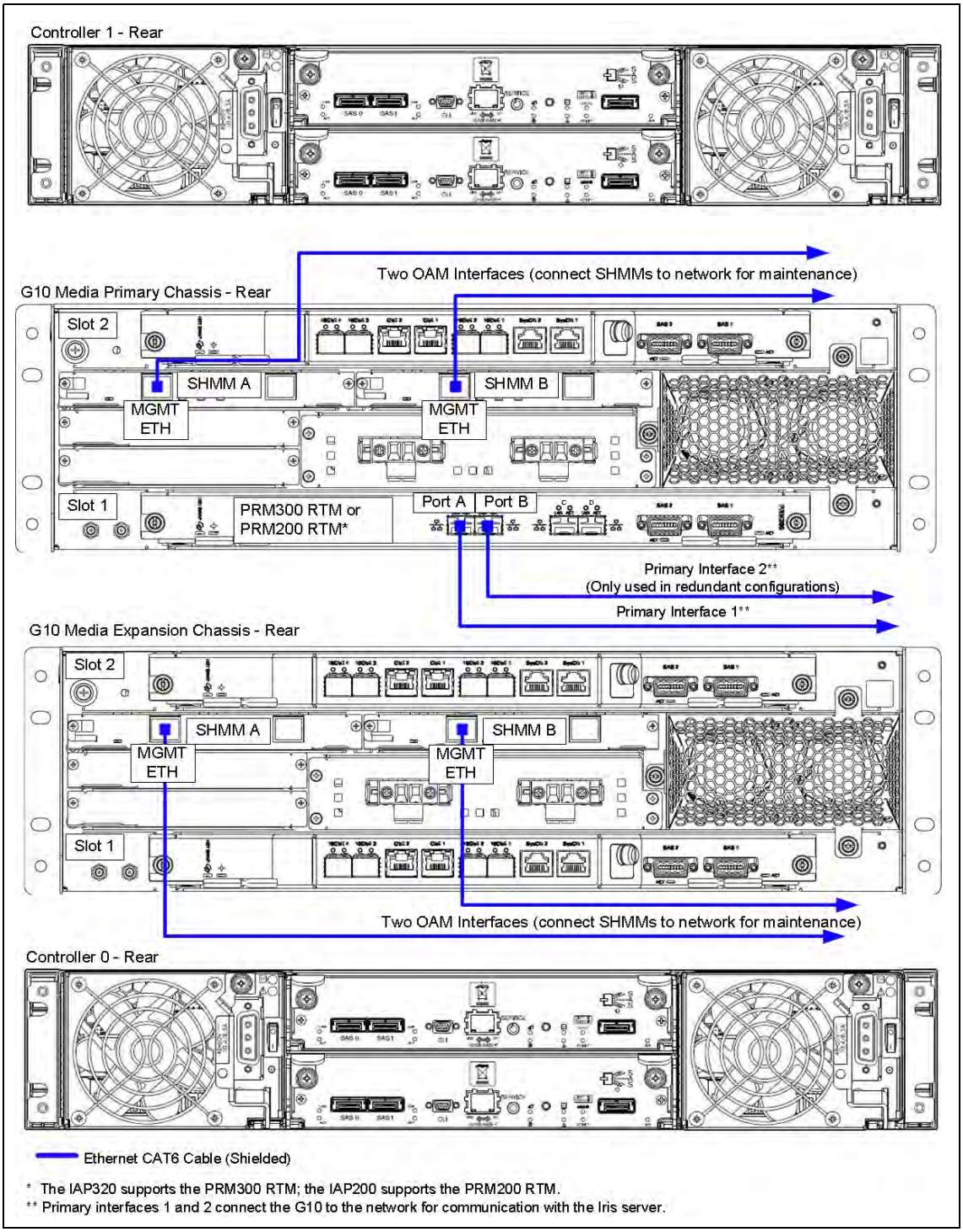


Figure 3.17 - Ethernet Connections from G10 to LAN

2. Connect the Ethernet cables between the G10 chassis as shown in **Figure 3.18** and **Table 3.14**. ***You should have verified the SYSCLK Termination DIP switch settings on all three TRM100 RTMs are TERMINATED prior to installing the chassis in the rack (see IIC100: TRM100 RTM SYSCLK Settings for details)***.

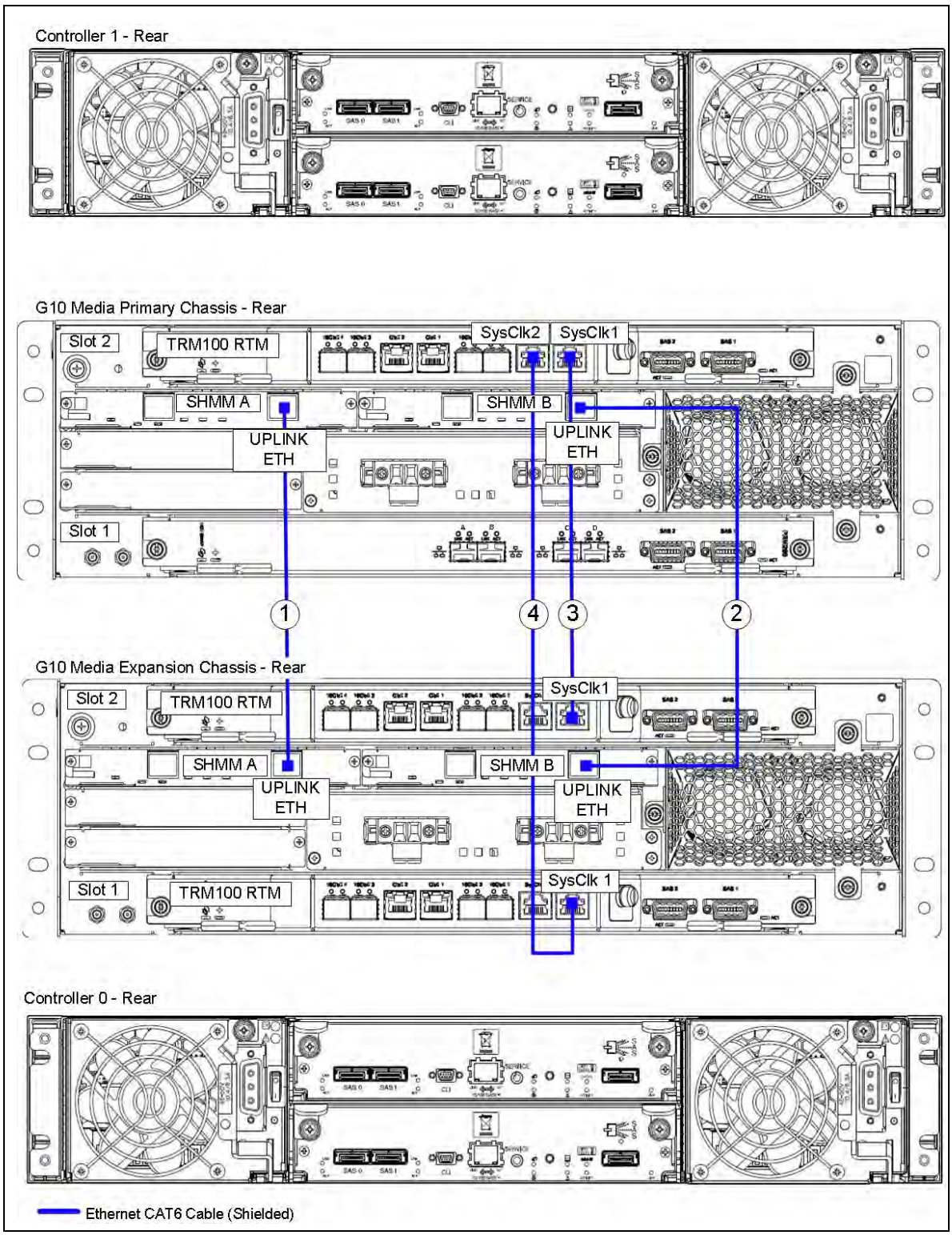


Figure 3.18 - Ethernet Connections between G10 Chassis

Table 3.14 - Ethernet Connections Between G10s

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
1	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SHMM A UPLINK ETH	G10 expansion chassis	SHMM A UPLINK ETH
2	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	SHMM B UPLINK ETH	G10 expansion chassis	SHMM B UPLINK ETH
3	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	TRM100 RTM Slot 2 SysClk1	G10 expansion chassis	TRM100 RTM Slot 2 SysClk1
4	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	TRM100 RTM Slot 2 SysClk2	G10 expansion chassis	TRM100 RTM Slot 1 SysClk1

3. To connect Ethernet cables from the G10 to **ONE** controller storage enclosure **ONLY**, refer to **Figure 3.19** and **Table 3.15**. ***To connect Ethernet cables from the G10 to TWO controllers, refer to Figure 3.20.***

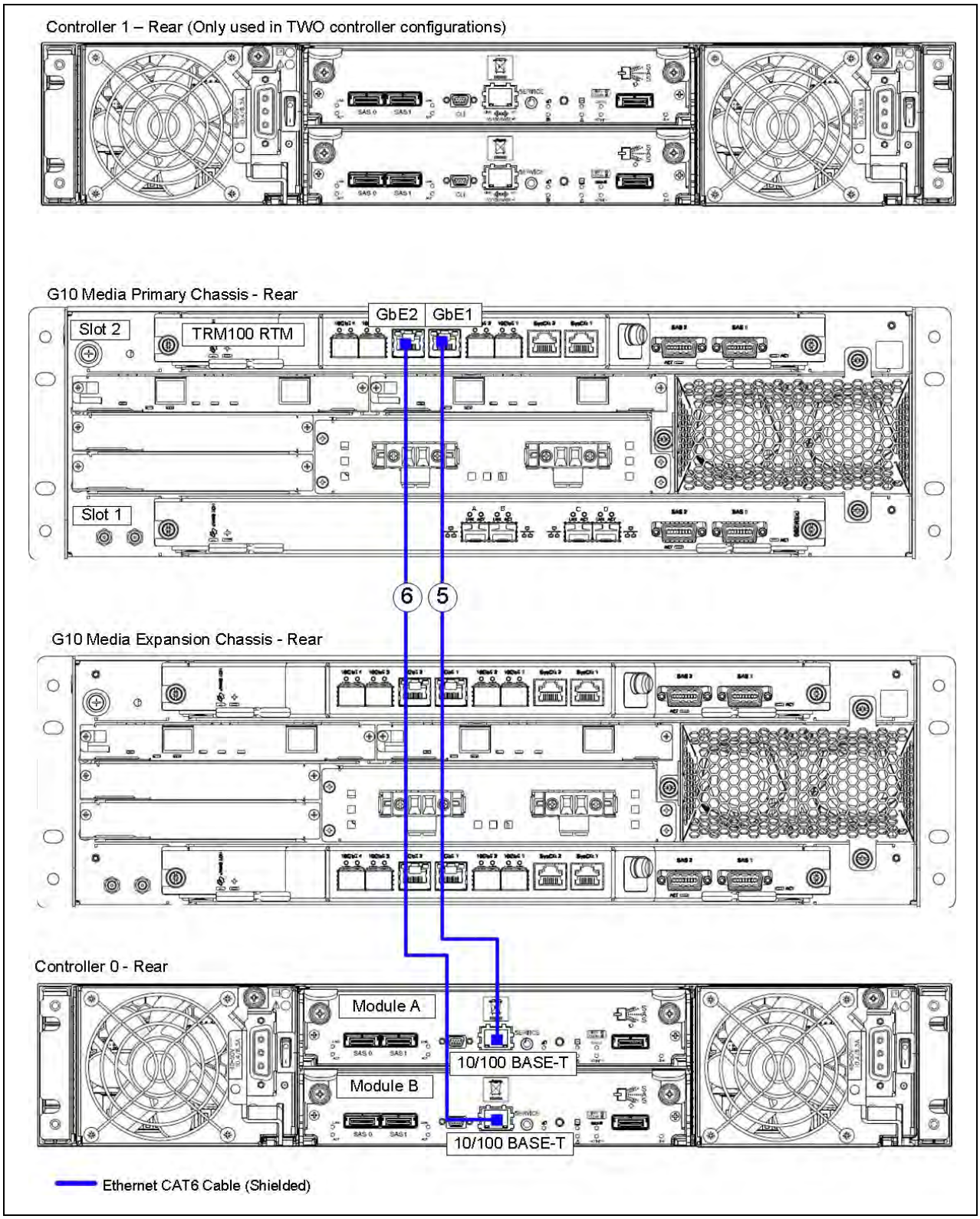


Figure 3.19 - Ethernet Connections - G10 to ONE Controller Enclosure ONLY

Table 3.15 - Ethernet Connections - G10 to ONE Controller Enclosure

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
5	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	TRM100 RTM Slot 2 GbE1	Controller 0	Module A 10/100 BASE-T
6	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	TRM100 RTM Slot 2 GbE2	Controller 0	Module B 10/100 BASE-T

4. To connect Ethernet cables from the G10 to **TWO** controller storage enclosures, refer to **Figure 3.20** and **Table 3.16**. To connect Ethernet cables from the G10 to **ONE** controller **ONLY**, refer to **Figure 3.19** and **Table 3.15**.

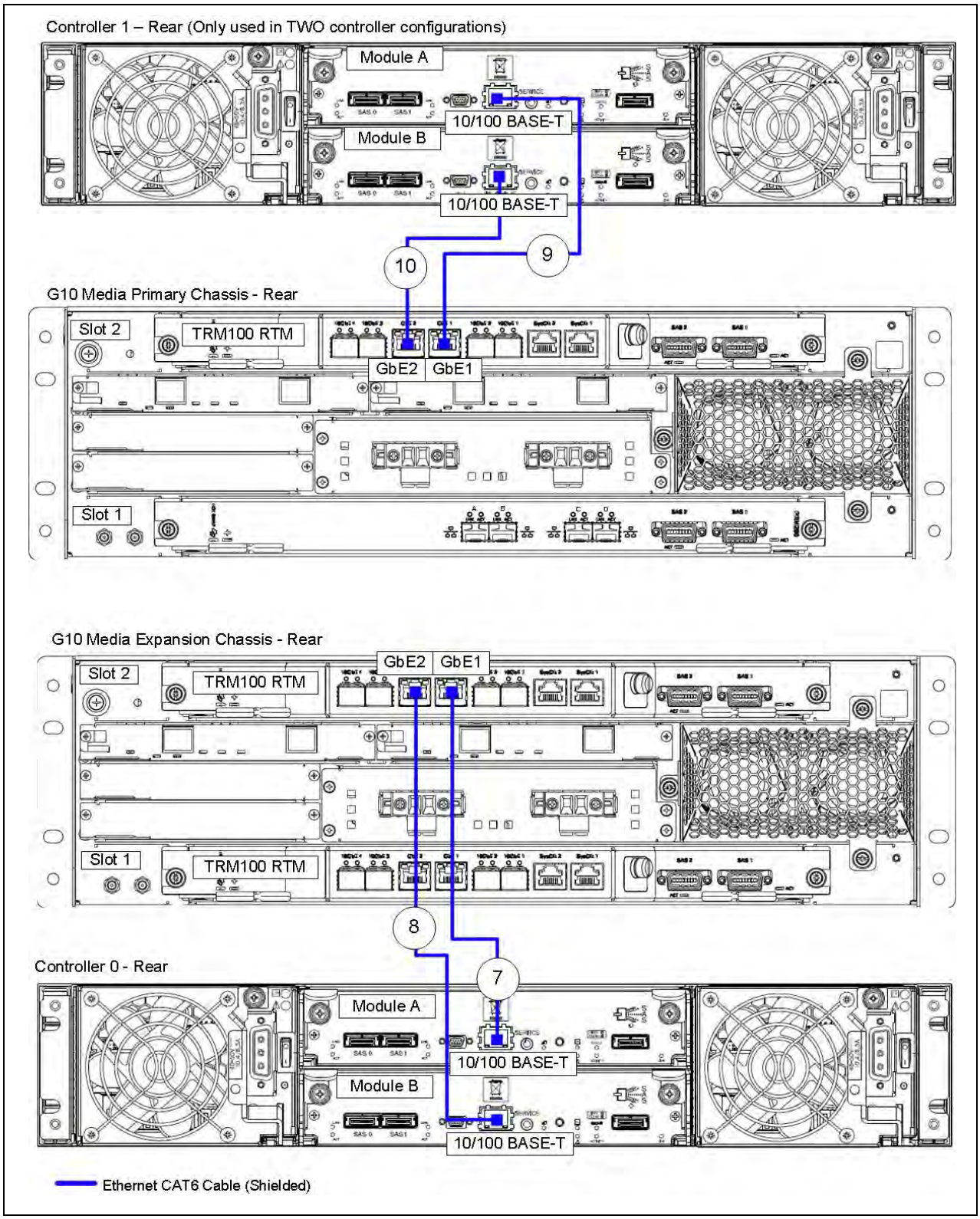


Figure 3.20 - Ethernet Connections - G10 to TWO Controller Enclosures

Table 3.16 - Ethernet Connections - G10 to TWO Controller Enclosures

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
7	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 expansion chassis	TRM100 RTM Slot 2 GbE1	Controller 0	Module A 10/100 BASE-T
8	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 expansion chassis	TRM100 RTM Slot 2 GbE2	Controller 0	Module B 10/100 BASE-T
9	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	TRM100 RTM Slot 2 GbE1	Controller 1	Module A 10/100 BASE-T
10	174584000	CAT 6, Shielded, 1 Meter, Blue	G10 primary chassis	TRM100 RTM Slot 2 GbE2	Controller 1	Module B 10/100 BASE-T

5. Insert SFPs into the following 10GbE ports (refer to the **Appendix B** for SFP details).

   - Primary Chassis
     - TRM100 RTM (Slot 2): 10GbE 2 and 10GbE 4
     - PRM200 RTM or PRM300 RTM (Slot 1): Ports C and D
   - Expansion Chassis
     - TRM100 RTM (Slot 2): 10GbE 1 and 10GbE 2
     - TRM100 RTM (Slot 1): 10GbE 1 and 10GbE 2

6. Connect optical fiber cables between the primary and expansion G10 chassis as shown in **Figure 3.21** and **Table 3.17**.

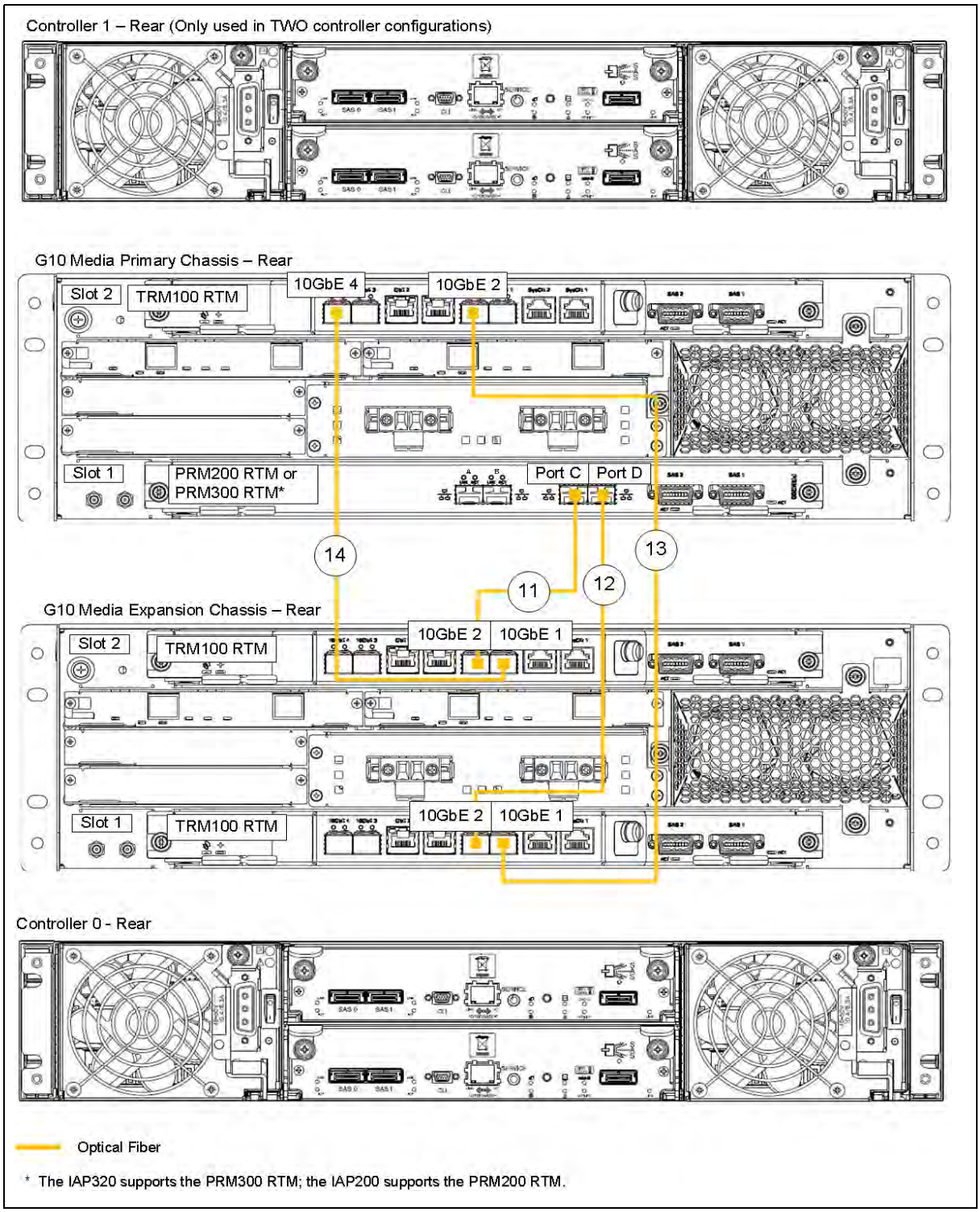


Figure 3.21 - Ethernet Connections - 10 GB Ethernet Between G10 Chassis

Table 3.17 - Ethernet Connections - 10 GB Ethernet Between G10 Chassis

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
11	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 Port C	G10 expansion chassis	TRM100 RTM Slot 2 10GbE 2
12	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 Port D	G10 expansion chassis	TRM100 RTM Slot 1 10GbE 2
13	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	TRM100 RTM Slot 2 10GbE 2	G10 expansion chassis	TRM100 RTM Slot 1 10GbE 1
14	174616900	Fiber Optic, Single mode, 2 meters, Yellow	G10 primary chassis	TRM100 RTM Slot 2 10GbE 4	G10 expansion chassis	TRM100 RTM Slot 2 10GbE 1

a. The IAP200 blade supports the PRM200 RTM; the IAP320 blade supports the PRM300 RTM.

7. Continue with Connect SAS Cabling (IIC100 + IAP200/IAP320 + SA200R/SA100R).

Connect SAS Cabling (IIC100 + IAP200/IAP320 + SA200R/SA100R)

Use **Figure 3.22** to connect SAS cables from the G10 to the controller enclosures; ***Controller 1 is only used in dual controller configurations.*** This configuration uses 1-to-2 SAS connector cables. The 1-to-2 SAS cables are labeled with “P1” and “P2” on the connector ends that attach to the enclosures to ensure proper cabling. P1 connectors should always attach to Module A; P2 connectors should always connect to Module B. Refer to **Figure 3.23** for information about cabling expansion enclosures, or continue with Power On the System.

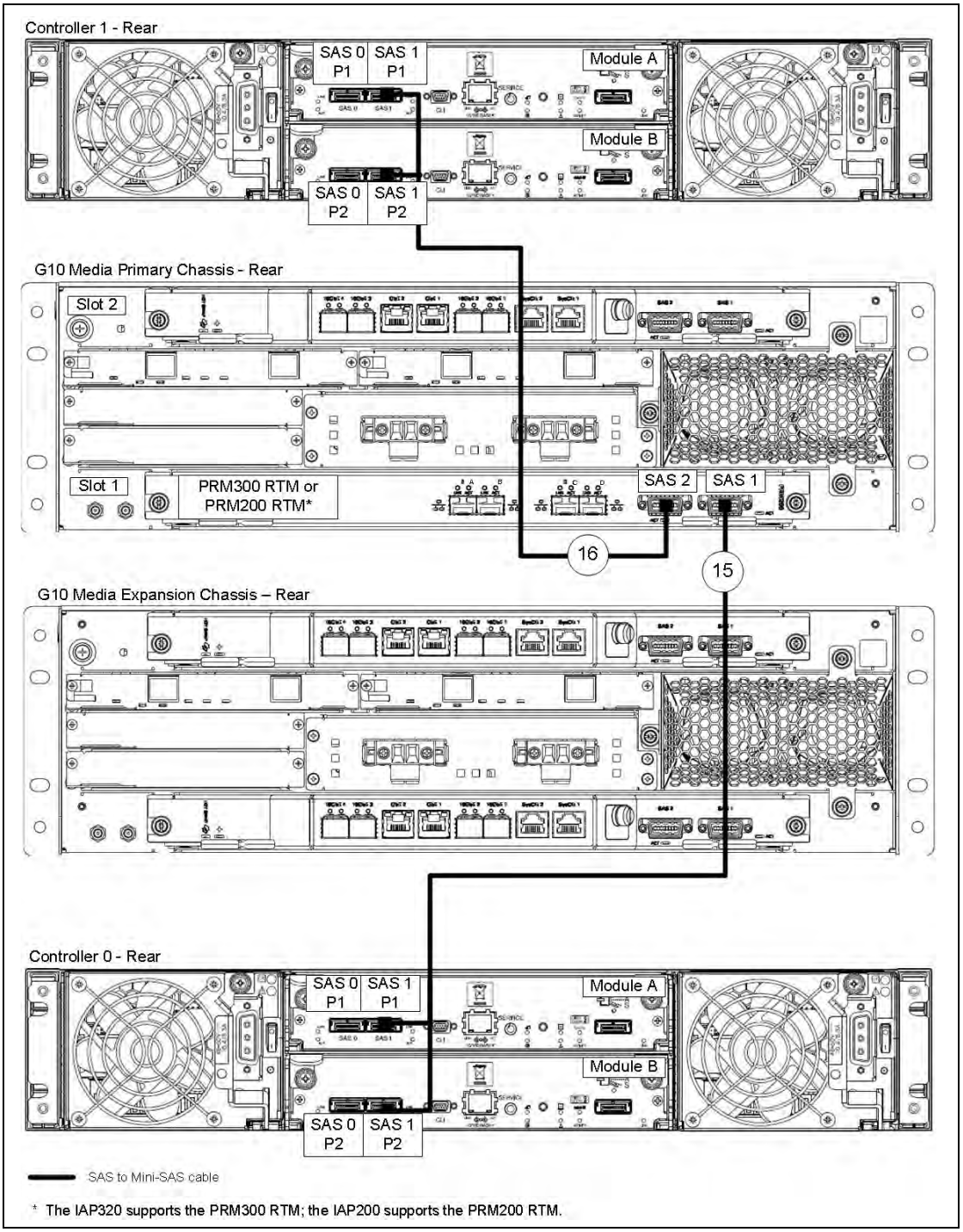


Figure 3.22 - G10 SAS Cabling to Controller 0 and Controller 1

Table 3.18 - SAS Connections to Controllers

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
15	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 SAS 1	Controller 0	Module A SAS 1, P1
						Module B SAS 1, P2
16	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 SAS 2	Controller 1	Module A SAS 1, P1
						Module B SAS 1, P2

a. The IAP200 blade supports the PRM200 RTM; the IAP320 blade supports the PRM300 RTM.

If the G10 is supporting two controller disk arrays, it is recommended you label the controller enclosures as "Controller 0" and "Controller 1" as soon as you begin cabling so they can be easily identified during the deployment process and for maintenance purposes.

SAS Connections - Controller Enclosure to Expansion Enclosures

Use **Figure 3.23** to connect SAS cables from the controller enclosure to the expansion enclosures. Then continue with Power On the System. Each controller enclosure supports three expansion enclosures. Expansion enclosures are shipped with mini-SAS cables.

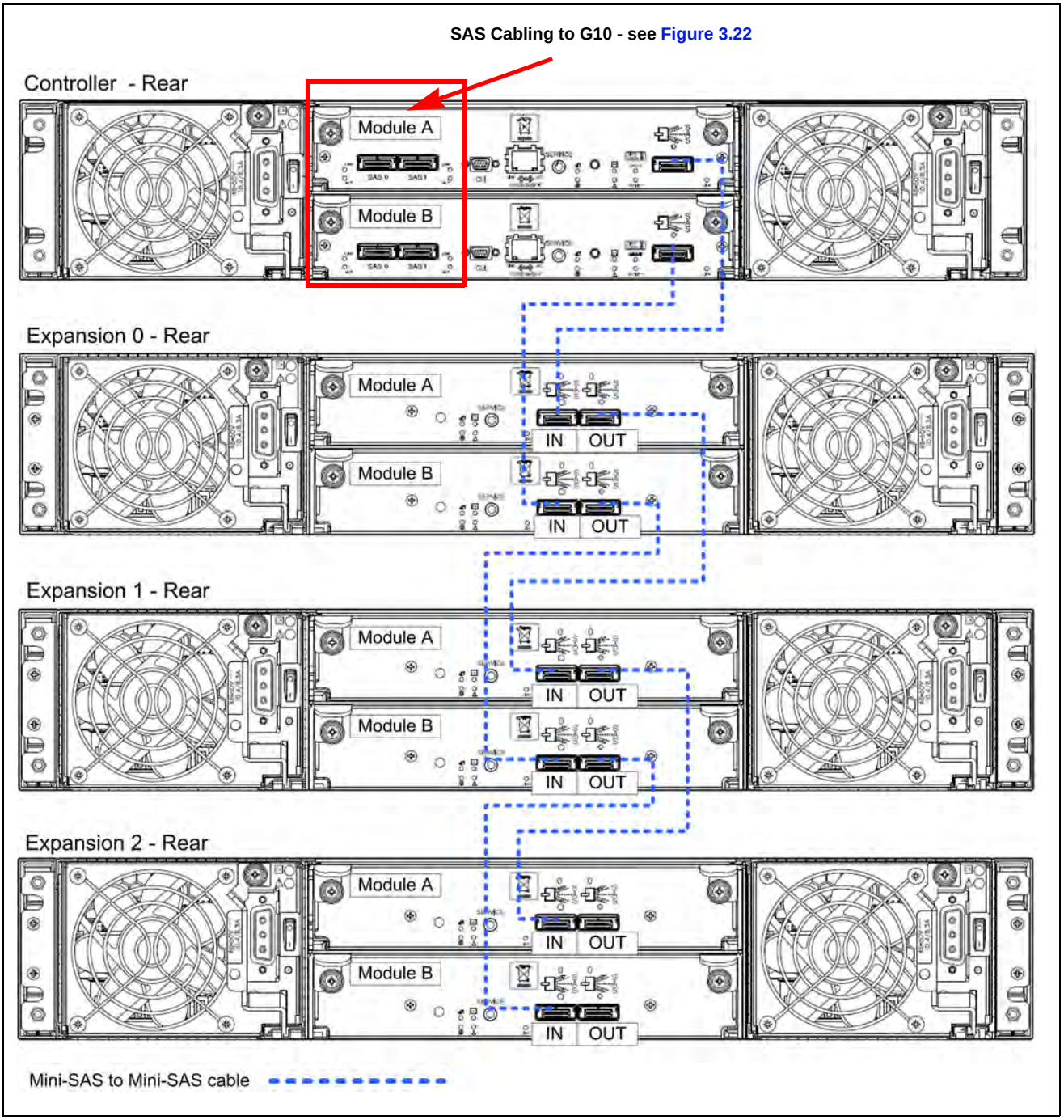


Figure 3.23 - SAS Connections - Controller Enclosure to Expansion Enclosures

COMPREHENSIVE RTP MEDIA CAPTURE SAS CABLING

A media probe that is supporting the Comprehensive RTP Media Capture feature requires the following hardware configuration.

G10 Media Primary Chassis	
Slot 1 (Bottom)	▪ IAP200 blade (front) and PRM200 RTM (rear) OR ▪ IAP320 blade (front) and PRM300 RTM (rear)
Slot 2 (Top)	▪ IIC200 blade (front) and SRM200 RTM (rear)
G10 Media Expansion Chassis	
Slot 1 (Bottom)	▪ IIC200 blade (front) and SRM200 RTM (rear)
Slot 2 (Top)	▪ IIC200 blade (front) and SRM200 RTM (rear)
SAS Storage Enclosures (Controller and Expansion) ▪ SA200R - Option of two controller enclosures, each supporting seven JBOD expansion enclosures	

Licensing

The BULK_RPT_CAPTURE license must be enabled on the media probe and the Comprehensive RTP Media Capture feature must be enabled in Iris Admin (refer to the Admin online help for details.

SAS Cabling

The following SAS cabling diagrams are provided for a Media probe that is supporting the Comprehensive RTP Media Capture feature.

- SAS Cabling to Controller 0
- SAS Cabling to Controller 1

A media probe supporting the comprehensive RTP media capture uses the same Ethernet cabling as an IIC200+ IAP200/IAP320 + SA200R media probe. Refer to Connect Ethernet Cabling (IIC200 + IAP200/IAP320+ SA200R) for Ethernet cabling diagrams.

SAS Cabling to Controller 0

Figure 3.24 shows the SAS cabling for the Comprehensive Media Probe to Controller 0. This configuration uses 1-to-2 SAS connector cables. The 1-to-2 SAS cables are labeled with “P1” and “P2” on the connector ends that attach to the enclosure to ensure proper cabling. P1 connectors should always attach to Module A; P2 connectors should always connect to Module B.

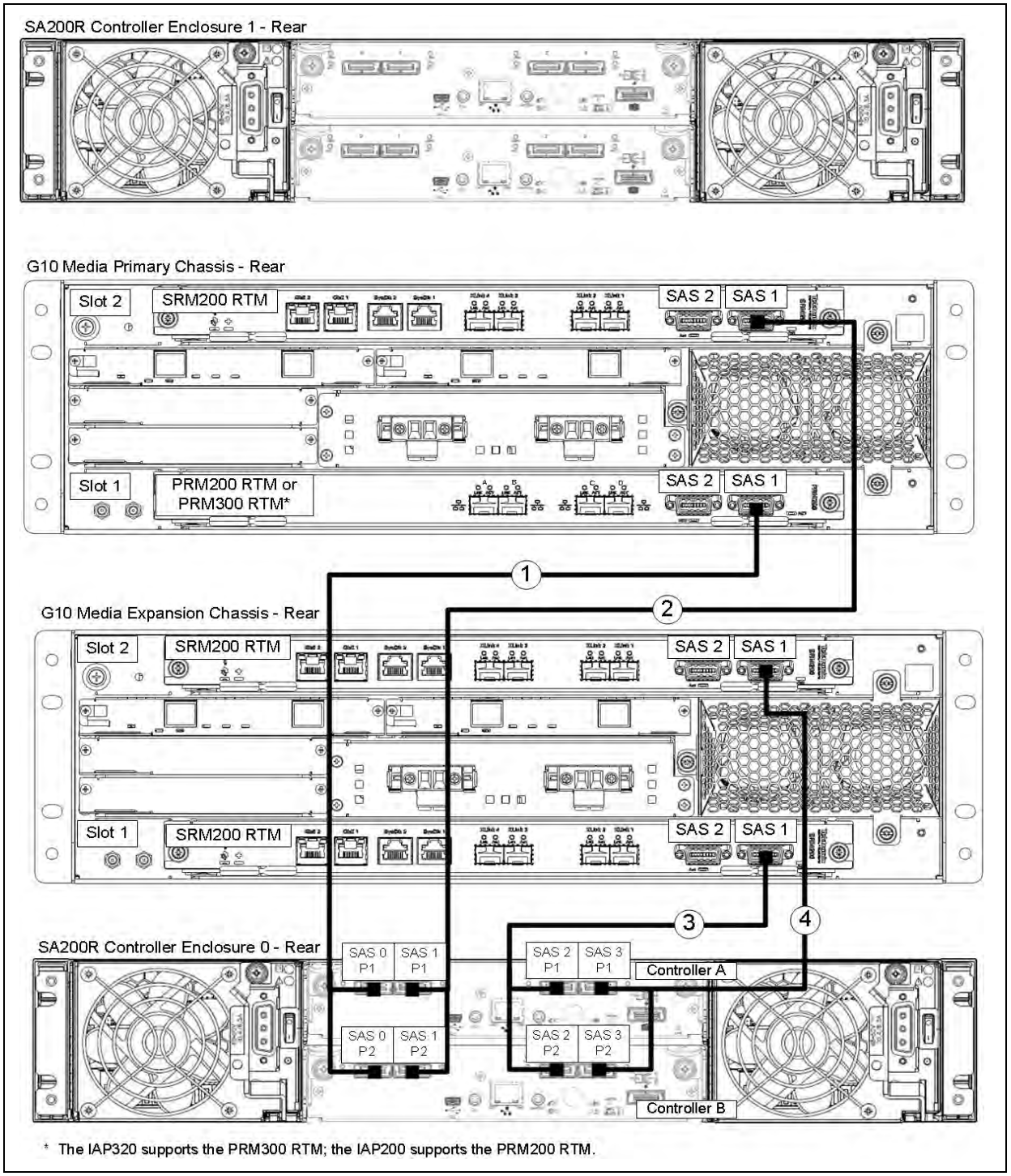


Figure 3.24 - Comprehensive Media Probe Cabling to Controller 0

Table 3.19 - SAS Connections to Controller 0

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
1	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 SAS 1	Controller 0	Module A SAS 0, P1
						Module B SAS 0, P2
2	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 primary chassis	SRM200 RTM Slot 2 SAS 1	Controller 0	Module A SAS 1, P1
						Module B SAS 1, P2
3	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 expansion chassis	SRM200 RTM Slot 1 SAS 1	Controller 0	Module A SAS 2, P1
						Module B SAS 2, P2
4	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 expansion chassis	SRM200 RTM Slot 2 SAS 1	Controller 0	Module A SAS 3, P1
						Module B SAS 3, P2

a. The IAP200 blade supports the PRM200 RTM; the IAP320 blade supports the PRM300 RTM.

SAS Cabling to Controller 1

Figure 3.25 shows the SAS cabling for the Comprehensive Media Probe to Controller 1. This configuration uses 1-to-2 SAS connector cables. The 1-to-2 SAS cables are labeled with “P1” and “P2” on the connector ends that attach to the enclosure to ensure proper cabling. P1 connectors should always attach to Module A; P2 connectors should always connect to Module B.

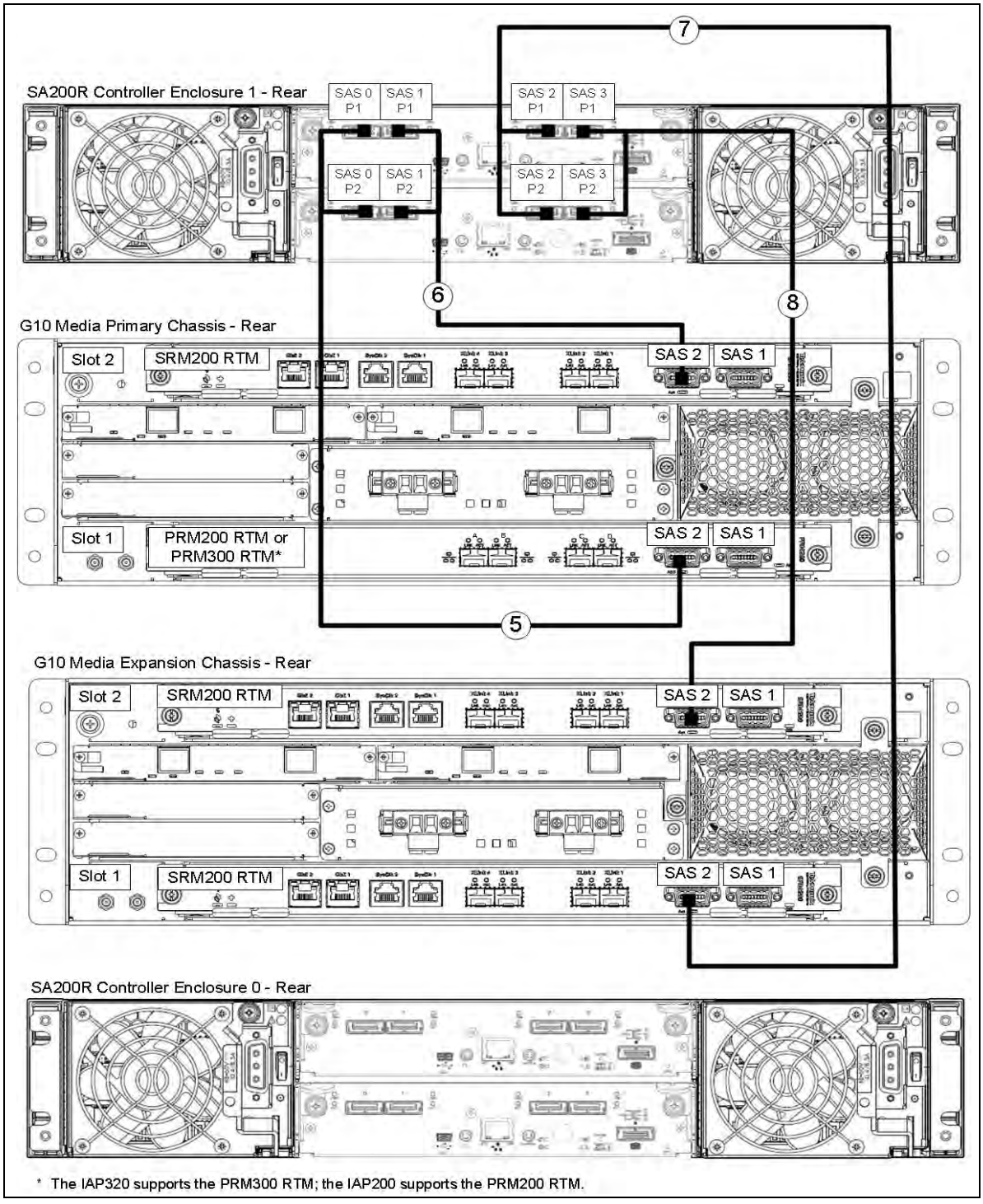


Figure 3.25 - Comprehensive Media Probe Cabling to Controller 1

Table 3.20 - SAS Connections to Controller 1

No.	Tektronix Part Number	Cable Type	Side A		Side B	
			Equipment	Connection	Equipment	Connection
5	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 primary chassis	PRM200 RTM or PRM300 RTM[a] Slot 1 SAS 2	Controller 1	Module A SAS 0, P1
						Module B SAS 0, P2
6	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 primary chassis	SRM200 RTM Slot 2 SAS 2	Controller 1	Module A SAS 1, P1
						Module B SAS 1, P2
7	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 expansion chassis	SRM200 RTM Slot 1 SAS 2	Controller 1	Module A SAS 2, P1
						Module B SAS 2, P2
8	174578872	Single SAS to DUAL mini-SAS, 2 meters, Black	G10 expansion chassis	SRM200 RTM Slot 2 SAS 2	Controller 1	Module A SAS 3, P1
						Module B SAS 3, P2

a. The IAP200 blade supports the PRM200 RTM; the IAP320 blade supports the PRM300 RTM.

4 Power On G10 and Configure Network Connectivity

POWER ON THE SYSTEM

After you have installed all hardware components and connected all cabling, you are now ready to power on the storage enclosures and G10 chassis.

The following steps must be performed in the specific order listed to properly configure the system. Make sure to perform the steps in the proper order.

Step	Action
1.	**G10 AC Units only: Make sure the G10 AC power cables are NOT connected to the rack power outlet.**
2.	Turn on the circuit breakers at the power distribution panel.
3.	Power on the storage enclosures. Power on the expansion enclosures first, then the controller enclosure(s).

a. Press the power switches to the ON position on both power modules at the back of each enclosure. **Figure 4.1** shows the DC power switches.

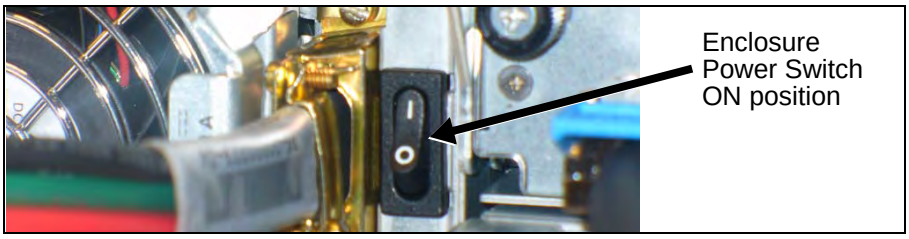


Figure 4.1 - Storage Enclosure DC Power Switch (Right)

b. Verify the following storage enclosure LEDs (**Figure 4.2**):

- Unit Locator ID LED is OFF indicating normal operation
- Fault/Service Required LED is OFF indicating no fault conditions
- FRU OK (Heartbeat) LED is GREEN indicating the enclosure is powered on with at least one power supply operating normally
- Temperature Fault LED is GREEN indicating enclosure temperatures are normal
- All disk module Power LEDs are GREEN indicating the module is operating normally

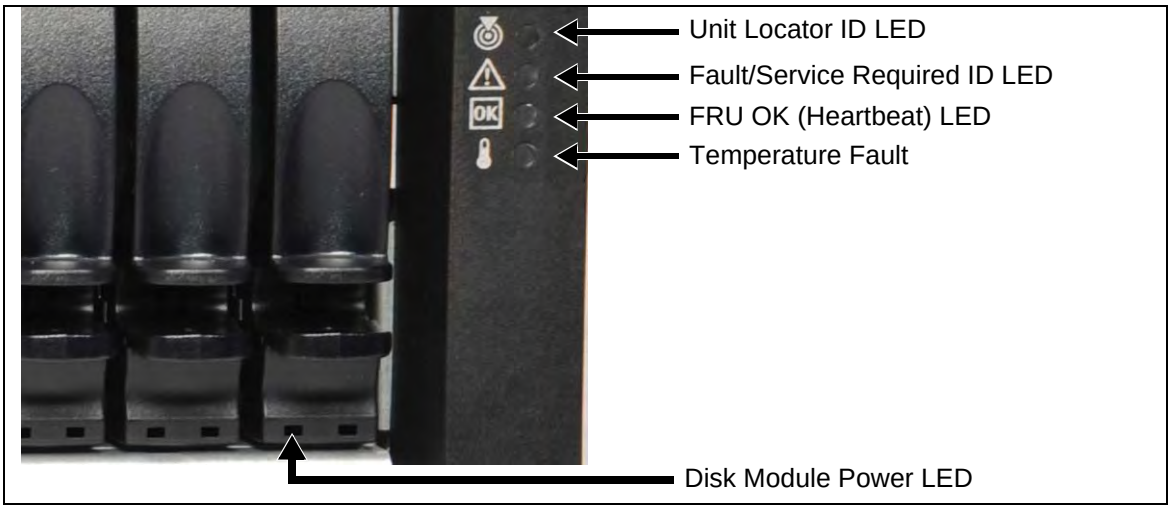


Figure 4.2 - Storage Enclosure LEDs (Front Right View)

Ensure all Storage Enclosures are powered on and operating normally prior to continuing with this procedure.

4. Turn on the power to the **G10 primary chassis**.

- **AC Units:** Connect the AC power cables into the rack power outlets.

- **DC Units:** Press the ON/OFF switch to the ON position on both PEMs on the front of the G10 chassis (**Figure 4.3**).

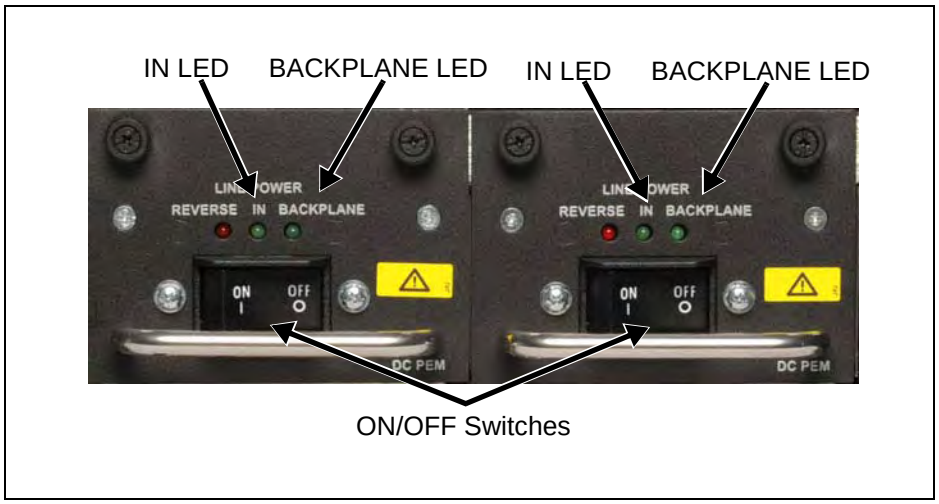


Figure 4.3 - DC PEMs Front Panels

5. Verify the following LEDs on the front of the chassis:

   - **DC Chassis Front**
     - IN LEDs are GREEN (**Figure 4.3**), indicating power is connected properly
     - BACKPLANE LEDs are GREEN (**Figure 4.3**), indicating the PEM is sending power through the backplane
   - **AC Chassis Front**
     - Status LED is GREEN (**Figure 4.4**)

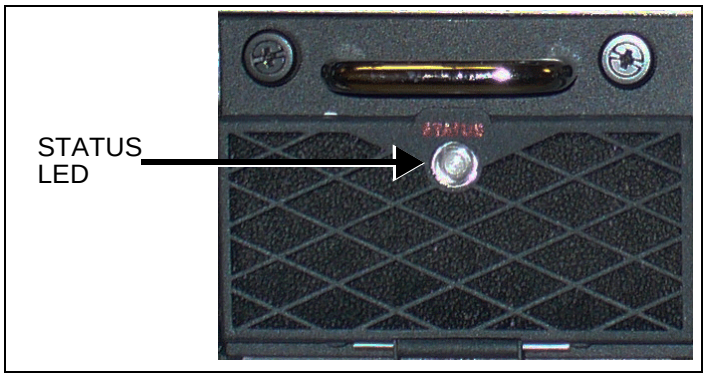


Figure 4.4 - AC PEM Front Panel LED

6. Verify the following LEDs on the front of the IIC (**Figure 4.5**):

   - The + LED on IIC100/IIC200 is OFF, indicating no errors in overall health of the IIC.
   - The CPU LED is AMBER on FPC100 and GREEN on the FPC200 AMC, indicating processor has normal functions.

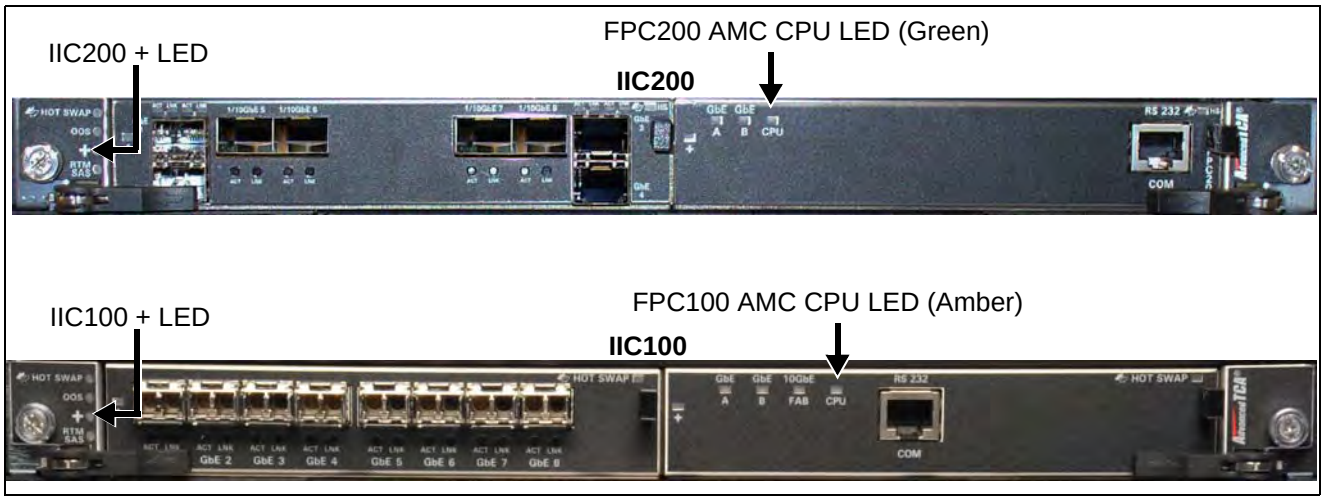


Figure 4.5 - G10 IIC LED Verification

7. Verify that the SHmm OK LEDs on the rear of the chassis are GREEN (**Figure 4.6**).

Figure 4.6 - SHmms on G10 Chassis Rear

8. Verify that the + LED is GREEN on the SRM200 RTM or TRM100 RTM, and the PRM200/PRM300 RTM, indicating no errors (**Figure 4.7**).

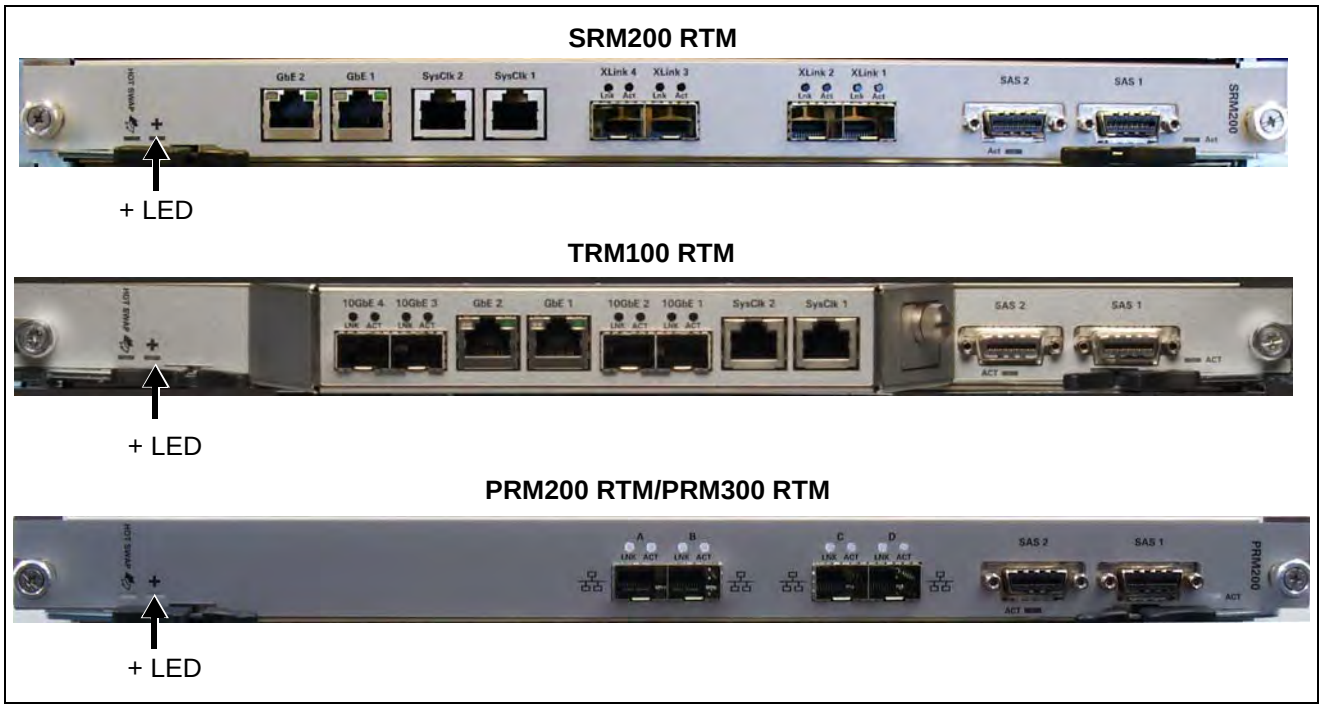


Figure 4.7 - RTM + LED

9. Wait approximately 10 minutes for the IAP to boot up. The OOS LED (**Figure 4.8**) will transition from RED (board booting) to AMBER (applications are starting) to OFF, indicating the probe is up.

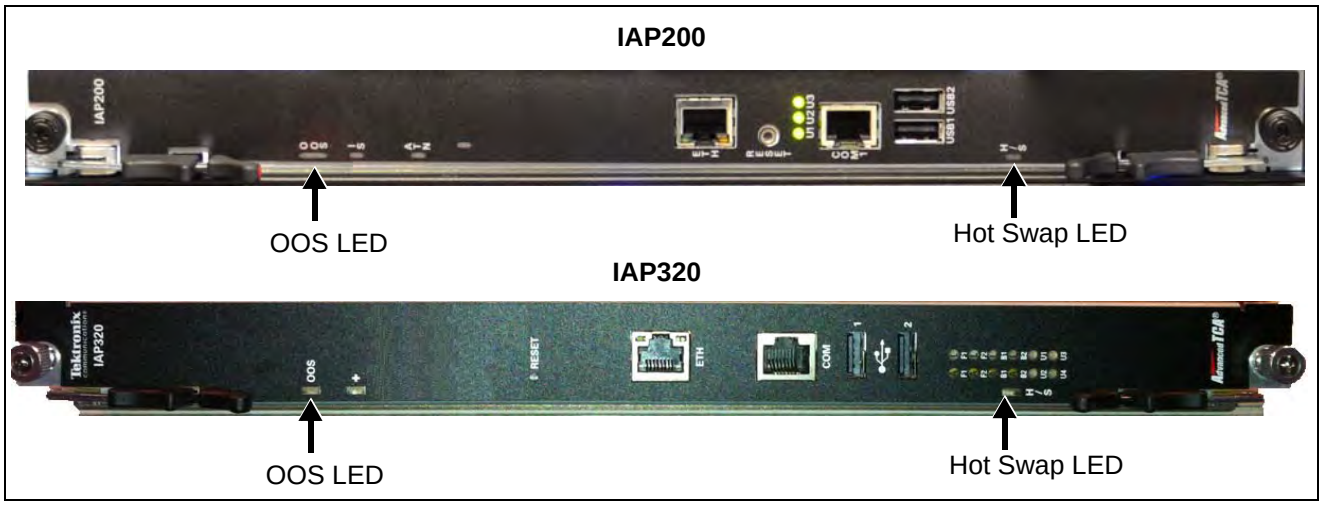


Figure 4.8 - IAP200 or IAP320

If LEDs are behaving differently than described in this procedure, contact Customer Support prior to continuing with Configure G10 Probe Network Connectivity.

10. After the G10 primary chassis is powered up successfully, turn on power to the **G10 expansion chassis**. Verify the IIC, SHMM, and RTM LEDs on the expansion chassis, as shown in **Step 6** through **Step 8** in this procedure.

11. Continue with Configure G10 Probe Network Connectivity.

CONFIGURE G10 PROBE NETWORK CONNECTIVITY

To configure the G10 probe for your network, you will need the information in **Table 4.1**.

Step	Action

1. Connect an Ethernet cable to a laptop or PC and to the **ETH** port on the IAP on the front of the G10 primary chassis (**Figure 4.9**).

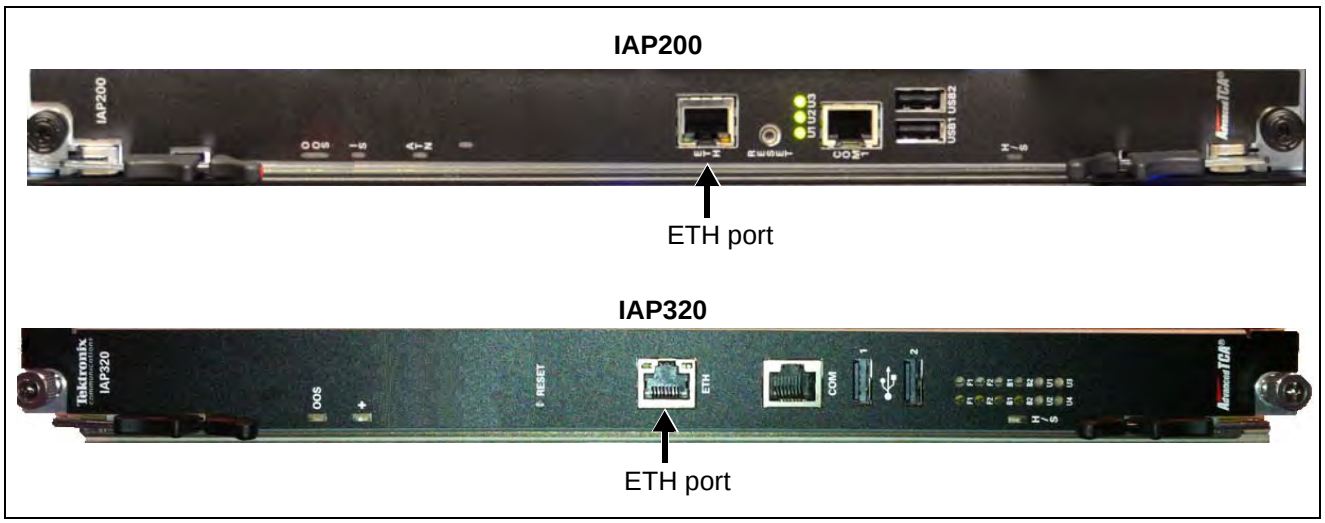


Figure 4.9 - G10 IAP200 or IAP320

2. On the laptop or PC, set the Local Area Connection to **Obtain IP Address Automatically (DHCP)**.

3. Open a Web browser. In the Web browser Address field, enter **http://172.31.128.1/** and press **Enter**. A login page appears (**Figure 4.10**).

Figure 4.10 - Probe Installation GUI

4. Log in using the user ID and password provided by Tektronix for probe configuration.

5. The following Web page appears (**Figure 4.11**). Click the **Next** button.

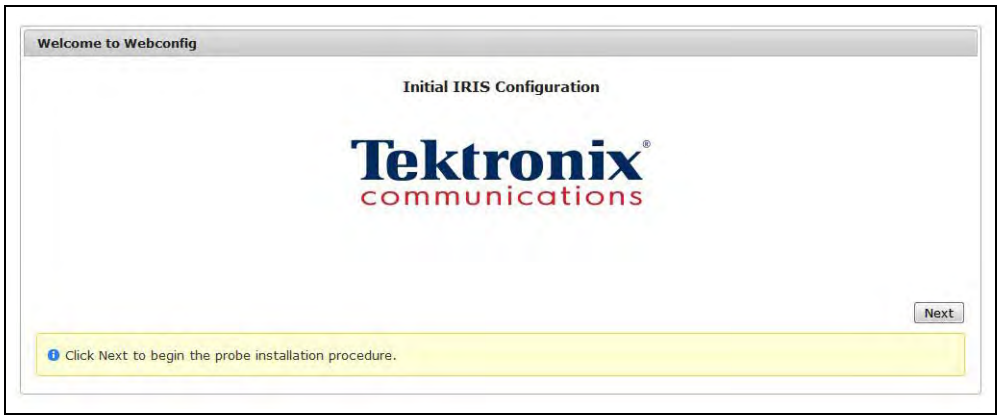


Figure 4.11 - Probe Installation GUI

The software scans the probe (**Figure 4.12**) to obtain the G10 configuration format (standalone or multi-chassis).

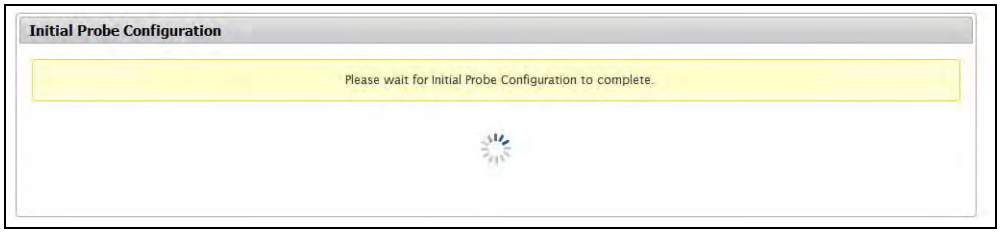


Figure 4.12 - Initial Probe Scan

6. After the scan completes, the following Web page appears (**Figure 4.13**). The fields will either be blank or display the probe configuration data obtained from the last scan. To clear the values from all fields, click the **Reset** button.

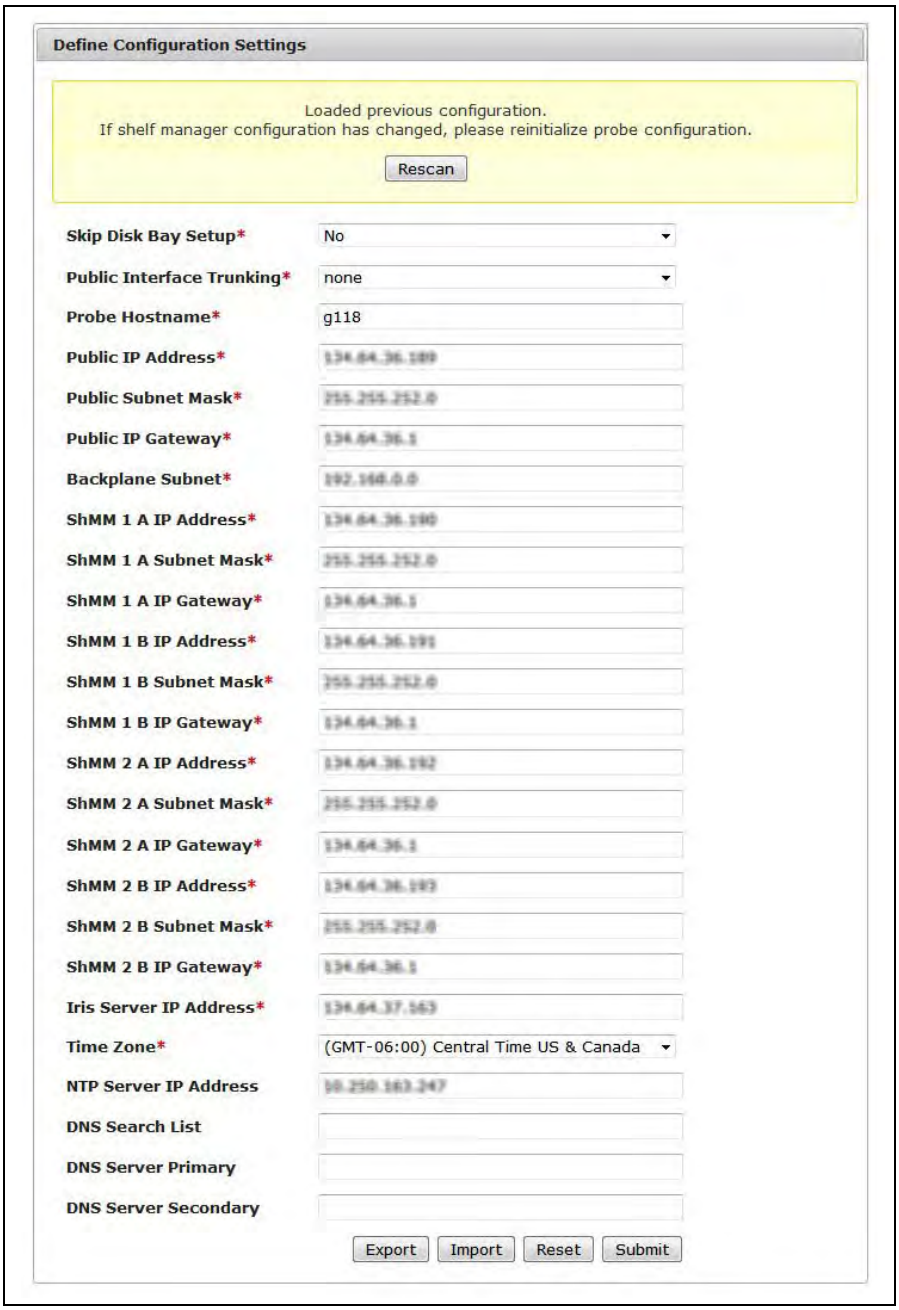


Figure 4.13 - Probe Installation GUI - System Information

7. Enter the required information for each field for your network. Click a field to view details about that field. You can click the **Export** button to save the data to a probesetup.txt comma-separated value (CSV) file for later recall. Click the **Import** button to populate the fields with previously saved configuration settings.

8. Click the **Submit** button. A Confirm Configuration Settings page displays (**Figure 4.14**). Review your settings. Click **Apply Config** to apply the current settings, or click **Edit Config** to return to previous page to make corrections.

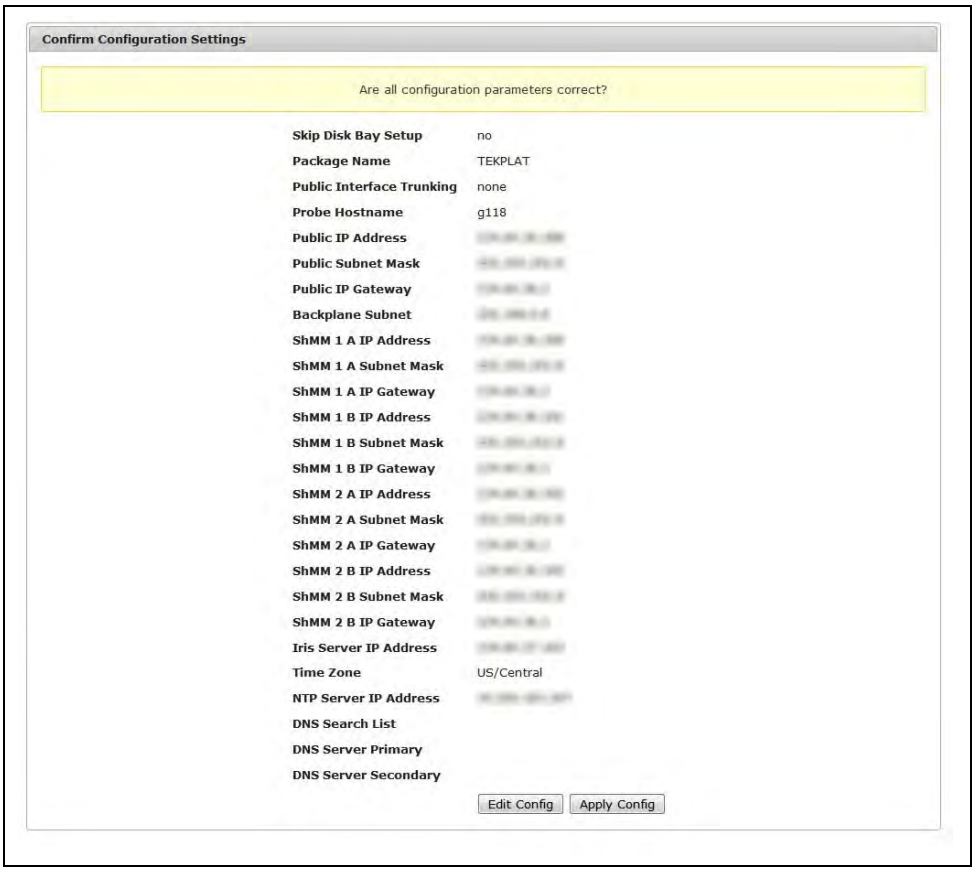


Figure 4.14 - Probe Installation GUI - Confirmation

9. When you apply the configuration, the following Web page appears (**Figure 4.15**). It will take approximately 10 minutes for the G10 to complete setup.

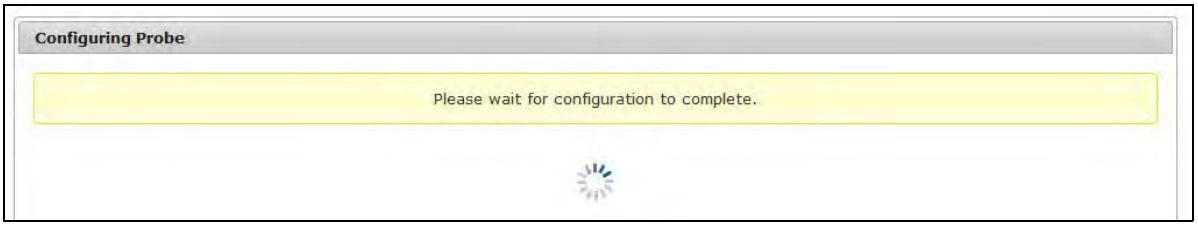


Figure 4.15 - Probe Installation GUI - Configuring Probe

If the configuration is successful, the following screen displays (**Figure 4.16**). If the configuration failed, go to **Step 11**.

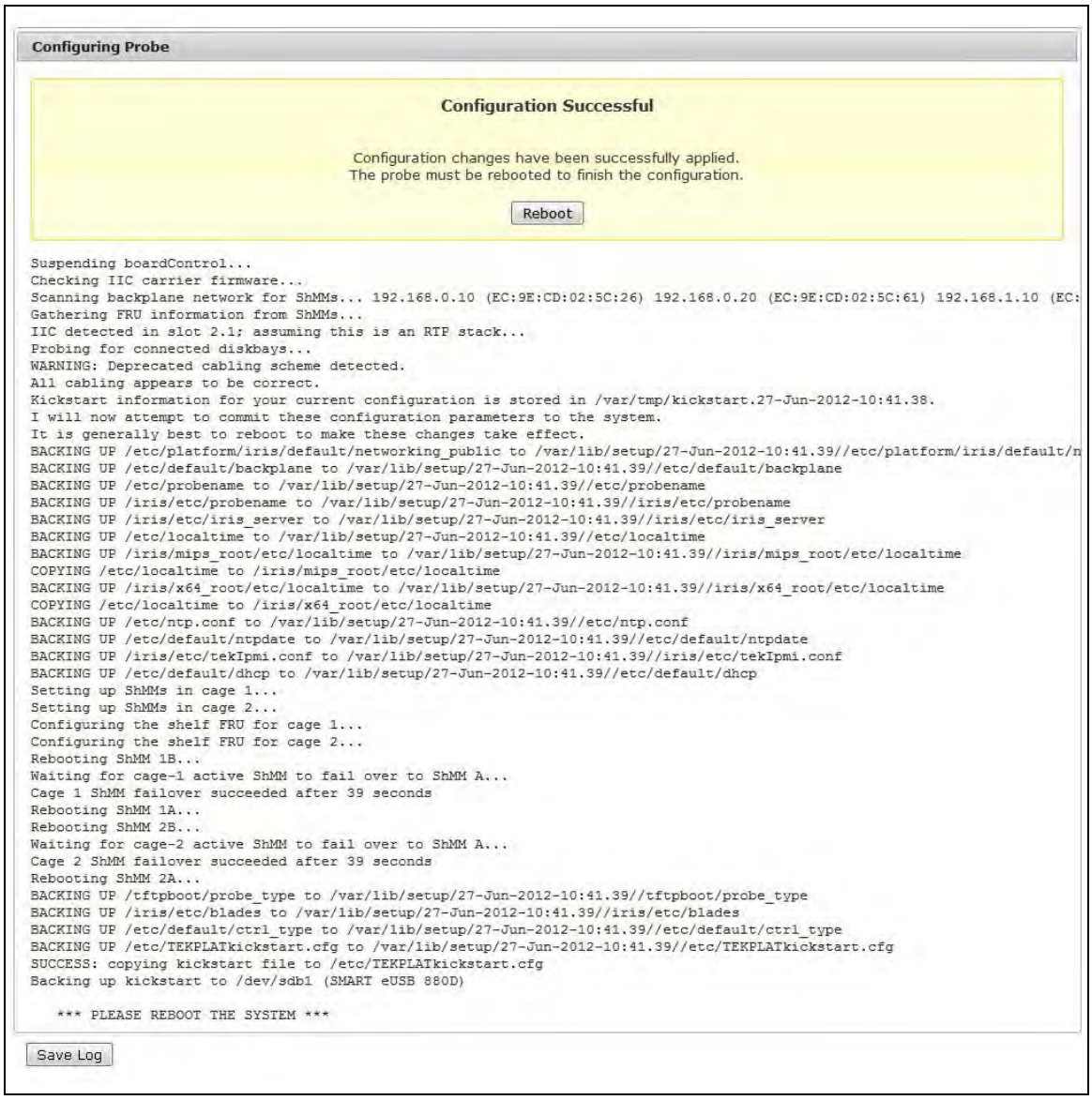


Figure 4.16 - Example Configuration Successful

10. Click the **Reboot** button to complete the configuration and reboot the G10. The following screen displays (**Figure 4.17**), and the G10 probe reboots automatically. Continue with **Step 12**.

Figure 4.17 - Probe Installation GUI - Rebooting

11. If the configuration failed, the following screen displays (**Figure 4.18**). Configuration changes failed to apply; configuration parameters will be saved to /var/log/webconfig directory. Perform the following:

- Review log messages to determine the cause of the error.
- Click the **Shutdown** button to shut down the probe's OS.
- WAIT until the IAP (primary chassis, Slot 1) hot swap LED is solid blue.
- Power down the probe.
- Correct any errors (such as cabling errors). When corrected, power on the probe.
- After 10 minutes, click the **Restart Config** button.

If the setup fails a second time, contact Tektronix Communications Customer Support (refer to **page 2**).

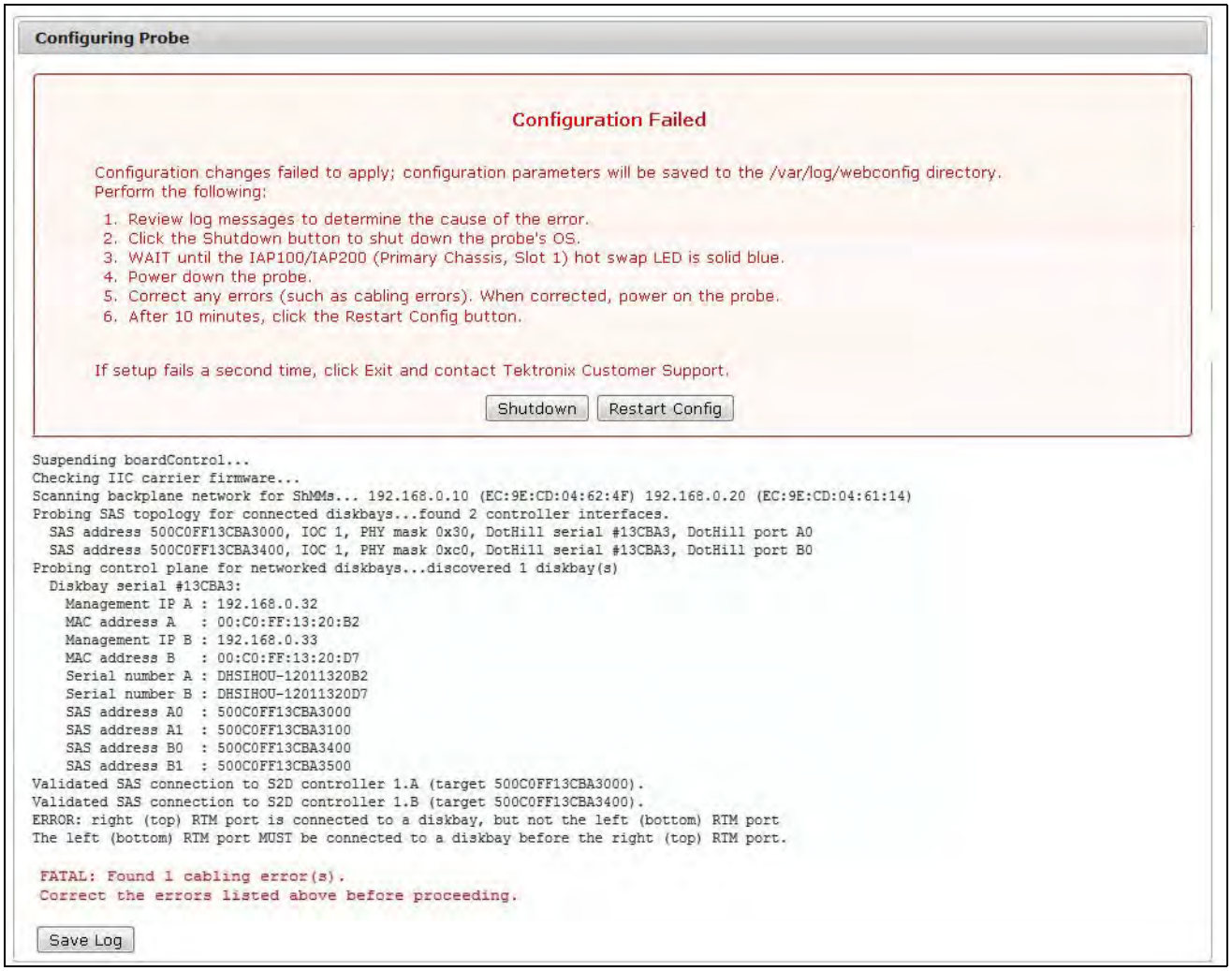


Figure 4.18 - Example Configuration Failed Window

12. After successful configuration, install a bezel on all storage enclosures; refer to Bezel (Air Filter) Procedures for details.

13. Continue with **Chapter 5**, **Connect Media Probe to Monitored Network**.

NETWORK CONNECTIVITY

A G10 deployment currently requires the customer provide five physical Ethernet connections and associated IP addresses on the same subnet. Refer to **Chapter 3**, **Connect Ethernet and SAS Cabling** for detailed diagrams of Ethernet connections.

- **Primary Interface** that connects the G10 to the Iris server via the PRM200/PRM300 RTM on the primary chassis. This enables probe maintenance and configuration, as well as delivery of network traffic statistics and detailed data to the server for display in IrisView applications. The Primary Interface supports 100/1000/10000 Mbps Ethernet physical connections; it requires at least 100Mbps connectivity. The primary interface can be configured as a non-redundant or a redundant configuration.

- **OAM Interfaces (4)** that connect to the Shelf Management Modules (ShMM) on the rear of the primary and expansion chassis. The ShMMs provide a central management point for controlling the operation of the chassis, for providing probe status, and for monitoring the alarm conditions. The OAM interfaces support 10/100 Mbps Ethernet physical connections. They require at least 10Mbps connectivity to the Iris server for management.

After installing the hardware, you will run a probe setup process that will scan the probes and obtain necessary configuration parameters. You will be required to set up the information listed in **Table 4.1** in order to complete the G10 probe setup (see Configure G10 Probe Network Connectivity).

Table 4.1 - Configuration Parameters

Parameter	Description
Skip Disk Bay Setup	Select **No** for all initial probe configurations. Select **Yes** only if the previous configuration failed due to errors caused by the disk bays. This option will skip the disk bay configuration and complete the setup of the remainder of the system (including networking).
Public Interface Trunking	If you are configuring a non-redundant primary interface, select **None**. If you are configuring a **redundant** primary interface, select the **layer2** (802.3ad LACP layer-2 hashing) option. *Tektronix recommends this setting for most redundant primary interface configurations as this option will support most switch configurations.* The **layer-3+4** (802.3ad LACP layer-3+4 hashing) option is only used for compatibility with certain legacy Cisco switch configurations.
Probe Hostname	Provide a hostname for the probe, using 8 characters or less.
Public IP Address (Primary Interface)	Provide the IP address to be used for Operations and Maintenance (LAN/WAN) access to the probe. This IP address is used in both non-redundant and redundant primary interface configurations.
Public Subnet Mask	Provide the corresponding subnet mask for the Public IP Address. After the subnet mask is entered in the Configuration GUI, the system populates the **SHMM 1A Subnet Mask** and **SHMM 1B Subnet Mask** fields with the same value.

Table 4.1 - Configuration Parameters (Continued)

Parameter	Description
Public IP Gateway	Provide the corresponding IP gateway for the Public IP Address. After the IP gateway is entered in the Configuration GUI, the system populates the **SHMM 1A IP Gateway** and **SHMM 1B IP Gateway** fields with the same value.
Backplane Subnet	Provide the IP subnet for the probe's backplane. It must be a class-B subnet; ensure that this subnet does not overlap any of the subnets (IP addresses) on the public interface.
SHMM 1A IP Address (OAM Interface)	Provide the IP address to be used for Operations and Maintenance (LAN/WAN) access to the primary chassis' Shelf Manager A.
SHMM 1A Subnet Mask	This field is populated with the same subnet mask you enter for the **Public Subnet Mask**. The field is editable.
SHMM 1A IP Gateway	This field is populated with the same IP gateway you enter for the **Public IP Gateway**. The field is editable.
SHMM 1B IP Address (OAM Interface)	Provide the IP address to be used for Operations and Maintenance (LAN/WAN) access to the primary chassis' Shelf Manager B.
SHMM 1B Subnet Mask	This field is populated with the same subnet mask you enter for the **Public Subnet Mask**. The field is editable.
SHMM 1B IP Gateway	This field is populated with the same IP gateway you enter for the **Public IP Gateway**. The field is editable.
SHMM 2A IP Address (OAM Interface)	Provide the IP address to be used for Operations and Maintenance (LAN/WAN) access to the expansion chassis' Shelf Manager A.
SHMM 2A Subnet Mask	This field is populated with the same subnet mask you enter for the **Public Subnet Mask**. The field is editable.
SHMM 2A IP Gateway	This field is populated with the same IP gateway you enter for the **Public IP Gateway**. The field is editable.
SHMM 2B IP Address (OAM Interface)	Provide the IP address to be used for Operations and Maintenance (LAN/WAN) access to the expansion chassis' Shelf Manager B.
SHMM 2B Subnet Mask	This field is populated with the same subnet mask you enter for the **Public Subnet Mask**. The field is editable.
SHMM 2B IP Gateway	This field is populated with the same IP gateway you enter for the **Public IP Gateway**. The field is editable.
Iris Server IP Address	Provide the IP address of the Iris Server to which this probe will connect.
Time Zone	You will select the time zone in which the probe is deployed.
NTP Server IP Address	Provide the IP address of the server that this probe will use for time synchronization.
DNS Search List (optional)	Enter the search list for host-name lookup.
DNS Primary Server IP Address	Provide the IP address of the primary DNS server this probe will use.
DNS Secondary Server IP Address	Provide the IP address of the secondary DNS server this probe will use.

5 Connect Media Probe to Monitored Network

MONITORED LINK SUPPORT

The final step in the G10 installation process is connecting the G10 primary chassis to the monitored network via 1G or 10G Ethernet connections on the IIC. Refer to the following sections for cabling diagrams for connecting the G10 probe to the monitored network:

- Monitored Link Cabling (IIC200)
- Monitored Link Cabling (IIC100)

MONITORED LINK CABLING (IIC200)

The final step in the G10 installation process is connecting the G10 Primary Chassis to the monitored network.

To accurately monitor links, a minimum signal strength is required at each G10 input port. The signal strength requirement is broad enough to allow some optical taps and splitters. The inputs must comply with Table B.2 in Appendix B and can be verified with optical light meters.

Maximum Number of Monitored Links Per Media Probe (IIC200)

The G10 media probe IIC200 configuration supports a maximum of eight physical monitored ports (1G + 10G). **Table 5.1** shows the maximum number of monitored links a G10 media probe supports for span/mirror ports and for tapped ports.

Table 5.1 - Maximum Number of Monitored Links per Media Probe (IIC200)

Interface Type	IIC200 Maximum Monitored Links
Span/Mirrored (1 monitored link requires 1 port)	4 10G + 4 1G max 3 10G + 5 1G max 2 10G + 6 1G max 1 10G + 7 1G max
Optical Taps/Splitters (1 monitored link requires 2 ports)	1 10G + 3 1G max 2 10G + 2 1G max

Monitored Traffic per Port Type (IIC200)

By design, the G10 media probe primary chassis supports monitoring control plane and media traffic as described in **Table 5.2**. The G10 Media probe IIC200 configuration primary chassis can monitor both control plane and media traffic on both 1G and/or 10G ports.

Table 5.2 - Monitored Traffic Support per Port Type (IIC200)

Traffic Type	Monitored Port Support
Control Plane	1G or 10G
Media	1G or 10G

IIC200 Ethernet Connections

The IIC200 has eight ports that can be used for 1G Ethernet connections. Ports 5 to 8 are dual-purpose sockets that can be used for 1G or 10G Ethernet connections (**Figure 5.1**).

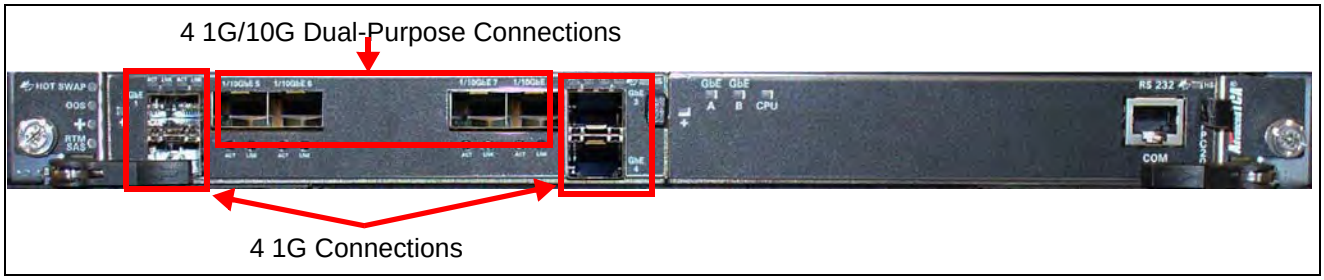


Figure 5.1 - IIC200 Ethernet Connections

Refer to Appendix B SFP Reference for details about installing and maintaining SFP modules.

Ethernet Cabling for Optical Taps/Splitters (IIC200)

Step	Action

1. Use **Figure 5.2** and **Table 5.3** to connect monitored network cables using optical taps or splitters to the IIC200 Ethernet connections. ***In this configuration, the TX ports are not used.*** Refer to **Table 5.1** for details about the maximum number of monitored links per probe.

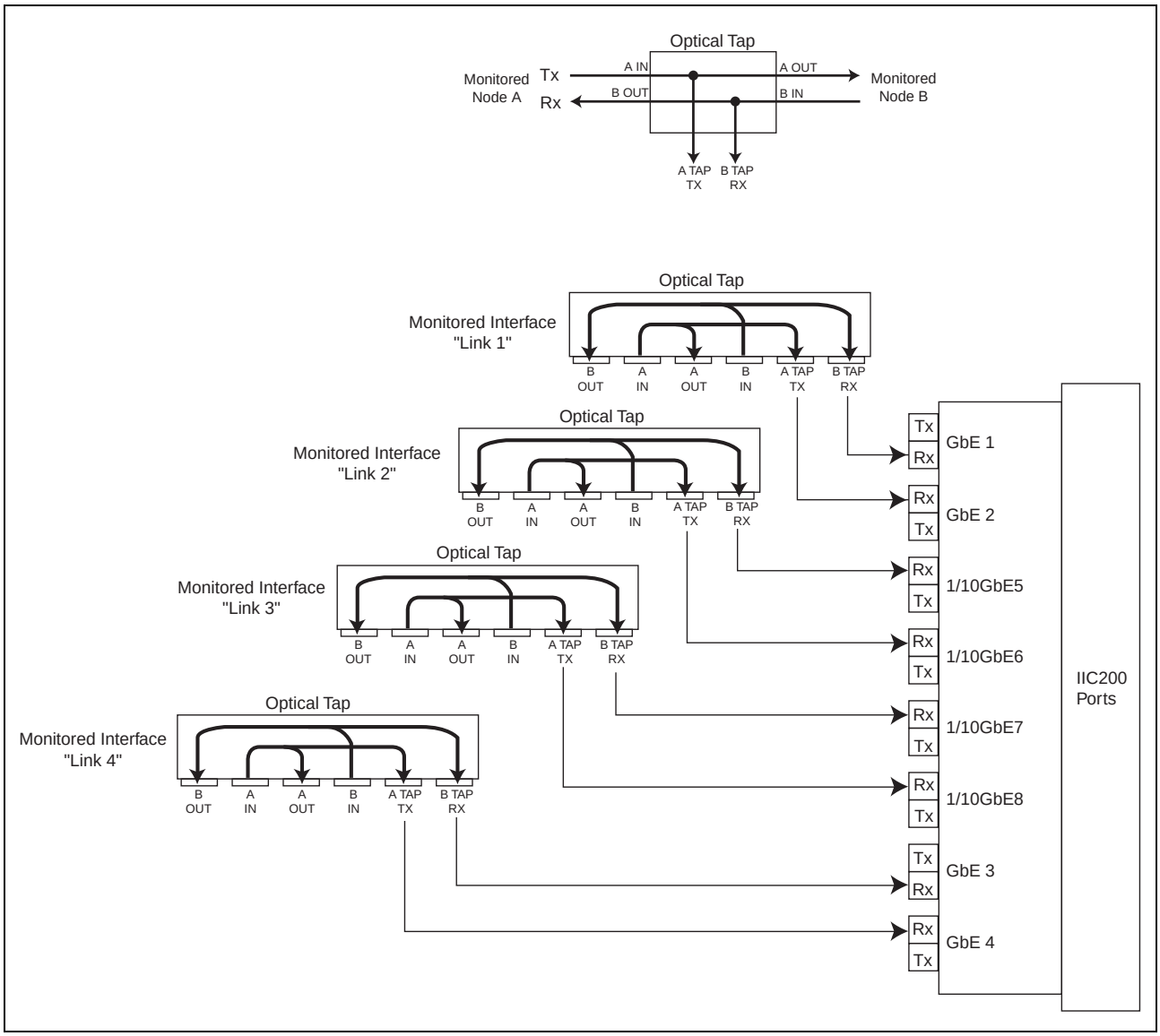


Figure 5.2 - G10 Ethernet Connections - Optical Taps/Splitters

Table 5.3 - G10 Ethernet Connections - Optical Taps/Splitters

Monitored Network		G10 Ethernet Connections
Monitored Interface 1 “Link 1”	B Tap (RX)	GbE 1 RX (**right**)
	A Tap (TX)	GbE 2 RX (left)

Table 5.3 - G10 Ethernet Connections - Optical Taps/Splitters (Continued)

Monitored Network		G10 Ethernet Connections
Monitored Interface 2 “Link 2”	B Tap (RX)	1/10GbE 5 RX (left)
	A Tap (TX)	1/10GbE 6 RX (left)
Monitored Interface 3 “Link 3”	B Tap (RX)	1/10GbE 7 RX (left)
	A Tap (TX)	1/10GbE 8 RX (left)
Monitored Interface 4 “Link 4”	B Tap (RX)	GbE 3 RX (**right**)
	A Tap (TX)	GbE 4 RX (left)

2. After the cables are connected, verify that the ACT and LNK LEDs are on.

3. Call Tektronix Service and Delivery to confirm the successful G10 installation (refer to **page 2**).

Ethernet Cabling for Mirror/Span Ports (IIC200)

Step	Action
1.	Use **Figure 5.3** and **Table 5.4** to connect the monitored network to the IIC200 Ethernet connections for mirror/span ports. Refer to **Table 5.1** for details about the maximum number of monitored links per probe

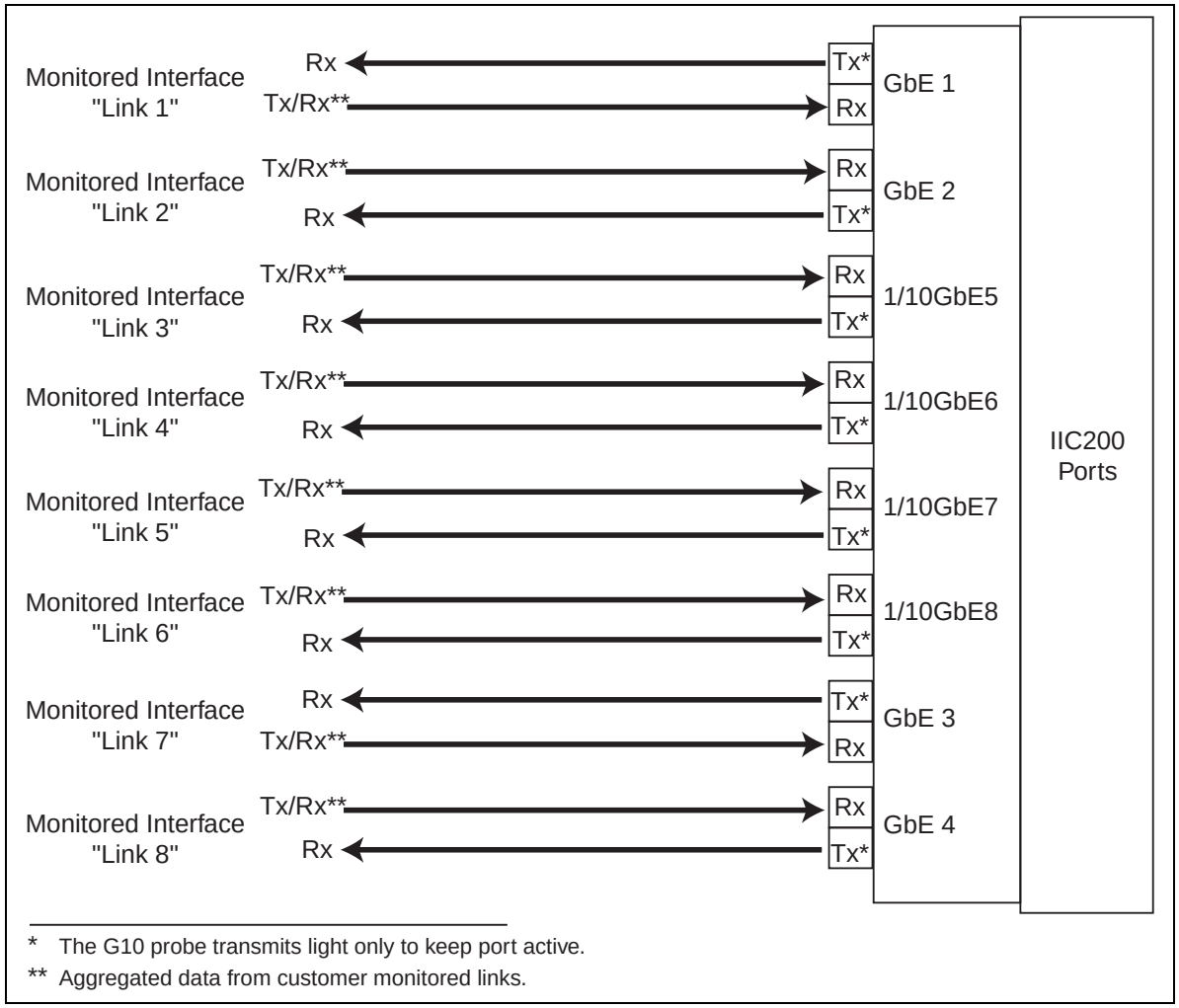


Figure 5.3 - G10 Ethernet Connections - Mirror/Span

Table 5.4 - G10 Ethernet Connections - Mirror/Span

Monitored Network		G10 Ethernet Connections
Monitored Interface 1 “Link 1”	TX	GbE 1 RX (**right**)
	RX	GbE 1 TX (**left**)
Monitored Interface 2 “Link 2”	TX	GbE 2 RX (left)
	RX	GbE 2 TX (right)

Table 5.4 - G10 Ethernet Connections - Mirror/Span (Continued)

Monitored Network		G10 Ethernet Connections
Monitored Interface 3 “Link 3”	TX	1/10GbE 5 RX (left)
	RX	1/10GbE 5 TX (right)
Monitored Interface 4 “Link 4”	TX	1/10GbE 6 RX (left)
	RX	1/10GbE 6 TX (right)
Monitored Interface 5 “Link 5”	TX	1/10GbE 7 RX (left)
	RX	1/10GbE 7 TX (right)
Monitored Interface 6 “Link 6”	TX	1/10GbE 8 RX (left)
	RX	1/10GbE 8 TX (right)
Monitored Interface 7 “Link 7”	TX	GbE 3 RX (**right**)
	RX	GbE 3 TX (**left**)
Monitored Interface 8 “Link 8”	TX	GbE 4 RX (left)
	RX	GbE 4 TX (right)

2. After the cables are connected, verify that the ACT and LNK LEDs under each GbE port are ON.

3. Call Tektronix Service and Delivery to confirm the successful G10 installation (refer to **page 2**).

MONITORED LINK CABLING (IIC100)

The final step in the G10 installation process is connecting the G10 primary chassis to the monitored network.

To accurately monitor links, a minimum signal strength is required at each G10 input port. The signal strength requirement is broad enough to allow some optical taps and splitters. The inputs must comply with Table B.2 in Appendix B and can be verified with optical light meters.

Maximum Number of Monitored Links Per Media Probe (IIC100)

The G10 media probe IIC100 configuration supports a maximum of eight physical monitored ports (1G + 10G). The media probe IIC100 configuration has a maximum of TWO 10G physical ports are available to monitor RTP/RTCP media traffic. For IIC100 configurations, monitor control plane traffic only on 1G ports; monitor media traffic only on 10G ports. You cannot mix media traffic and control plane traffic on the same port type (1G or 10G).

Table 5.5 shows the maximum number of monitored links a G10 media probe IIC100 configuration supports for span/mirror ports and for tapped ports.

Table 5.5 - Maximum Number of Monitored Links per Media Probe (IIC100)

Interface Type	Maximum Monitored Links
Span/Mirrored (1 monitored link requires 1 port)	7 1G + 1 10G max 6 1G + 2 10G max
Optical Taps/Splitters (1 monitored link requires 2 ports)	3 1G + 1 10G max

Monitored Traffic per Port Type (IIC100)

By design, the G10 media probe primary chassis supports monitoring control plane and media traffic as described in **Table 5.6**. ***For control plane traffic over SCTP on the IIC100, the traffic MUST BE SEGREGATED by port type; you cannot mix media traffic and control plane traffic on the same port type (1G or 10G).***

Table 5.6 - Monitored Traffic Support per Port Type (IIC100)

Traffic Type	Monitored Port Support
Control Plane over TCP or UDP	1G or 10G
Control Plane over SCTP	**1G only**
Media	**10G only**

1G Ethernet Connections (Control Plane)

You connect the 1G Ethernet cable to the front of the G10 primary chassis on the Iris Interface Card (IIC100). **Figure 5.4** shows the eight 1G Ethernet ports. See **Table 5.5** for details about the number of monitored links a G10 media probe supports. Refer to **Appendix B** for details about SFP transceivers.

Figure 5.4 - G10 1G Ethernet Connections

SFPs are inserted into the 1G connections with the *open handle or clasp on TOP* (**Figure 5.5**). For the **1G Ethernet connections**, the left port is **Receive (RX)** and the right port is **Transmit (TX)**.

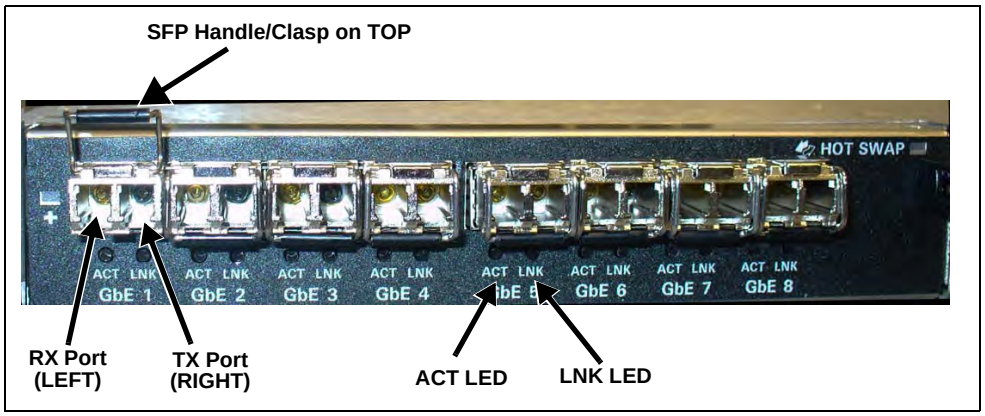


Figure 5.5 - G10 1G Ethernet Connections with SFPs

1G Ethernet Cabling for Optical Taps/Splitters

Step	Action

1. Use **Figure 5.6** and **Table 5.7** to connect monitored network cables using optical taps or splitters to the G10 1G Ethernet connections. In this configuration the TX ports are not used. Refer to **Table 5.5** for details about the maximum number of monitored links per probe.

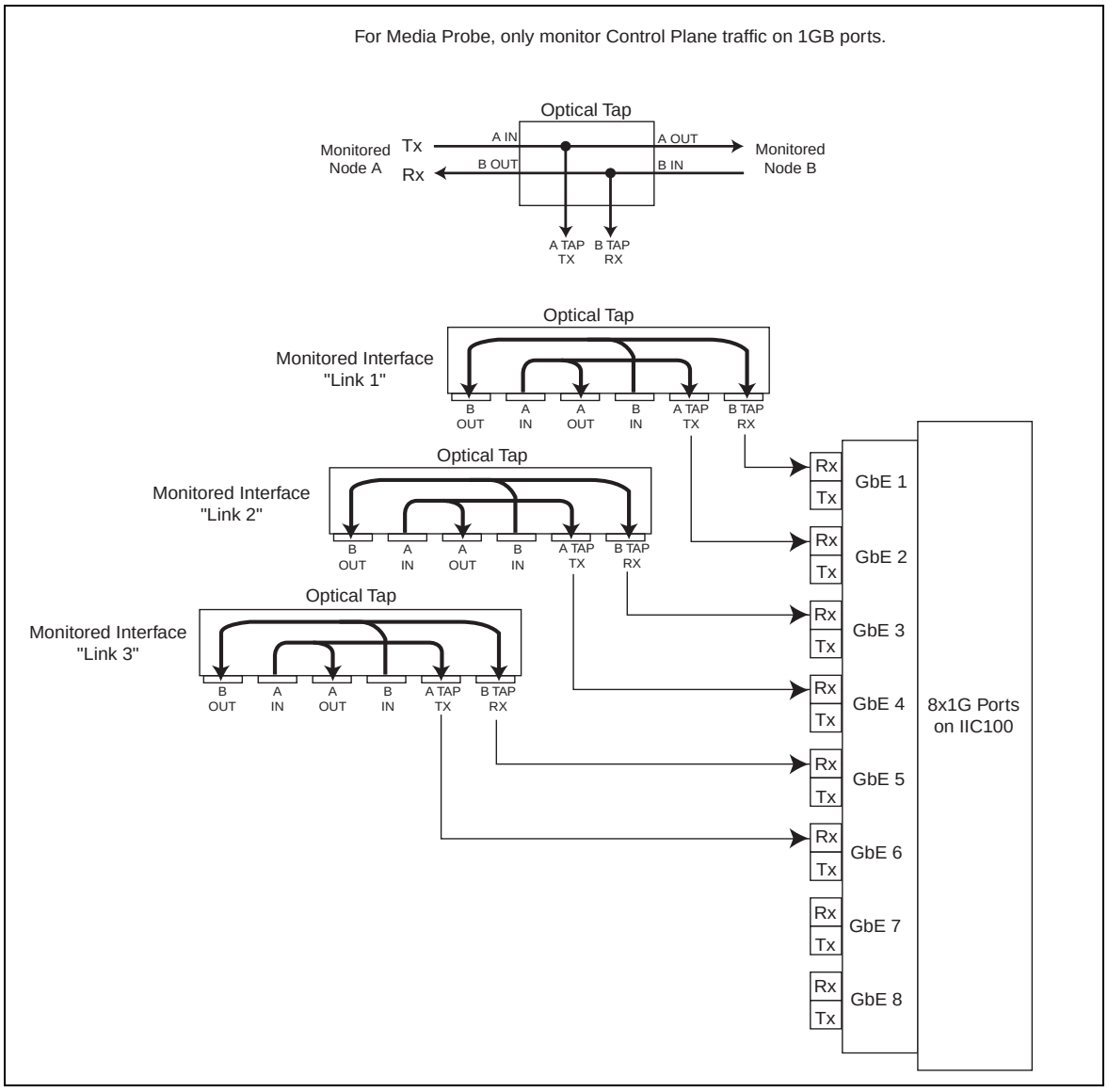


Figure 5.6 - G10 1G Ethernet Connections - Optical Taps/Splitters

Table 5.7 - G10 1G Ethernet Connections - Optical Taps/Splitters

Monitored Network		G10 1G Ethernet Connections
Monitored Interface 1 “Link 1”	B Tap (RX)	GbE 1 RX (left)
	A Tap (TX)	GbE 2 RX (left)

Table 5.7 - G10 1G Ethernet Connections - Optical Taps/Splitters (Continued)

Monitored Network		G10 1G Ethernet Connections
Monitored Interface 2 “Link 2”	B Tap (RX)	GbE 3 RX (left)
	A Tap (TX)	GbE 4 RX (left)
Monitored Interface 3 “Link 3”	B Tap (RX)	GbE 5 RX (left)
	A Tap (TX)	GbE 6 RX (left)

2. After the cables are connected, verify that the ACT and LNK LEDs under each GbE port are ON.

3. Call Tektronix Service and Delivery to confirm the successful G10 installation (refer to **page 2**).

1G Ethernet Cabling for Mirror/Span Ports

Step	Action
1.	Use **Figure 5.7** and **Table 5.8** to connect the monitored network to the G10 1G Ethernet connections for mirror/span ports. Refer to **Table 5.5** for details about the maximum number of monitored links per probe.

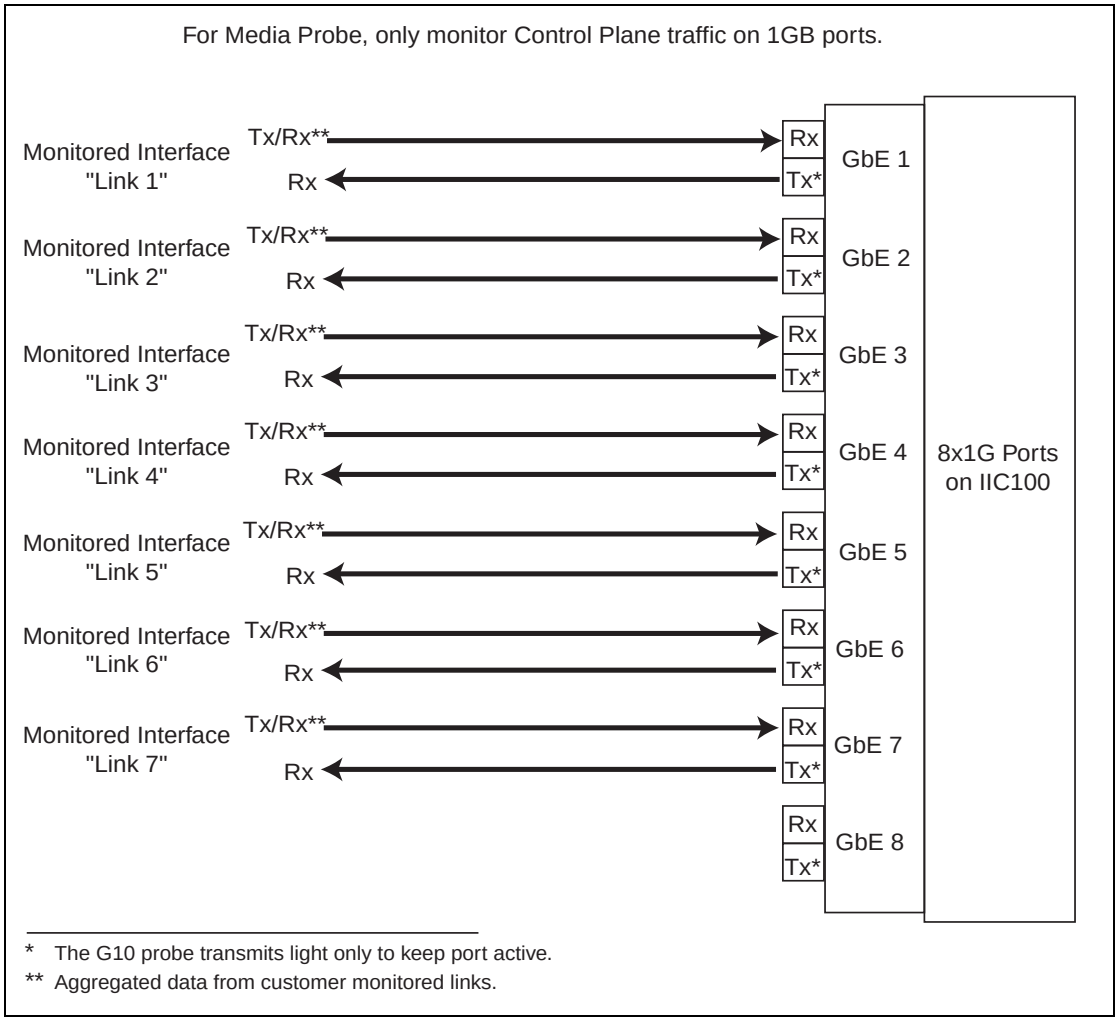


Figure 5.7 - G10 1G Ethernet Connections - Mirror/Span

Table 5.8 - G10 1G Ethernet Connections - Mirror/Span

Monitored Network		G10 1G Ethernet Connections
Monitored Interface 1 “Link 1”	TX	GbE 1 RX (left)
	RX	GbE 1 TX (right)
Monitored Interface 2 “Link 2”	TX	GbE 2 RX (left)
	RX	GbE 2 TX (right)

Table 5.8 - G10 1G Ethernet Connections - Mirror/Span (Continued)

Monitored Network		G10 1G Ethernet Connections
Monitored Interface 3 “Link 3”	TX	GbE 3 RX (left)
	RX	GbE 3 TX (right)
Monitored Interface 4 “Link 4”	TX	GbE 4 RX (left)
	RX	GbE 4 TX (right)
Monitored Interface 5 “Link 5”	TX	GbE 5 RX (left)
	RX	GbE 5 TX (right)
Monitored Interface 6 “Link 6”	TX	GbE 6 RX (left)
	RX	GbE 6 TX (right)
Monitored Interface 7 “Link 7”	TX	GbE 7 RX (left)
	RX	GbE 7 TX (right)

2. After the cables are connected, verify that the ACT and LNK LEDs under each GbE port are ON (**Figure 5.5**).

3. Call Tektronix Service and Delivery to confirm the successful G10 installation (refer to **page 2**).

10G Ethernet Connections (Media)

By design, the G10 media probe primary chassis IIC100 configuration supports monitoring control plane and media traffic as described in Table 5.6. For control plane traffic over SCTP on the IIC100, the traffic MUST BE SEGREGATED by port type; you cannot mix media traffic and control plane traffic on the same port type (1G or 10G).

You connect the 10G Ethernet to the rear of the G10 primary chassis on the TRM100 RTM. **Figure 5.8** shows the two available 10G Ethernet ports. ***Due to the required media probe configuration, only ports 10GbE 1 and 10GbE 3 are used to monitor RTP/RTCP media traffic.***

See **Table 5.5** for details about the number of monitored links a G10 media probe supports. Refer to **Appendix B** for details about SFP transceivers.

Figure 5.8 - TRM100 RTM 10GbE Ports

The SFPs are inserted into the 10G connections with the *open handle or clasp on BOTTOM* (**Figure 5.9**). For the **10G Ethernet connections**, the left port is **Transmit (TX)** and the right port is **Receive (RX)**.

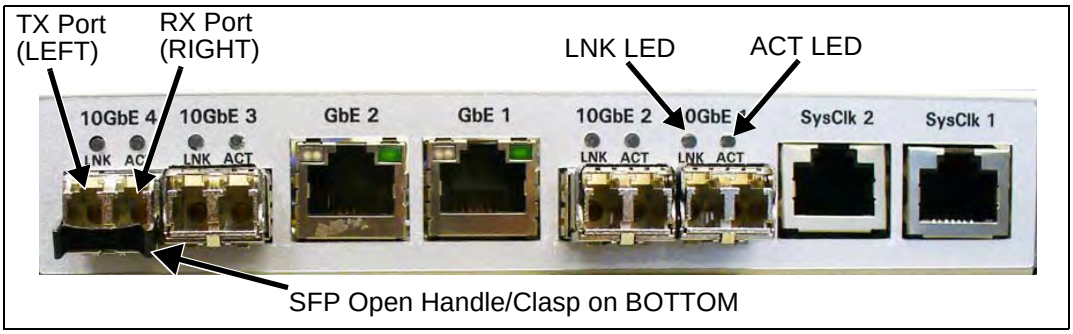


Figure 5.9 - G10 10G Ethernet Connections with SFPs

10G Ethernet Cabling for Optical Taps/Splitters

Step	Action

1. Use **Figure 5.10** and **Table 5.9** to connect monitored network cables using optical taps or splitters to the G10 10G Ethernet connections. ***In this configuration the TX ports are not used.*** Refer to **Table 5.5** for details about the maximum number of monitored links per probe.

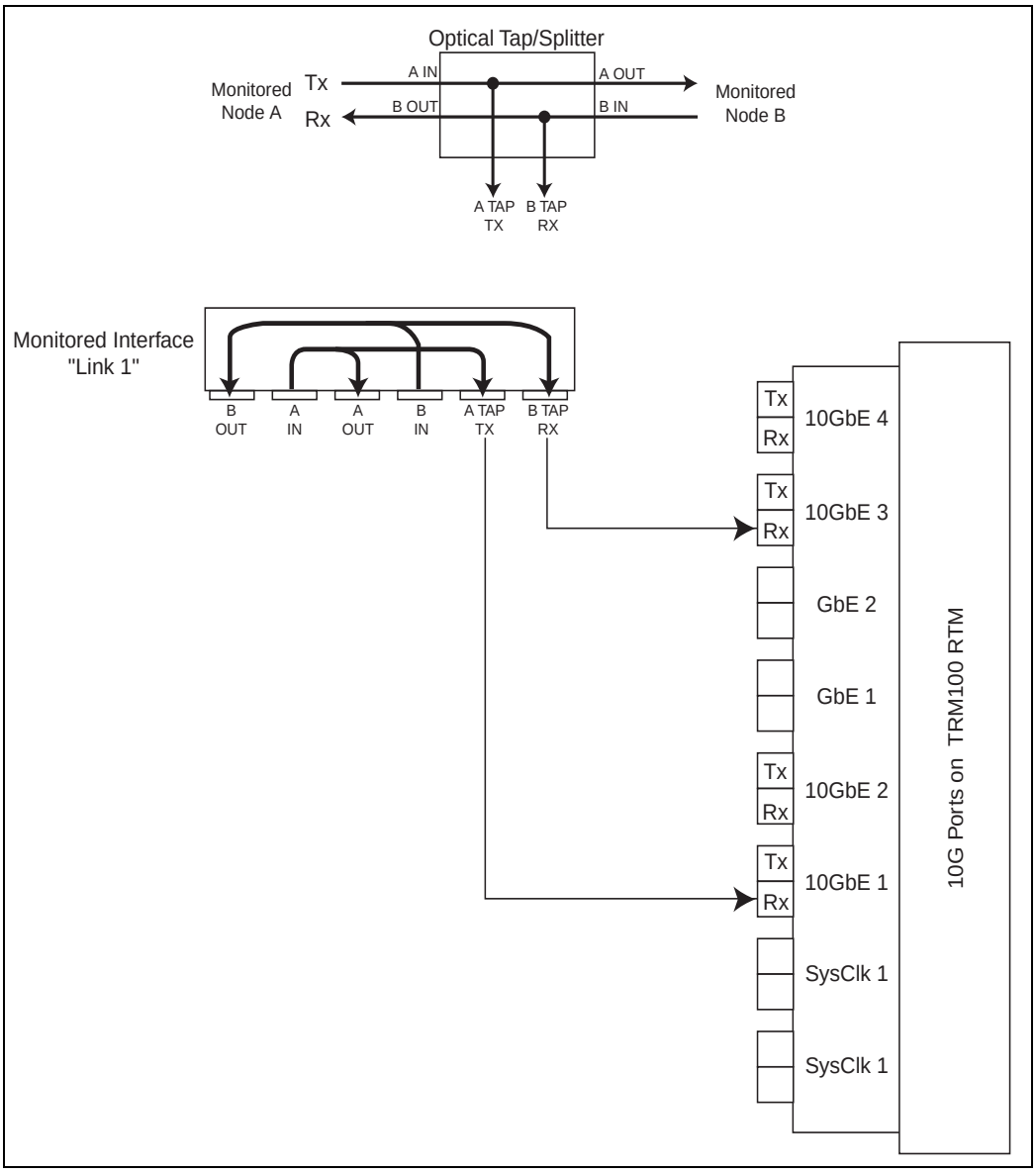


Figure 5.10 - 10G Ethernet Connections - Optical Taps/Splitters

Table 5.9 - 10G Ethernet Connections - Optical Taps/Splitters

Monitored Network		G10 10G Ethernet Connections
Monitored Interface 1 “Link 1”	A Tap (TX)	10GbE 1 RX (right)
	B Tap (RX)	10GbE 3 RX (right)

2. After the cables are connected, verify that the ACT and LNK LEDs above each 10GbE port are ON.

3. Call Tektronix Service and Delivery to confirm the successful G10 installation (refer to **page 2**).

10G Ethernet Cabling for Mirror/Span Ports

Step	Action

1. Use **Figure 5.11** and **Table 5.10** to connect the monitored network to the G10 10G Ethernet connections for mirror/span ports. Refer to **Table 5.5** for details about the maximum number of monitored links per probe.

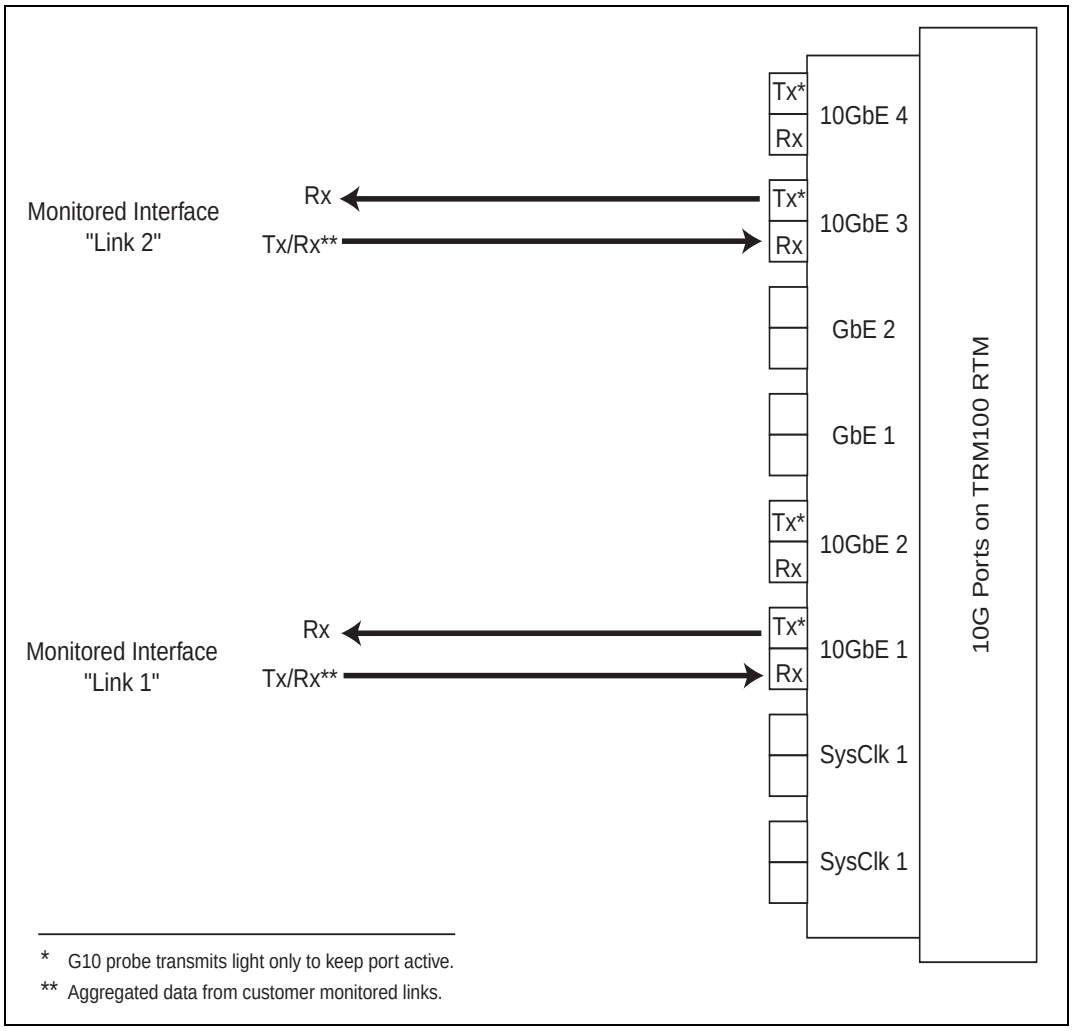


Figure 5.11 - 10G Ethernet Connections - Mirror/Span

Table 5.10 - G10 10G Ethernet Connections - Mirror/Span

Monitored Network		G10 10G Ethernet Connections
Monitored Interface 1 “Link 1”	RX	10GbE 1 TX (left)
	TX	10GbE 1 RX (right)
Monitored Interface 2 “Link 2”	RX	10GbE 3 TX (left)
	TX	10GbE 3 RX (right)

2. After the cables are connected, verify that the ACT and LNK LEDs above each 10GbE port are ON.

3. Call Tektronix Service and Delivery to confirm the successful G10 installation (refer to **page 2**).

A G10 Media Probe Operating Specifications

Overview

The following sections list the specifications to which the G10 probe conforms:

- Rack Space Considerations
- DC Power Requirements
- AC Power Requirements
- Default Port Settings

RACK SPACE CONSIDERATIONS

All equipment is suitable for mounting in a standard 19- or 23-inch wide equipment rack or cabinet. G10 installation varies depending on the type of rack configuration in which it is installed:

- Two-Post Rack—G10s must be mid-mounted
- Four-Post Rack—G10s must be front-mounted

	G10 Probe	Fuse Panel	SAS Storage Enclosure[a]
Height (space required)	3U 132 mm (5.20 inches)	1U 44.45 mm (1.75 inches)	2U 88.90 mm (3.50 inches)
Width	445 mm (17.52 inches)	431.80 mm (17.0 inches)	447.04 mm (17.6 inches)
Depth	420 mm (16.54 inches)	304.80 mm (12.0 inches)	502.92 mm (19.8 inches)
Weight	22 kg (47 lbs.)	4.09 kg (9.0 lbs.)	29 kg (64 lbs.)
Heat Dissipation	2048 BTU/hr max 1808 BTU/hr typical	Per 100A bus @% load 1.0W (3.4 Btu/hr) @ 0% 1.2W (4.1 Btu/hr) @ 25% 4.8W (16.5 Btu/hr) @ 50% 11.4W (38.7 Btu/hr) @ 75% 21.3W (72.6 Btu/hr) @ 100%	**SA100R (24 300 GB disks)** 956 BTU/hr typical 1706 BTU/hr max **SA200R (24 900 GB disks)** 1433 BTU/hr typical 1706 BTU/hr max **SA200J (24 900 GB disks)** 870 BTU/hr typical 1706 BTU/hr max

a. For IAP100/PRM100 RTM configurations, you must leave 1U of space below the G10 to allow for SAS cabling from the SAS AMC on the front of the G10 to the back of the controller enclosure(s).

Note the following information regarding rackmount ventilation:

- Do not block or cover ventilation openings at the front and rear of an enclosure. Never place an enclosure near a radiator or heating vent. Failure to follow these guidelines can cause overheating and affect the reliability and warranty of your enclosure.
- Leave a minimum of 6 inches (15 cm) at the front and back of each enclosure to ensure adequate airflow for cooling. No cooling clearance is required on the sides, top, or bottom of enclosures.
- Leave enough space in front and in back of an enclosure to allow access to enclosure components for servicing. Removing a component requires a clearance of at least 15 inches (37 cm) in front of and behind the enclosure.

*Refer to Equipment Cooling Requirements in **Appendix D** for details about Network Equipment Building Systems (NEBS) requirements.*

Example Rack Installations

Figure A.1 shows an example rack installation of the G10 chassis, one controller disk enclosure, and the fuse panel (fuse panels apply only to DC power configurations). Tektronix recommends installing the first controller enclosure above the G10 probe to allow for future storage expansion (see **Figure A.2**).

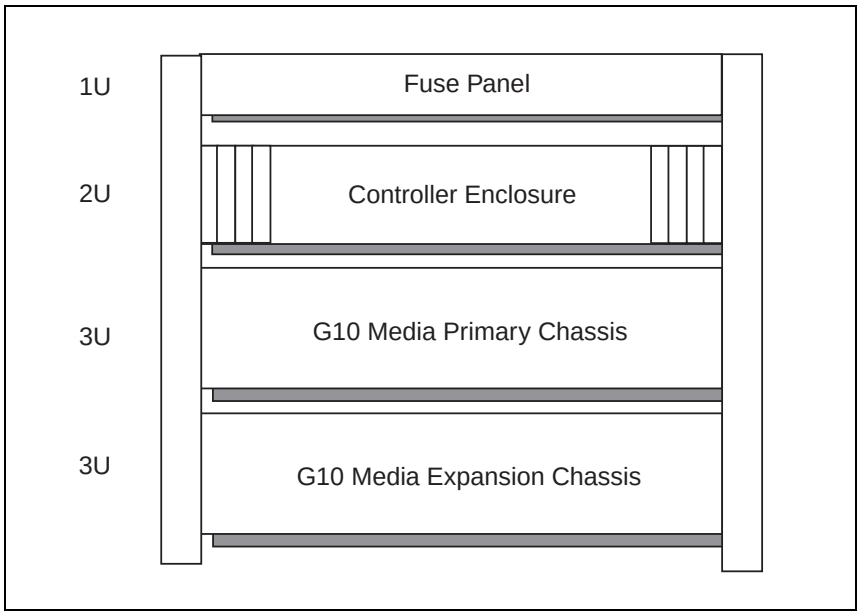


Figure A.1 - Example Rack Installation

Figure A.2 shows rack installations for expanded storage.

- SA200R controller enclosures support up to seven expansion enclosures. ***Due to the increased performance of the SA200R, only one controller enclosure is required for a typical deployment.***
- The SA100R controller enclosures support up to three expansion enclosures.
- A single fuse panel supports five components (G10s and storage enclosures). Fuse panels apply only to DC power configurations.

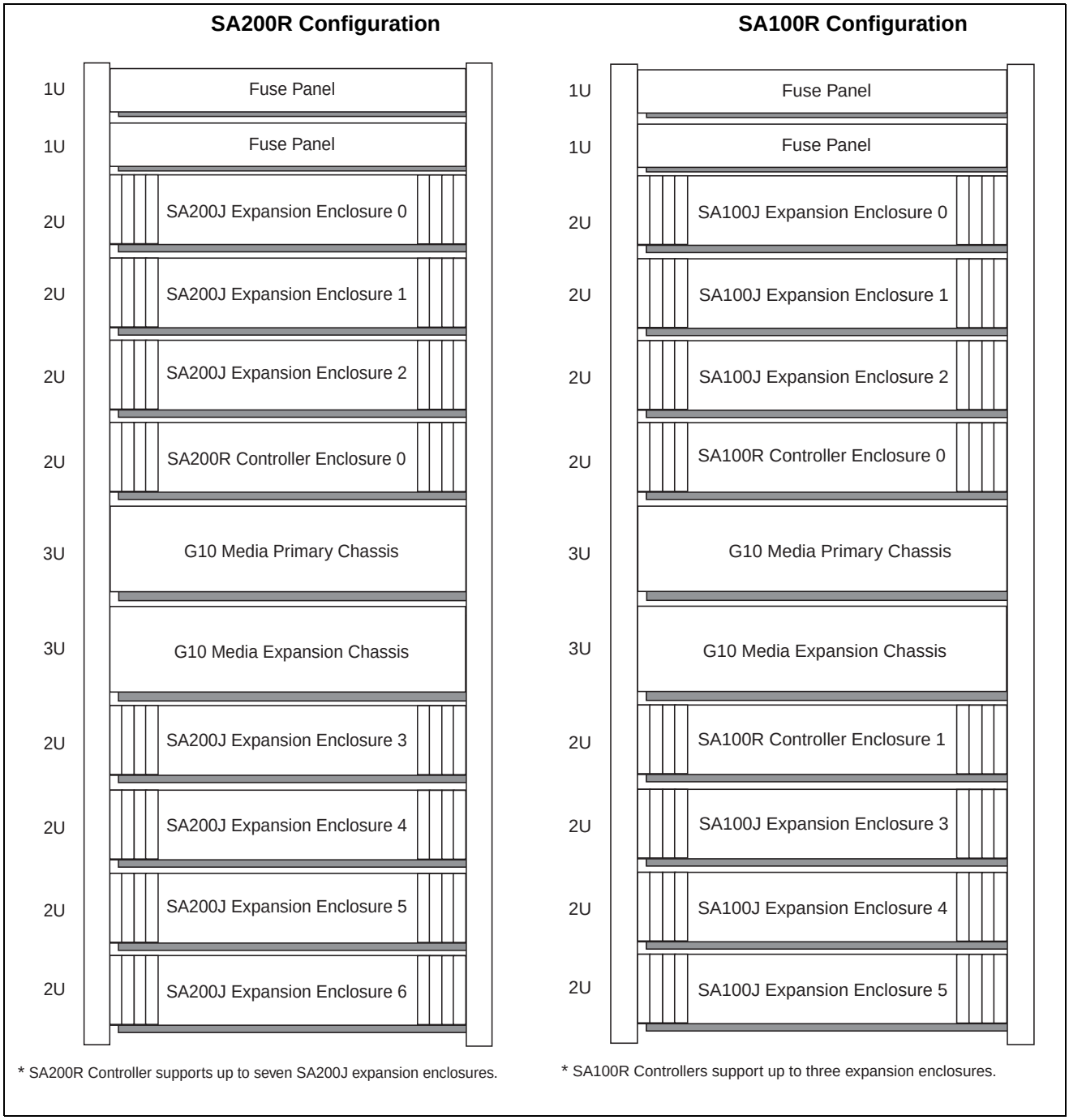


Figure A.2 - Expanded Storage Enclosure Rack Installations

DC Power Requirements

Table A.1 lists the DC power requirements for the GeoProbe G10 and SAS storage enclosures. All probe and disk enclosure power and chassis ground cabling use 12AWG cable or larger.

Table A.1 - DC Power Requirements

Equipment	VDC	Fuse	Watts
G10 (IIC100 and IAP100)	-40 to -72VDC	15A max	430W typical, 600W max
G10 (IIC100 and IAP200)	-40 to -72VDC	15A max	470W typical, 600W max
G10 (IIC100 and IAP320)	-40 to -72VDC	15A max	495W typical, 600W max
G10 (IIC200 and IAP200)	-40 to -72VDC	15A max	495W typical, 600W max
G10 (IIC200 and IAP320)	-40 to -72VDC	15A max	495W typical, 600W max
G10 Media Expansion Chassis (2 IIC100s and 2 TRM100 RTMs)	-40 to -72VDC	15A max	460W typical, 600W max
G10 Media Expansion Chassis (2 IIC200s and 2 SRM200 RTMs)	-40 to -72VDC	15A max	460W typical, 600W max
SA100R RAID Storage Enclosure	-40 to -72VDC	15A max	280W typical, 500W max
SA100J JBOD Storage Enclosure	-40 to -72VDC	15A max	280W typical, 500W max
SA200R RAID Storage Enclosure[a]	-40 to -72VDC	15A max	420W typical, 500W max
SA200J/SA210J JBOD Storage Enclosure[a]	-40 to -72VDC	15A max	255W typical, 500W max

a. For Storage Enclosure and 24 900G drives (SA200J) or 12 4TB drives (SA210J).

Tektronix equipment, cables, and wiring diagrams comply with industry standard DC electrical color coding. Please ensure proper cabling if your equipment and cabling uses nonstandard DC electrical color coding. Improper cabling can cause damage to equipment or personal injury. Contact Tektronix to request specially labeled power cables (-48V = Red, Return = Black) for the G10 chassis and the storage enclosures.

AC Power Requirements

Table A.2 lists the AC power requirements for the GeoProbe G10 and SAS storage enclosures. All probe and disk enclosure power and chassis ground cabling will use 12AWG cable or larger.

Table A.2 - AC Power Requirements

Equipment	VAC	Fuse	Watts
G10 (IIC100 and IAP100)	100 to 240 VAC	6A max	470W typical, 600W max
G10 (IIC100 and IAP200)	100 to 240 VAC	6A max	520W typical, 600W max
G10 (IIC100 and IAP320)	100 to 240 VAC	6A max	545W typical, 600W max
G10 (IIC200 and IAP200)	100 to 240 VAC	6A max	545W typical, 600W max

Table A.2 - AC Power Requirements (Continued)

Equipment	VAC	Fuse	Watts
G10 (IIC200 and IAP320)	100 to 240 VAC	6A max	545W typical, 600W max
G10 Media Expansion Chassis (2 IIC100s and 2 TRM100 RTMs)	100 to 240 VAC	6A max	510W typical, 600W max
G10 Media Expansion Chassis (2 IIC200s and 2 SRM200 RTMs)	100 to 240 VAC	6A max	506W typical, 600W max
SA100R RAID Storage Enclosure	100 to 240 VAC	5A max	280W typical, 500W max
SA100J JBOD Storage Enclosure	100 to 240 VAC	5A max	280W typical, 500W max
SA200R RAID Storage Enclosure[a]	100 to 240 VAC	5A max	420W typical, 500W max
SA200J/SA210J JBOD Storage Enclosure[a]	100 to 240 VAC	5A max	255W typical, 500W max

a. For Storage Enclosure and 24 900G drives (SA200J) or 12 4TB drives (SA210J).

DEFAULT PORT SETTINGS

Table A.2 lists the default port settings for the G10 probe.

Table A.3 - Default Port Settings

G10 Component	Ports	Supported Speeds	Autonegotiation?
LPC200 (IIC200	1G	1G	No
LPC200 (IIC200)	10G/1G	10G/1G	No
LPC100 (IIC100)	All	1G	No
SRM200	10G	10G	No
TRM100	10G	10G	No
PRM300	ETH A-D	10G/1G/100M	Yes
PRM200	ETH A-D	10G/1G/100M	Yes
IAP320	ETH	1G/100M	Yes
IAP200	ETH	1G/100M	Yes
IAP100[a]	ETH A, B	1G/100M	Yes
SHMM	MGMT	100M	Yes

a. Not supported on Control Plane or Media probes.

B SFP Reference

This appendix provides reference information for the small form-factor pluggable (SFP) transceivers for the 1G ports and the 10G ports on the G10 probe.

1 GB PORT SFPS

The G10 probe has the following 1G Ethernet connections (**Figure B.1**):

- IIC200—up to eight 1G Ethernet ports (4 1G ports + 4 1/10G ports)
- PRM200 RTM or PRM300 RTM—two 1G Ethernet ports (Port A and Port B)
- IIC100—up to eight 1G Ethernet ports

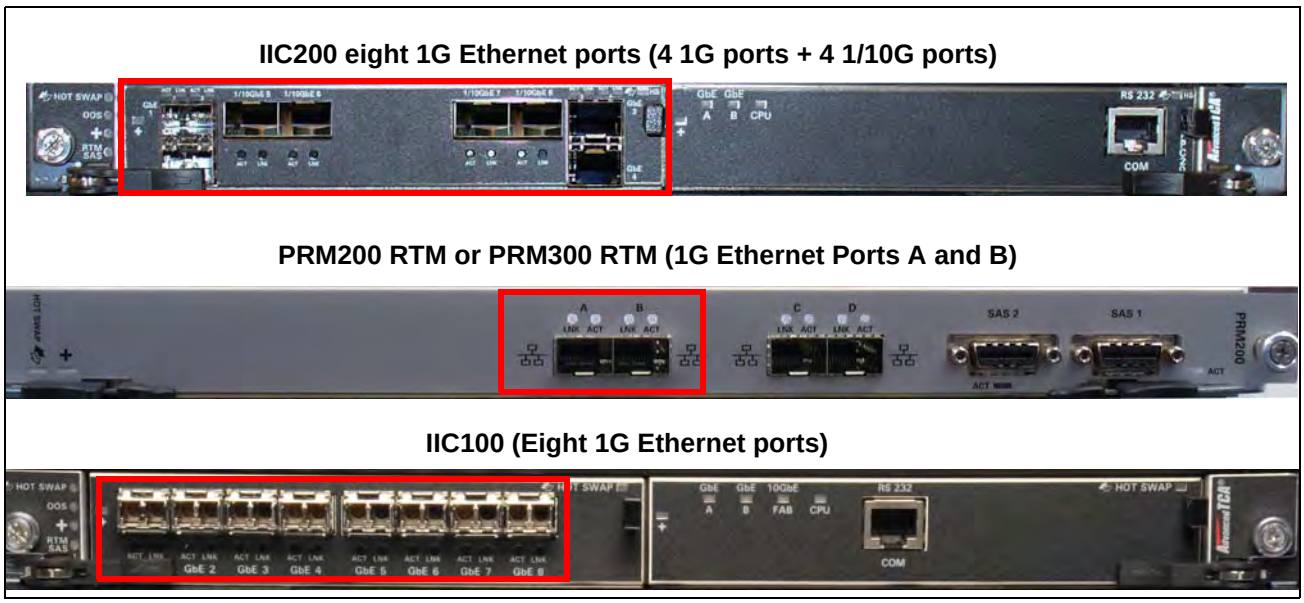


Figure B.1 - G10 1G Ethernet Connections

The available connections support optical or electrical Ethernet links. The G10 1G Ethernet ports support the following connectivity:

- 1000base-LX Fiber
- 1000base-SX Fiber
- 1000base-T Copper

1000base-LX Fiber

Distance	Tek P/N	Finisar P/N	Handle Color / Shape
1310 nm multi- or single-mode	119736700	FTLF1318P3BTL-TK	Blue / Round

1000base-SX Fiber

Distance	Tek P/N	Finisar P/N	Handle Color / Shape
850 nm multi-mode	119738600	FTLF8519P3BNL-TK	Black / Round

1000base-T Copper

Distance	Tek P/N	Finisar P/N	Handle color / Shape
RJ-45/cat5e	119738700	FCLF-8521-3	Yellow / Round

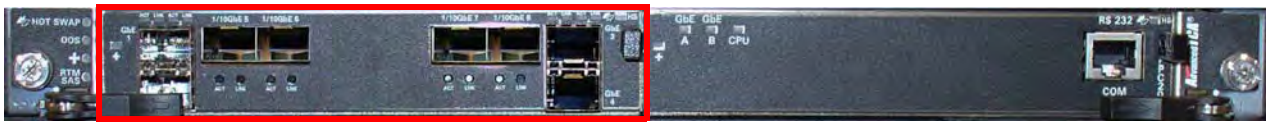
10 GB PORT SFPS

The G10 probe has the following 10G Ethernet connections (**Figure B.2**):

- IIC200—four 10G Ethernet ports (4 1/10G ports)
- SRM200 RTM—four 10G Ethernet ports (Xlink 1-4 ports are used in multiprobe configurations)
- PRM200 RTM or PRM300 RTM—two 10G Ethernet ports (Port C and Port D are used in multiprobe configurations)

- TRM100 RTM—four 10G Ethernet ports when used with IIC100. When used with IIC200, the 10G ports are not used for monitored traffic (all monitored traffic connects to G10 using IIC200).

IIC200 four 10G Ethernet ports (4 1/10G ports)



SRM200 RTM (Four Xlink Ports)

PRM200 RTM or PRM300 RTM (10G Ethernet Ports C and D)

TRM100 (Four 10G Ethernet ports when used with IIC100)

Figure B.2 - 10 GB Ethernet Ports

The four LC type optical connections use SFP+ transceiver modules for input of 10G Ethernet links. The G10 10G Ethernet ports support the following fiber connectivity:

- 10Gbase-SR Fiber
- 10Gbase-LR Fiber

10Gbase-SR Fiber

Distance	Tek P/N	Finisar P/N	Handle color / Shape
850 nm multi-mode	119741700	FTLX8571D3BCL	Light-grey/Flat

10Gbase-LR Fiber

Distance	Tek P/N	Finisar P/N	Handle color / Shape
1310 nm single-mode	119747500	FTLX1471D3BCL	Blue/Flat

Minimum Signal Levels

To accurately monitor links, a minimum signal strength is required at each G10 input port. The signal strength requirement is broad enough to allow some amount of optical taps and splitters. The Inputs must comply with **Table B.1**.

Table B.1 - Minimum Signal Levels

Interface Type	Mode	Minimum Signal Level
10 GB Ethernet	850 nm multi-mode	-9 dBm (0 dBm maximum)
	1310 nm single-mode	-12 dBm (0 dBm maximum)
1 GB Ethernet	850 nm multi-mode (SC)	-16 dBm (0 dBm maximum)
	1300/1310 nm multi-mode (LX)	-18 dBm (0 dBm maximum)
	1310 nm single-mode (LX)	-20 dBm (0 dBm maximum)

INSTALLING SFPS

You can install and remove/replace SFPs without powering down the probe or blade. Perform the following steps to install or remove/replace SFPs.

Step	Action

1. Perform one of the following:

   - **New SFPs**: Remove the filler plugs from the sockets on the blades where the SFPs will be installed. Keep the filler plugs in place for any unused or empty sockets to protect the sockets and to control airflow.

   - **Replacing SFPs**: Remove cabling from the SFPs that will be replaced. Open the handle on the SFP and remove it by pulling it gently out of the socket.

2. Make sure the new/replacement SFP's handle is in the closed position. This ensures that the SFP snaps into position when inserted into the socket. Also, keep the SFP filler plug in place until the SFP is installed.

3. Determine the correct orientation for the SFP you are inserting. SFP orientation varies depending on the blade and port in which you are installing it. Refer to the following sections for orientation details:

   - IIC200
   - IIC100
   - TRM100 RTM
   - PRM200 RTM or PRM300 RTM
   - SRM200 RTM

4. Carefully slide the SFP into the socket until its connector is fully seated and snaps into position. Keep the filler plugs in place until you are ready to connect cables to the SFPs. The plugs protect the SFP internal components.

5. Connect cabling.

6. If this is a new installation, you must configure the Physical Device Port settings in Probe Details tab in Iris Admin. Refer to the Iris Admin online help for details.

   If replacing SFPs, procedures vary depending on the type of SFP replacement you are performing and the blade in which you are replacing it. **Table B.2** summarizes the required steps for each scenario.

Table B.2 - SFP Replacement Procedures

G10 Blade	Type of SFP Replacement		
	Same SFP Speed and Mode as Original	**Change SFP Speed (1G to 10G or 10G to 1G)**	**Change SFP Mode (multi- to single- or single- to multi-)**
IIC200	Reboot the IIC200.	Update the Physical Device Port settings in Probe Details tab in Iris Admin. Reboot IIC200	Reboot the IIC200.
IIC100	No reboot necessary.	Update the Physical Device Port settings in Probe Details tab in Iris Admin. Reboot the IIC100.	No reboot necessary.
PRM200 RTM	Reboot the IAP200.	Reboot the IAP200.	Reboot the IAP200.
PRM300 RTM	Reboot the IAP320.	Reboot the IAP320.	Reboot the IAP320.
PRM100 RTM	N/A	N/A	N/A
IAP320	N/A	N/A	N/A
IAP200	N/A	N/A	N/A
IAP100	N/A	N/A	N/A

IIC200

The IIC200 SFP module socket configurations vary depending on the port. When the handle is in the closed and locked position, you insert the SFP with either the handle in the UP or DOWN position, depending on the port. Ensure that you are installing the SFP module in the correct orientation for the port. Refer to the following table and **Figure B.3**.

G10 Port	Insert SFP with Closed Handle:	Port TX/RX	
		Left	**Right**
1 GbE 1 and 3	**UP**	TX	RX
1/10GbE 5-8	**DOWN**	RX	TX
1 GbE 2 and 4	**DOWN**	RX	TX

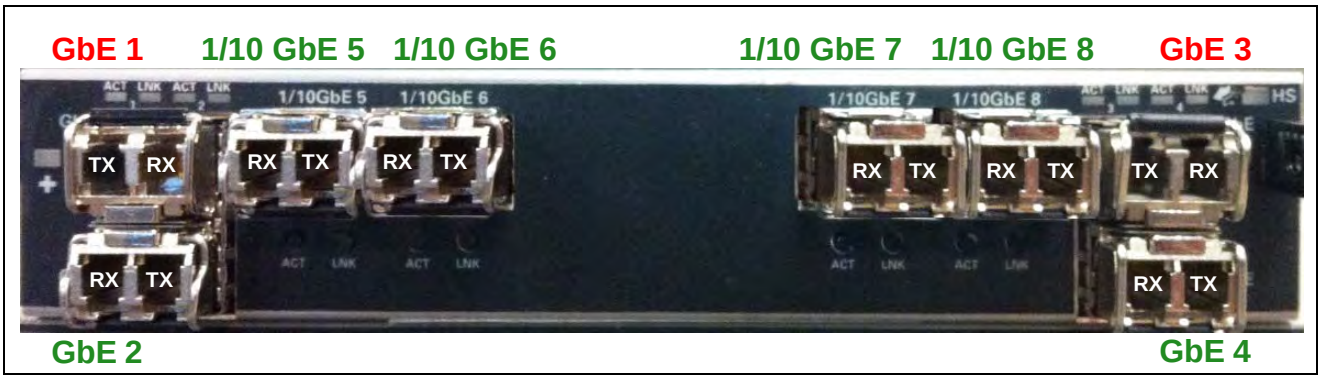


Figure B.3 - IIC200 SFPs

IIC100

Insert 1 Gb SFPs into the IIC100 with the closed handle in DOWN position (**Figure B.4**). For the 1G SFPs, the left port is Receive (RX) and the right port is Transmit (TX).

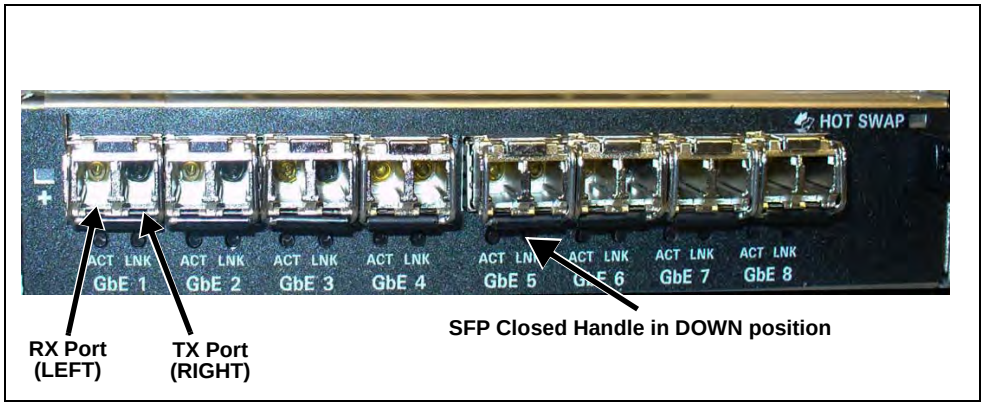


Figure B.4 - IIC100 SFPs

TRM100 RTM

The four 10G Ethernet ports are only used when paired with the IIC100. When paired with IIC200, the 10G ports are not used for monitored traffic (all monitored traffic connects to G10 using IIC200).

Insert 10 Gb SFPs with the closed handle in UP position (**Figure B.5**). For the 10G SFPs, the left port is **Transmit (TX)** and the right port is **Receive (RX)**.

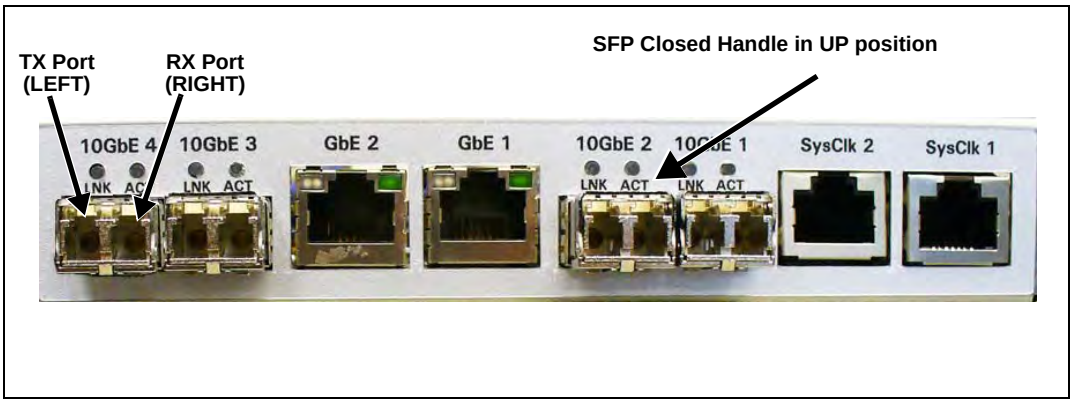


Figure B.5 - TRM100 RTM Paired with IIC100

PRM200 RTM or PRM300 RTM

Insert 1G and 10G SFPs with closed handle in UP position (**Figure B.6**):

- Port A and Port B—1G Ethernet ports
- Port C and Port D—10G Ethernet ports (only used in multiprobe configurations)

Figure B.6 - PRM200 RTM or PRM300 RTM SFPs

SRM200 RTM

Insert 10G SFPs with closed handle in UP position (**Figure B.7**):

- Xlink 1-4 ports—used in multiprobe configurations

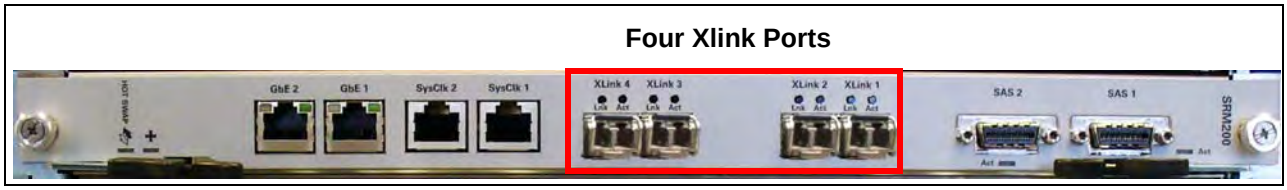


Figure B.7 - SRM200 RTM SFPs

C Maintenance Guidelines

Overview

This chapter provides the following sections:

G10 Maintenance Procedures

This section contains the following information:

Field Replaceable Units

The following tables lists the Field Replaceable Units (FRUs) for the G10 and storage array.

Chassis
3U DC Chassis with Shelf Manager
G10 SHMMs (replaced in pairs)
G10 DC Power Entry Module (PEM)
AC Power Entry Module (PEM)
G10 Fan Tray (Front)
G10 Fan Tray (Rear)
G10 Air Filters
Blades and RTMs
IIC100 8x 1GB Blade set includes the following: ▪ AMC Carrier Blade CAB100 ▪ LPC100 AMC ▪ FPC100 AMC ▪ SRM100 RTM

IIC100 4 x 10GB Blade set includes the following: ▪ AMC Carrier Blade CAB100 ▪ LPC100 AMC ▪ FPC100 AMC ▪ TRM100 RTM
IIC200 Blade set includes the following: ▪ AMC Carrier Blade CAB100 ▪ LPC200 AMC ▪ FPC200 AMC ▪ SRM200 RTM
IIC200e Blade set (for eHRPD monitoring) includes the following: ▪ AMC Carrier Blade CAB100 ▪ LPC200 AMC ▪ FPC200 AMC ▪ TRM200 RTM
IAP100
IAP200
IAP320
SRM100 RTM
SRM200 RTM
TRM100 RTM
PRM100 RTM
PRM200 RTM
PRM300 RTM
LPC100 AMC
FPC100 AMC
LPC200 AMC
FPC200 AMC
SAS AMC
Storage Enclosures
Storage Enclosure Air Filters
Storage Enclosure Power Supplies
SAS RAID Storage Enclosure SA100R or SA200R
SAS Expansion Enclosure SA100J, SA200J, SA210J

Controller or Expansion Module
SAS 300 GB, 600 GB, and 900 GB Disk Drives
NLS SAS 4T Disk Drives (SA210J)

Removing and Replacing a PEM

This section provides the information needed to remove and replace the Power Entry Modules (PEMs). The G10 chassis is equipped with two AC or DC PEMs. They are installed in the middle of the shelf's front. Before replacing a PEM, verify that a second PEM is present with both of its green notification LEDs lit. This second PEM will provide a single power supply path during the replacement process.

Replacing a DC PEM

Hot power supplies may cause injury. Allow the PEM to cool before servicing.

Perform the following steps to replace a DC PEM.

Step	Action
1.	Put on an ESD wrist strap.

Electrostatic discharge can damage circuits or shorten their life. Before touching the blade or electronic components, ensure that you are working in an ESD-safe environment.

2.	Connect the strap to the shelf by attaching the front or rear ESD jack/ESD snap.
3.	Switch the breaker of the PEM to be replaced to the OFF (tripped) position, if it is not already in this position.
4.	Remove the power connection cables from the PEM.
5.	Unfasten the two captive screws of the PEM.
6.	Remove the PEM from the shelf bay by pulling the PEM handle.
7.	Switch the breaker on the replacement PEM to the OFF (tripped) position, if it is not in this position already.

Inserting or extracting the PEM with the PEM breaker in the ON position may damage your system. If power is connected to the shelf, ensure that the breaker is in the OFF position before you insert or extract a PEM.

8. Insert the replacement PEM (see **Figure C.1**).

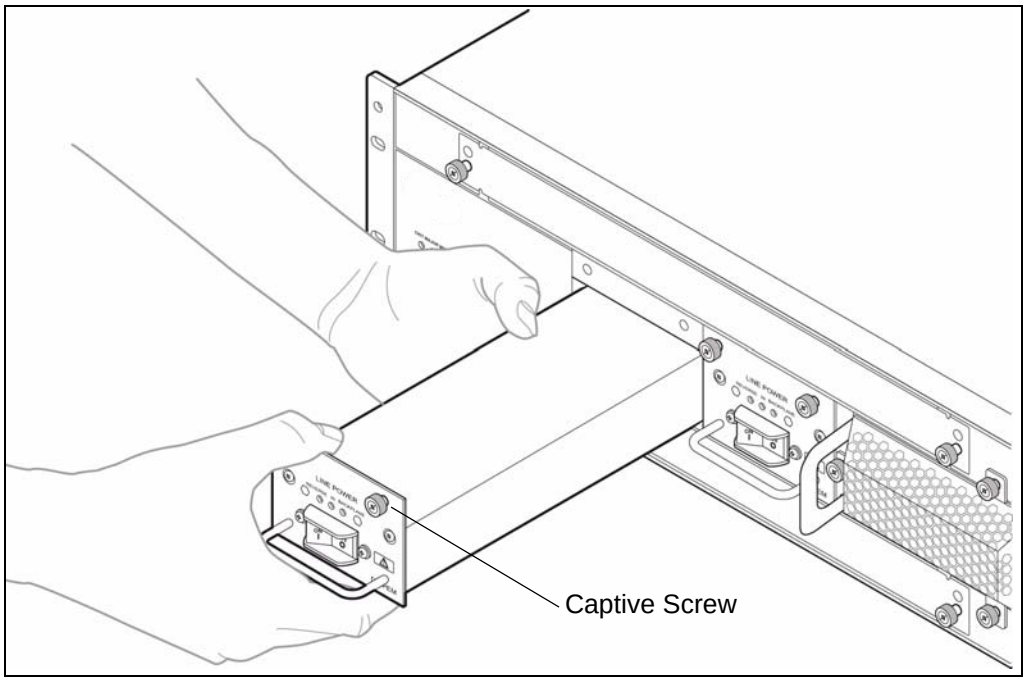


Figure C.1 - Inserting the Replacement DC PEM

9. Fasten the two PEM captive screws.

10. Reconnect the power cables to the PEM.

Tektronix equipment, cables, and wiring diagrams comply with industry standard DC electrical color coding. Please ensure proper cabling if your equipment and cabling uses nonstandard DC electrical color coding. Improper cabling can cause damage to equipment or personal injury. Contact Tektronix to request specially labeled power cables (-48V = Red, Return = Black) for the G10 chassis and the storage enclosures.

11. Turn on the feed power if it is not already turned on.

12. Check the PEM LEDs (see **Figure C.2**) and take the appropriate actions as listed in **Table C.1**.

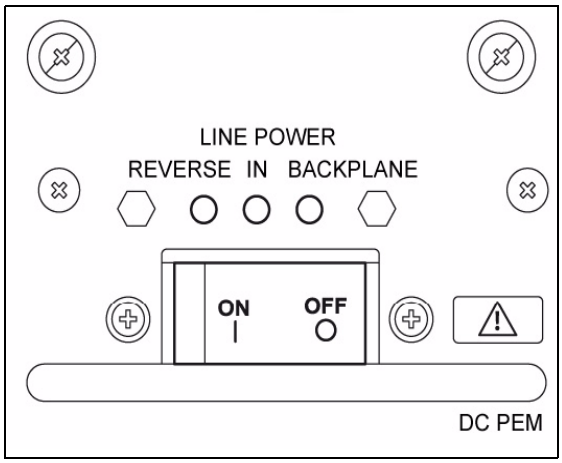


Figure C.2 - PEM LEDs

Applying reverse power causes damage to the electrolytic capacitors of the filter. Therefore, switch on the breakers only if no red light is visible.

Table C.1 - G10 DC PEM LEDs

PEM LEDs	Status
Reverse LED (red) ON **In** LED (green) OFF	Do not switch on the breaker while the Reverse LED is on. ▪ **Reason**—the power connected is reversed. ▪ **Action**—turn off the feed power and attach the power cables at the power connector with the correct orientation (-48V, Return).
Reverse LED (red) OFF **In** LED (green) OFF	Do not switch on the breaker while the **In** LED stays off.
Reverse LED (red) OFF **In** LED (green) ON	The power is connected correctly. You may switch on the breaker now.

13. Switch the breaker to the ON position.

14. Verify that the green BP LED (on the right) is lit.

Replacing an AC PEM

Perform the following steps to replace an AC PEM.

Step	Action
1.	Put on an ESD wrist strap.

Electrostatic discharge can damage circuits or shorten their life. Before touching the blade or electronic components, ensure that you are working in an ESD-safe environment.

2. Connect the strap to the shelf by attaching the front or rear ESD jack / ESD snap.

3. Disconnect the AC power cord from the rack power supply for the AC PEM that you want to replace.

4. Disconnect the AC power cord from the back of the AC PEM. Allow the PEM to cool before removing it.

5. Loosen the two captive screws on the front of the PEM.

6. Remove the PEM from the front of the chassis by pulling the PEM handle.

7. Insert the replacement PEM (**Figure C.3**).

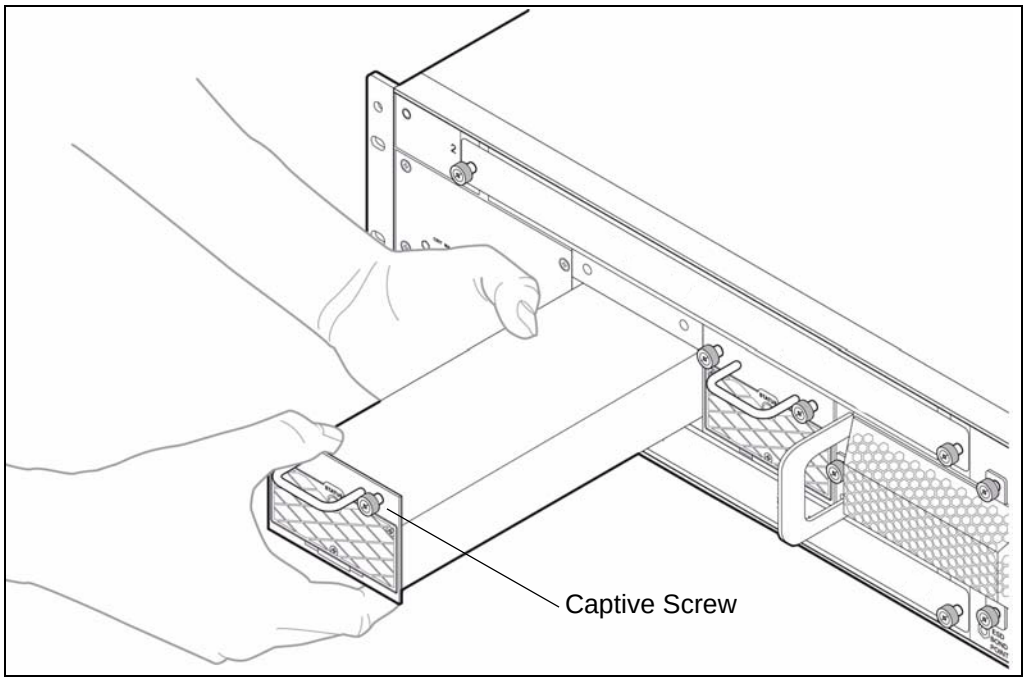


Figure C.3 - Inserting the Replacement AC PEM

8. Tighten the two PEM captive screws.

9. Connect the AC power cord to the back of the AC PEM.

10. Connect the AC power cord to the rack power supply.

11. Check the PEM Status LED (**Figure C.4**) and take the appropriate actions as listed in **Table C.2**.

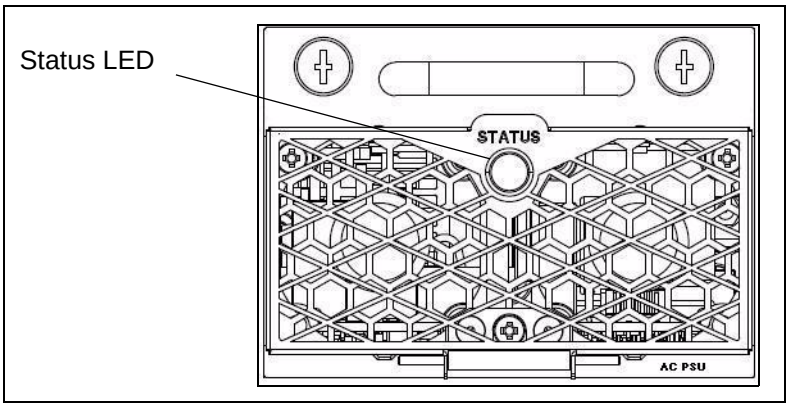


Figure C.4 - AC PEM Status LED

Table C.2 - G10 AC PEM LEDs

PEM LEDs	Status
LED OFF	The power is disconnected.
	Action: Check the AC power cable connections.
LED RED	The power supply is in a failed state.
	Action: Disconnect the AC power cord from the PEM. Remove and insert the PEM again to be sure that it is properly seated and secure. If the LED lights again, contact Tektronix Communications Customer Support.
LED GREEN	The power is connected correctly.

Replacing the Fan Tray

The following section provides the information needed to remove and replace the fan trays. The fan trays are located on the right-hand side of the shelf's front and on the right-hand side of the rear. If you want to check or replace an air filter, you must remove the front fan tray first.

Removing the single operating fan tray leads to overheating very quickly. Ensure that one operating fan tray is present in the system at all times.

Perform the following steps to replace the fan tray. These steps are the same for the front and rear fan trays.

Step	Action
1.	Put on an ESD wrist strap.

Electrostatic discharge can damage circuits or shorten their life. Before touching the blade or electronic components, ensure that you are working in an ESD-safe environment.

2. Remove the replacement fan tray from the shipping box and ensure that it is the correct model for the shelf and the required front or rear fan tray.

When a fan tray is taken out of operation or is removed during a replacement procedure, the system manager compensates for the loss by increasing the speed of the remaining fans. Running a fan on high speed for a long time can shorten the fan's life and can exceed the allowable acoustic noise limits. Replace the fan tray as soon as possible.

3. Loosen the three mounting screws of the tray (see **Figure C.5**).

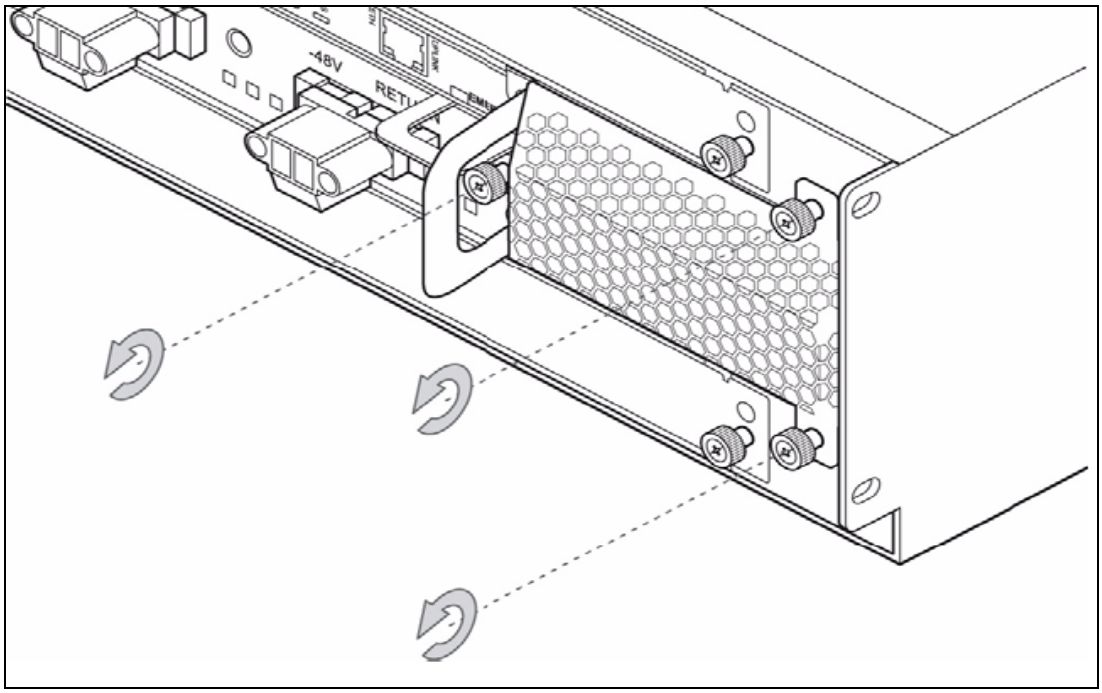


Figure C.5 - Fan Tray Mounting Screws (Rear)

Please use caution because there are rotating fans. Inserting tools or fingers into operational fans can cause injuries. Keep clear of the fans as long as they are rotating.

4. Grasp the handle and pull the tray carefully out of the shelf (see **Figure C.6**).

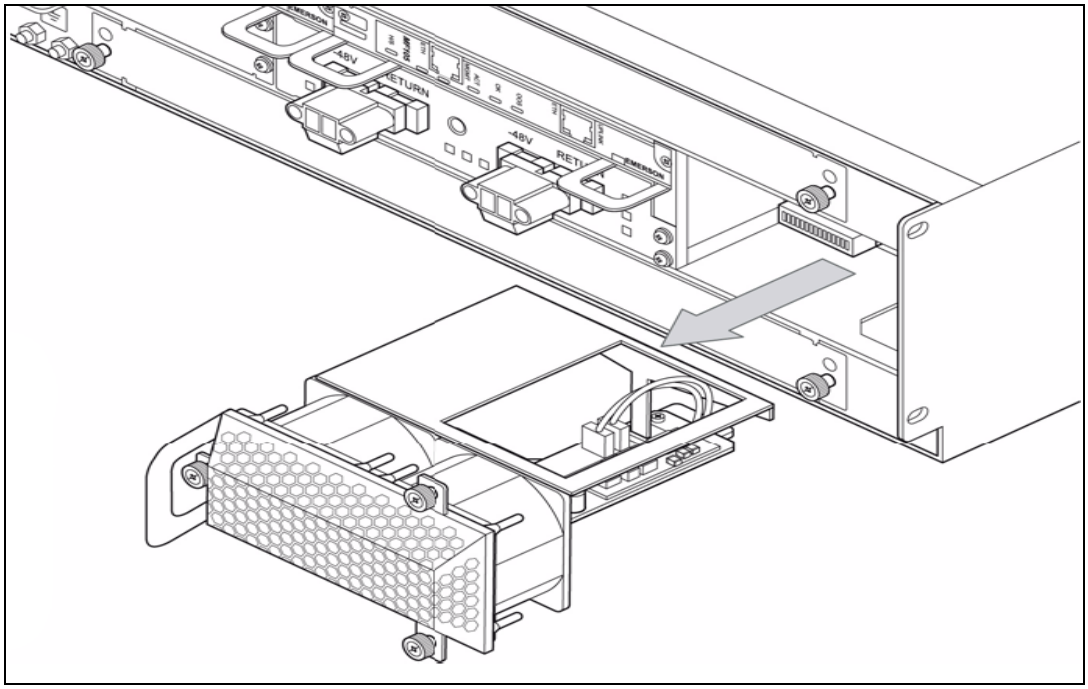


Figure C.6 - Pulling Out the Fan Tray (Rear)

5. Take the replacement fan tray and insert it into the shelf (see **Figure C.7**).

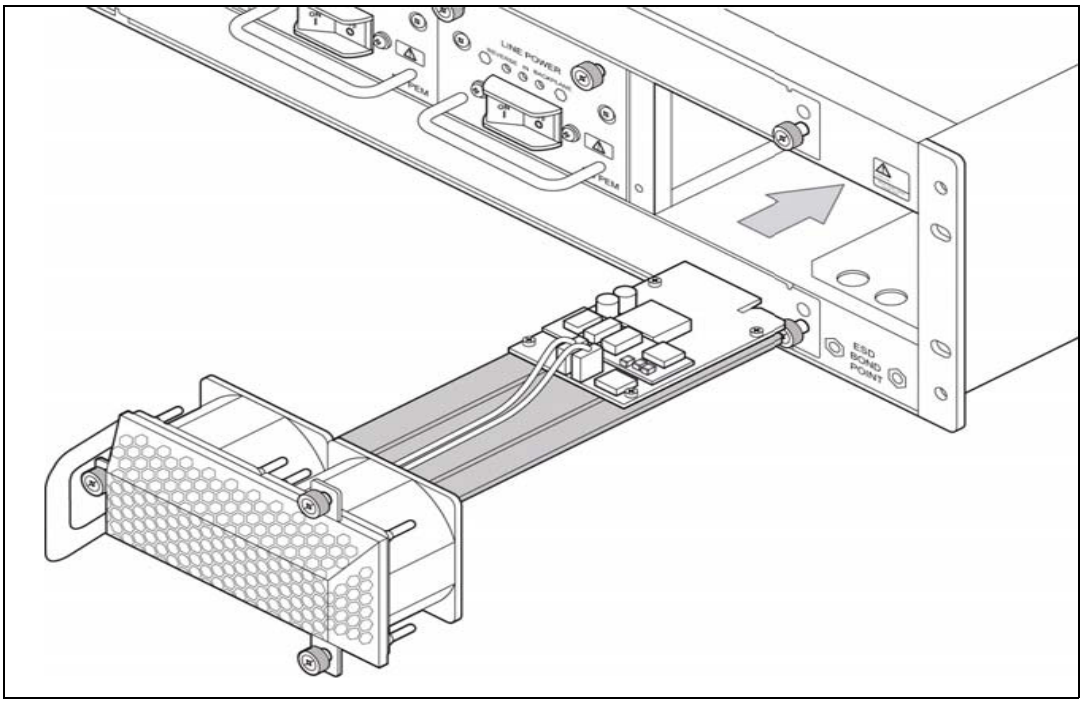


Figure C.7 - Front Fan Tray (Front)

6. Slide the tray into the slot until you feel resistance (see **Figure C.8**). The fans start rotating during this step.

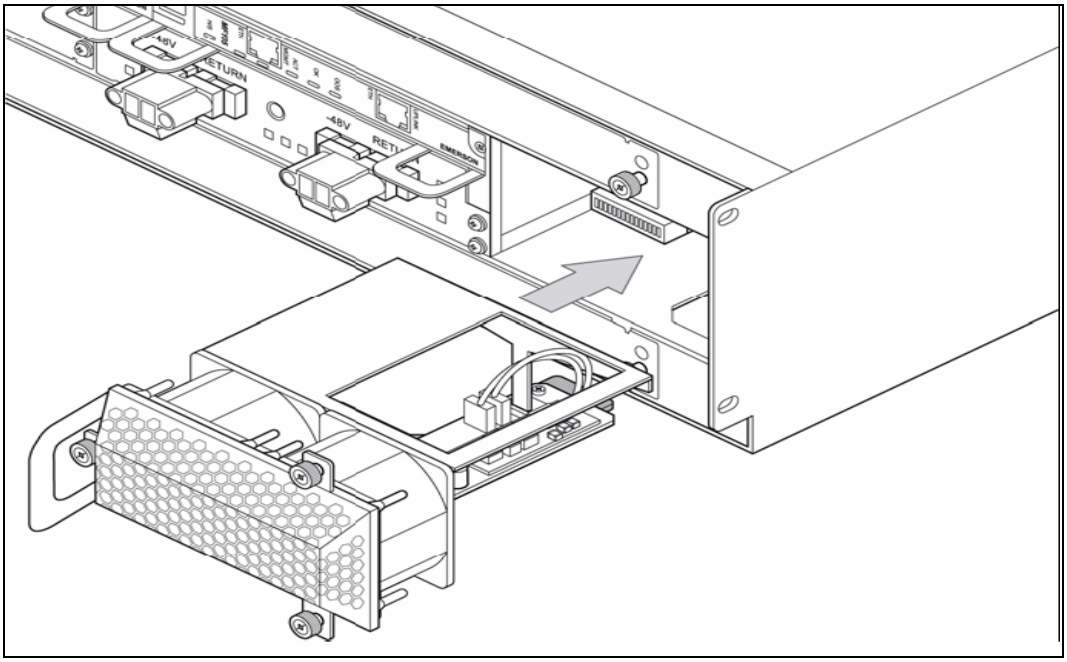


Figure C.8 - Rear Fan Tray

7. Fasten the three mounting screws of the tray.

Replacing G10 Chassis Air Filters

The G10 chassis is equipped with two air filters located below and above the front fan tray. If you want to replace both filters at the same time, replace the top filter first. Otherwise, dust may fall and soil the new bottom filter when you remove the top filter.

To ensure that the G10 probe operates efficiently, Tektronix requires the air filters to be changed every 3 months.

Replacing the Top Air Filter

Perform the following steps to replace the top air filter.

Step	Action
1.	Put on an ESD wrist strap.

Electrostatic discharge can damage circuits or shorten their life. Before touching the blade or electronic components, ensure that you are working in an ESD-safe environment.

2.	Ensure that you have a new replacement filter available.
3.	Remove the front fan tray if it is not removed already (refer to Replacing the Fan Tray.)
4.	After the fan tray is removed, use compressed air to remove dust from the front fan tray if necessary.

5. Insert two fingers in the round holes at the front of the air filter frame and pull it downward and out of its compartment (**Figure C.9**). If you cannot remove the frame with your fingers, you can also use a tool such as a screwdriver.

When using a tool to remove the air filter frame, be careful not to damage the frame or the G10 chassis.

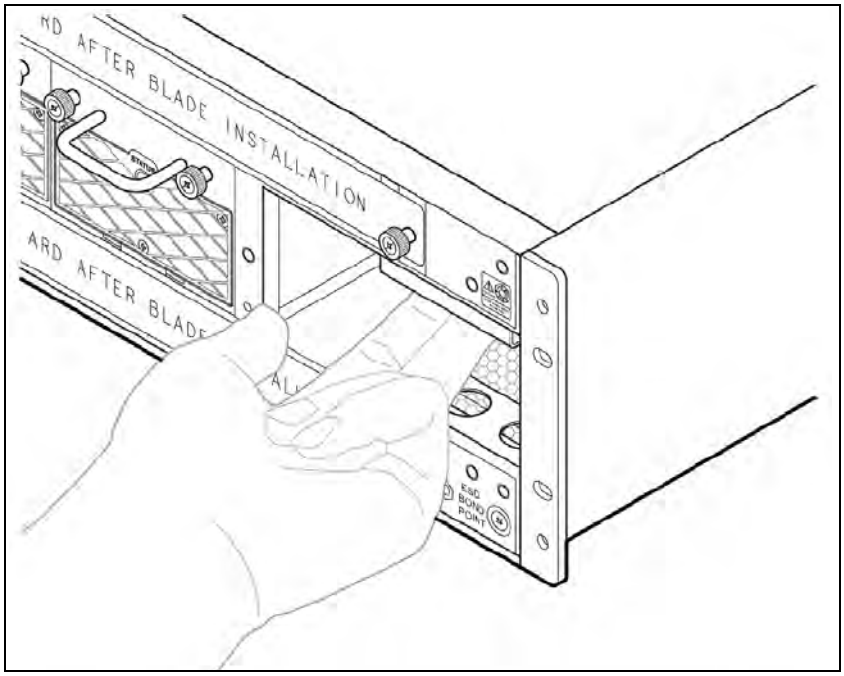


Figure C.9 - Top Air Filter Frame Removal

6. Pull the frame carefully out of the chassis (**Figure C.10**).

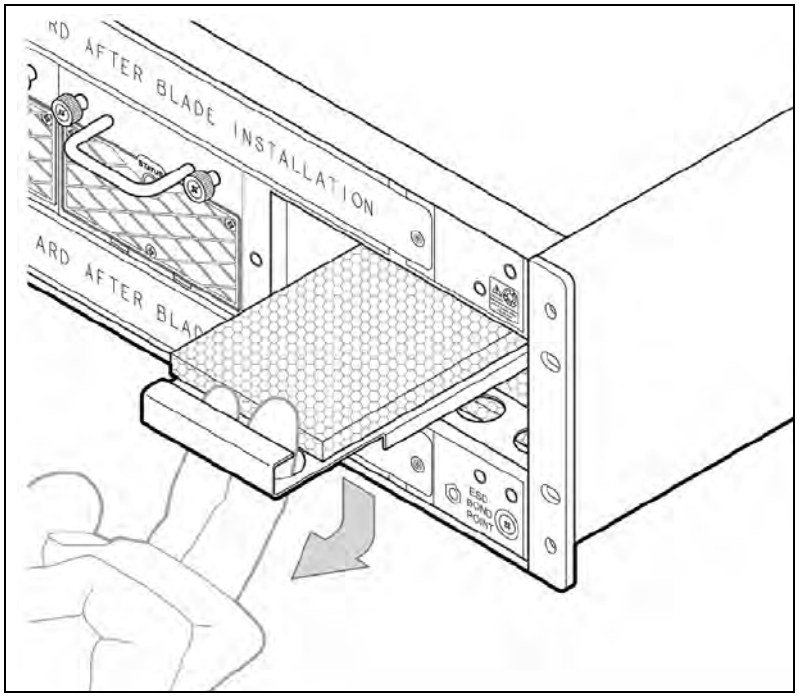


Figure C.10 - Top Air Filter Frame Removal

7. Detach the air filter from its frame.

8. Attach the new filter to the frame (**Figure C.11**). Ensure that it is aligned with the frame.

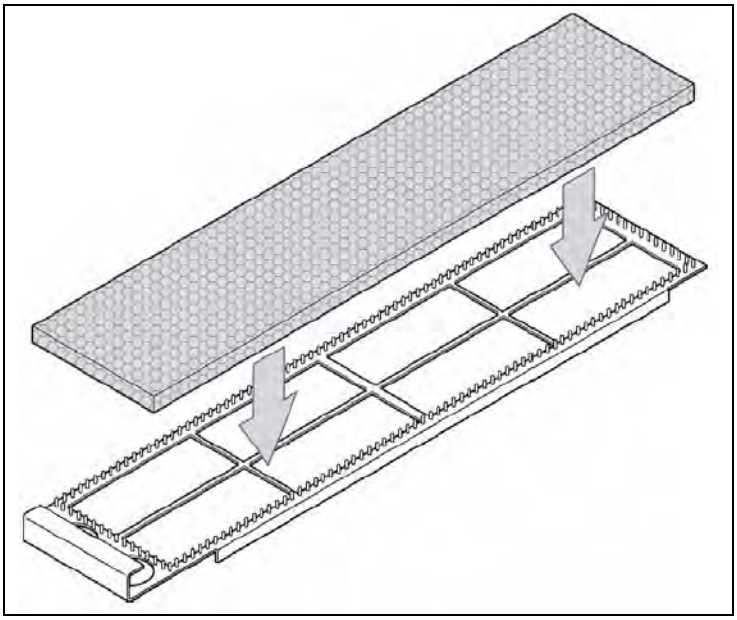


Figure C.11 - Top Air Filter Replacement

9. Press the air filter to the hook-and-loop fastener on the frame.

10. Insert the frame into the shelf by placing the right edge in the guide.

11. Slide the frame into the slot until you feel resistance.

12. Push the frame upward until it snaps in place.

13. Perform one of the following actions:

    - Replace the bottom air filter (refer to Replacing the Bottom Air Filter).
    - Replace Fan Trays (refer to Replacing the Fan Tray).

Replacing the Bottom Air Filter

Perform the following steps to replace the bottom air filter.

Step	Action

1. Put on an ESD wrist strap.

Electrostatic discharge can damage circuits or shorten their life. Before touching the blade or electronic components, ensure that you are working in an ESD-safe environment.

2. Ensure that a new replacement filter is available.

3. Remove the front fan tray if it is not removed already (refer to Replacing the Fan Tray).

4. Insert two fingers in the round holes at the front of the bottom air filter frame and pull the frame upward and out of its compartment (**Figure C.12**). If you cannot remove the frame with your fingers, you can also use a tool such as a screwdriver.

When using a tool to remove the air filter frame, be careful not to damage the frame or the G10 chassis.

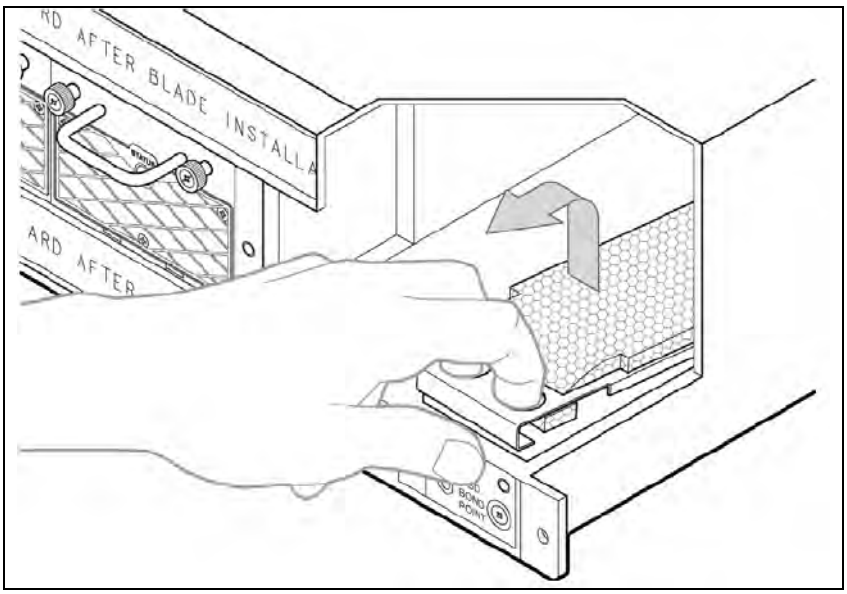


Figure C.12 - Bottom Air Filter Removal

5. Pull the frame carefully out of the chassis.

6. Detach the air filter from its frame.

7. Attach the new filter to the frame. Ensure that it is aligned with the frame.

8. Pull the front end of the filter through the frame to the bottom of the frame as shown in **Figure C.13**.

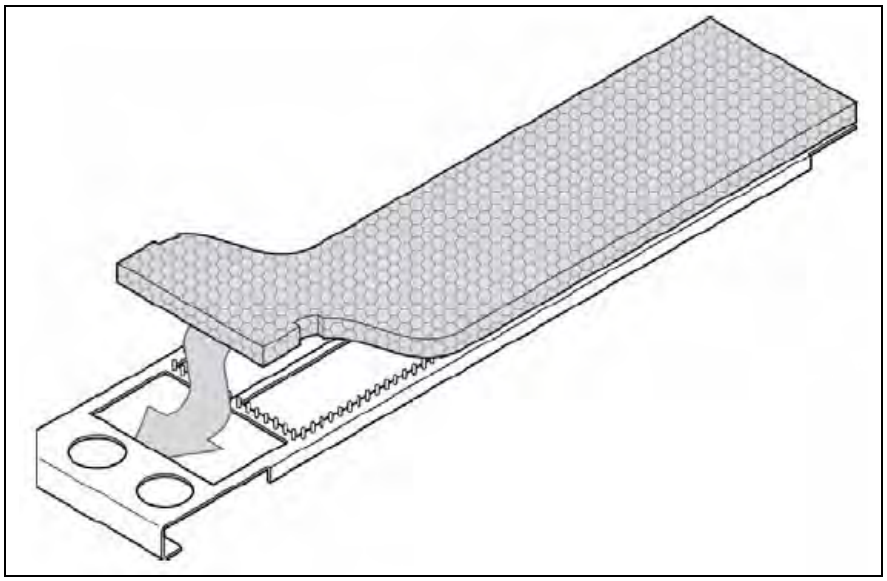


Figure C.13 - Bottom Air Filter Replacement

9. Press the air filter to the hook-and-loop fastener on the frame.

10. Insert the frame into the shelf by placing the right edge in the guide.

11. Slide the frame into the slot until you feel resistance.

12. Push the frame downward until it snaps in place.

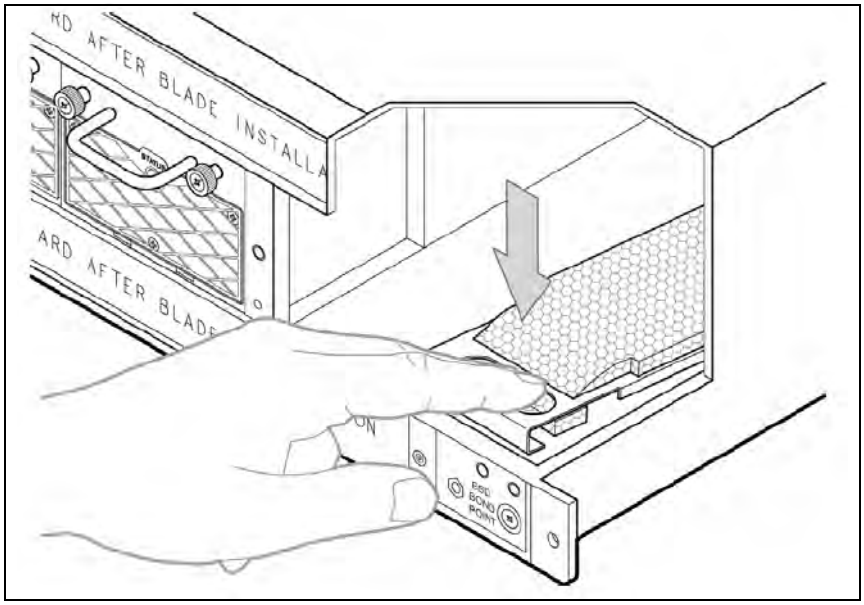


Figure C.14 - Bottom Air Filter Replacement

13. Insert the front fan tray (refer to Replacing the Fan Tray).

G10 Blade Removal/Replacement Procedures

Before removing any G10 blades or RTMs, contact Tektronix Communications Customer Support.

Prior to hardware upgrades/downgrades, the Iris server and G10 probe MUST:

- ***Have the minimum software version required for the installed blades. Contact Tektronix Communications Customer Support for assistance.***
- ***Be on the same version of software; Iris server version must match G10 probe version.***

This section provides procedures for the following G10 blades and RTMs.

Procedures For:	Refer to Page:
IAP100	page 158
SAS AMC (IAP100)	page 161
IAP200/IAP320	page 162
Iris Interface Card (IIC100 or IIC200)	page 164
LPC and FPC AMCs (IIC100 or IIC200)	page 171
RTMs	page 172
10G Interface Card	page 174

IAP100

This section contains the following procedures for the IAP100.

- Removing or Resetting the IAP100
- Installing the IAP100

Removing or Resetting the IAP100

Perform the following to reset or remove the IAP100.

Step	Action
1.	Pinch the latch and lever on the right ejector handle and pull the handle outward slightly as shown (**Figure C.15**).

2. The blue Hot Swap LED starts to blink, indicating that the blade is shutting down the OS.

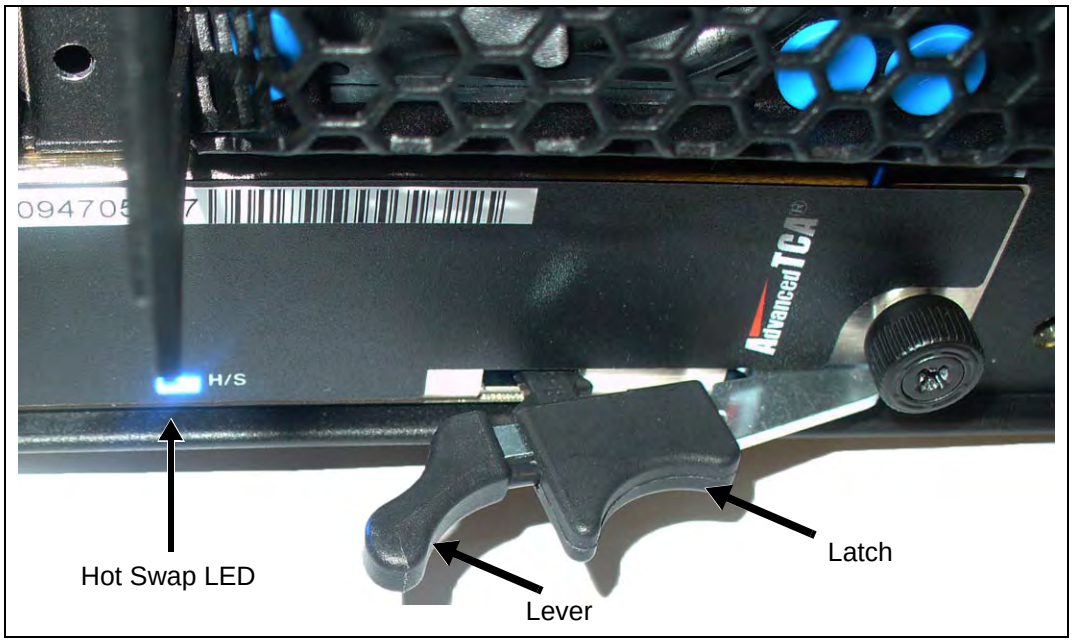


Figure C.15 - IAP100 Right Ejector Handle - Hot Swap Position

3. Wait until the Hot Swap LED is solid blue. This indicates that the blade's OS has powered down completely.

4. If you are resetting the board, pinch the latch and lever together and push the ejector handle back in toward the chassis until the Hot Swap LED turns off. The PWR LED turns GREEN. Wait about 10 minutes for the IAP100 to boot up.

5. If you are removing the blade, perform the following:

   - Loosen the thumbscrews on each side of the blade.
   - Pinch the latch and lever on each ejector handle and rotate the ejector handles outward.
   - Gently remove the blade from the chassis.

6. To reinstall the blade or install a new blade, refer to Installing the IAP100.

Installing the IAP100

Perform the following to install the IAP100 until it is completely seated.

Step	Action
1.	Guide the positioning pins of the blade until they are inserted in the positioning holes in the chassis (**Figure C.16**).

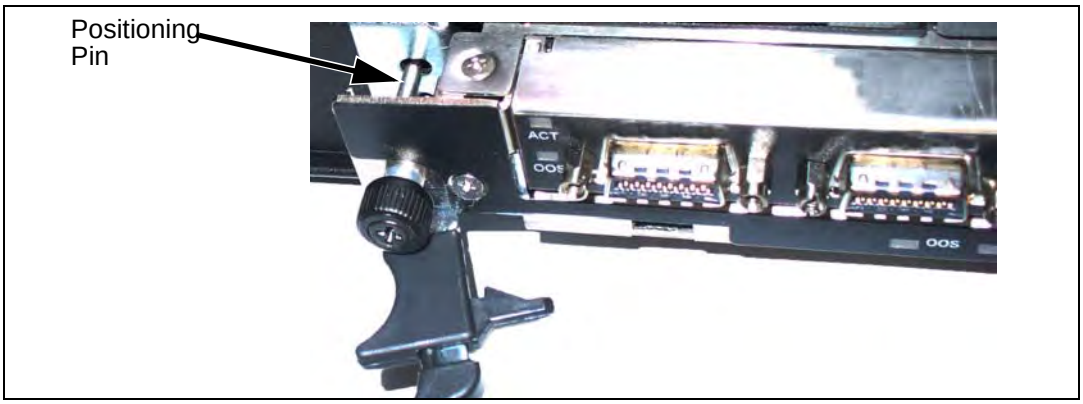


Figure C.16 - IAP100 Alignment

2.	While squeezing the handle's lever and latch together, close the left and right ejector handles until the inner sides of the ejector handles are attached to the faceplate (**Figure C.17**).

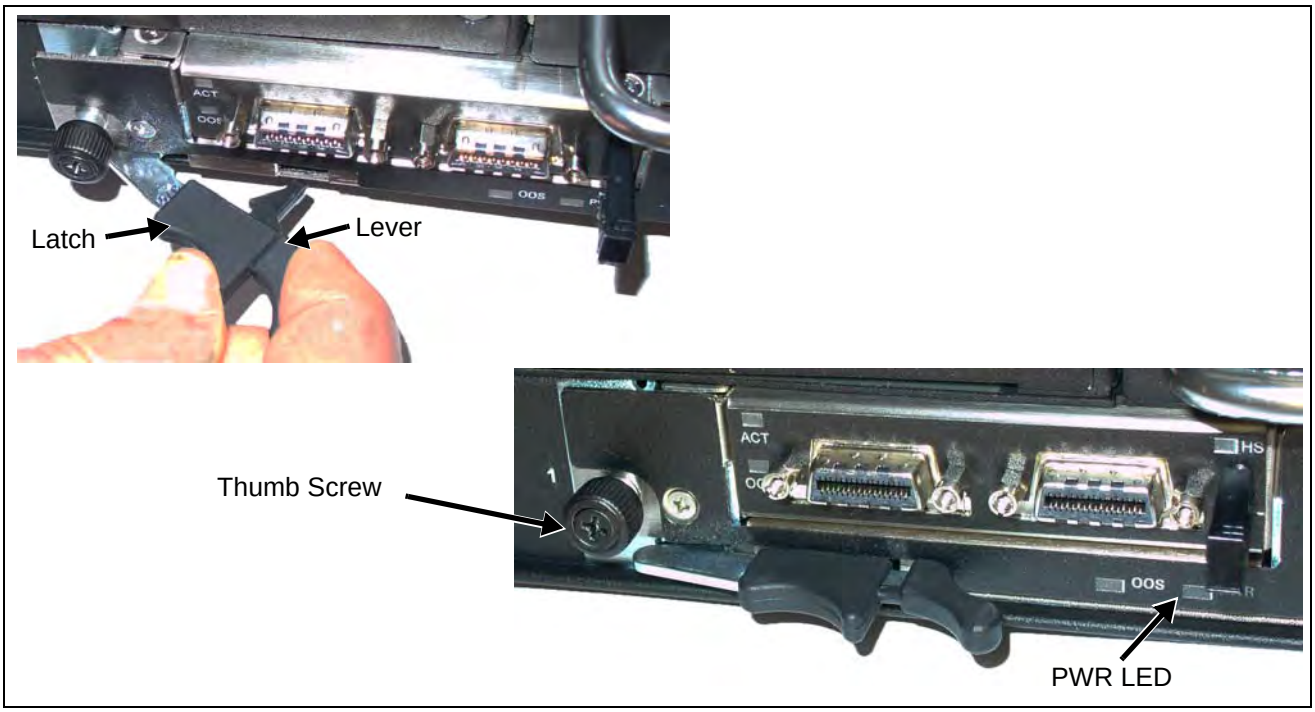


Figure C.17 - IAP100 Insertion

3. Verify that the PWR LED is GREEN, indicating that the IAP100 is receiving power (**Figure C.17**).

4. Tighten the two thumbscrews.

SAS AMC (IAP100)

Remove the SAS AMC only after the IAP100 has been powered OFF. The G10 does not support removing the SAS AMC while the IAP100 is powered ON.

Figure C.18 - G10 IAP100 Blade SAS AMC

Removing/Replacing the SAS AMC

Perform the following steps to remove the SAS AMC.

Step	Action
1.	Initiate the hot-swap mode for the IAP100 blade and wait until the hot-swap LED (**Figure C.18**) is solid blue (indicating that the OS is shut down). Refer to Removing or Resetting the IAP100 for details.
2.	Unseat the IAP100 blade 2 inches from the backplane.
3.	Pull the SAS AMC handle out (**Figure C.18**) until the latching mechanism is released and remove the AMC.
4.	Insert the replacement AMC and carefully align the edges with the rail guides in the IAP100.
5.	Apply equal and steady pressure and slide the module in until the fingers of the module snap into the internal AMC connector. ***DO NOT force the board into the slot.***
6.	Push the AMC handle to the IN position.
7.	Perform the steps in the procedure Installing the IAP100 to reinsert the IAP100.

IAP200/IAP320

This section contains the following procedures for the applications blade:

- Removing or Resetting the IAP200/IAP320
- Installing the IAP200/IAP320

Removing or Resetting the IAP200/IAP320

Perform the following to reset or remove the applications blade.

Step	Action
1.	Pinch the latch and lever on the right ejector handle and pull the handle outward slightly as shown (**Figure C.19**).
2.	The blue Hot Swap LED starts to blink, indicating that the blade is shutting down the OS.

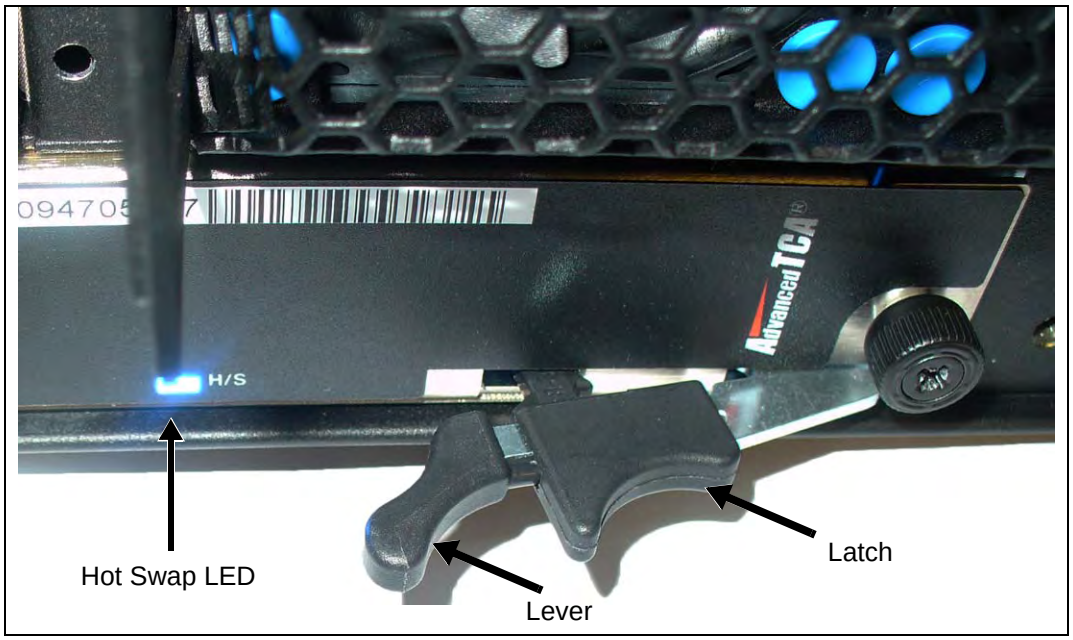


Figure C.19 - IAP Right Ejector Handle - Hot Swap Position

Step	Action
3.	Wait until the Hot Swap LED is solid blue. This indicates that the blade's OS has powered down completely.

If you are resetting the board, pinch the latch and lever together and push the ejector handle back in toward the chassis until the Hot Swap LED turns off. When the LED turns off, this indicates that the blade's payload has been powered up and that the blade is active.

4. If you are removing the blade perform the following:

   - Loosen the thumbscrews on each side of the blade.
   - Pinch the latch and lever on each ejector handle and rotate the ejector handles outward.
   - Gently remove the blade from the chassis.

5. To reinstall the blade or install a new blade, refer to Installing the IAP200/IAP320.

Installing the IAP200/IAP320

Perform the following to install the blade until it is completely seated.

If you are upgrading a probe by replacing the IAP100 with the IAP200 or IAP320, refer to the upgrade workflows.

Step	Action

1. Ensure that the left and right ejector handles are in the outward position by squeezing the lever and the latch together.
2. Insert the blade into the shelf by placing the top and bottom edges of the blade in the card guides of the shelf. Ensure that the guiding module of shelf and blade are aligned properly.
3. Guide the positioning pins of the blade until they are inserted in the positioning holes in the chassis (**Figure C.20**).

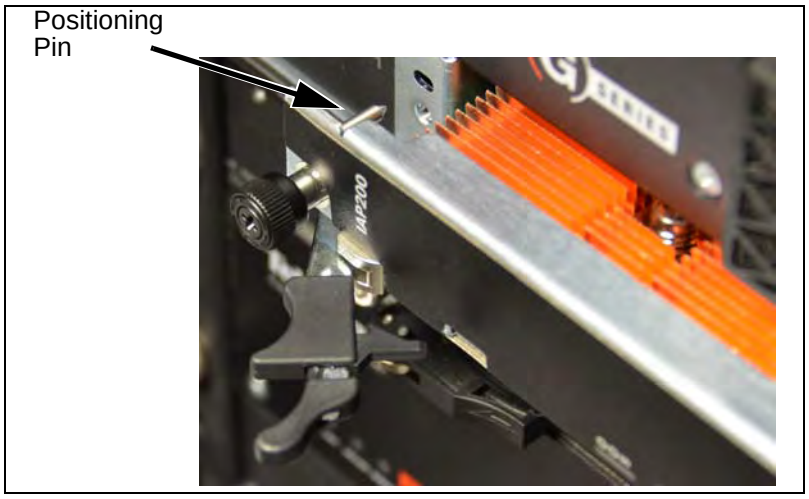


Figure C.20 - IAP Alignment

4. While squeezing the handle's lever and latch together, close the left and right ejector handles until the inner sides of the ejector handles are attached to the faceplate (**Figure C.21**).

If your shelf is powered on, the blue Hot Swap LED illuminates as soon as the blade is connected to the backplane power pins. When the blade is completely installed, the blue LED starts to blink. This indicates that the blade announces its presence to the shelf management controller.

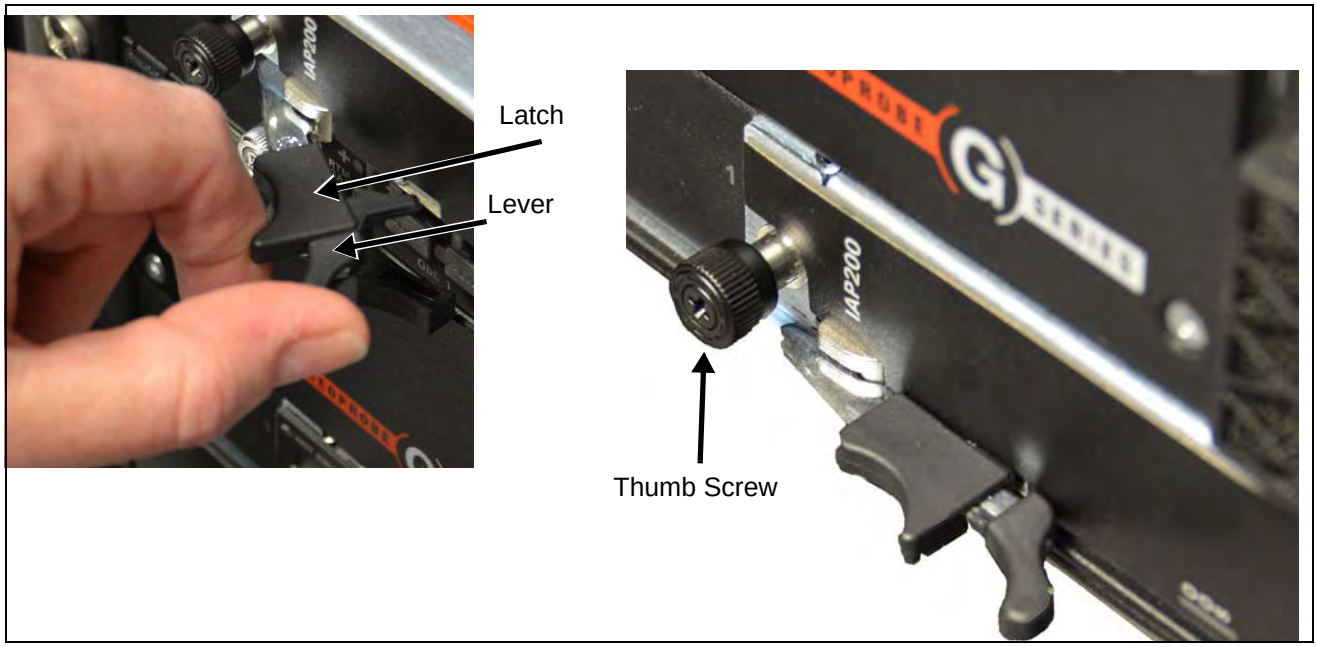


Figure C.21 - IAP Insertion

5. Wait until the blue LED is switched off and then tighten the faceplate screws that secure the blade to the shelf.

   When the LED turns off, this indicates the blade's payload has been powered up and that the blade is active.

Iris Interface Card (IIC100 or IIC200)

This section contains the following procedures for the IIC.

- Removing or Resetting the IIC100 or IIC200
- Installing the IIC100 or IIC200

*If you are upgrading a probe by replacing the IIC100 with the IIC200, refer to the **G10 Installation Guide** for a detailed procedure.*

Removing or Resetting the IIC100 or IIC200

Perform the following to reset or remove the IIC.

Step	Action

1. Rotate the IIC's right ejector handle outward as shown in (**Figure C.22**).

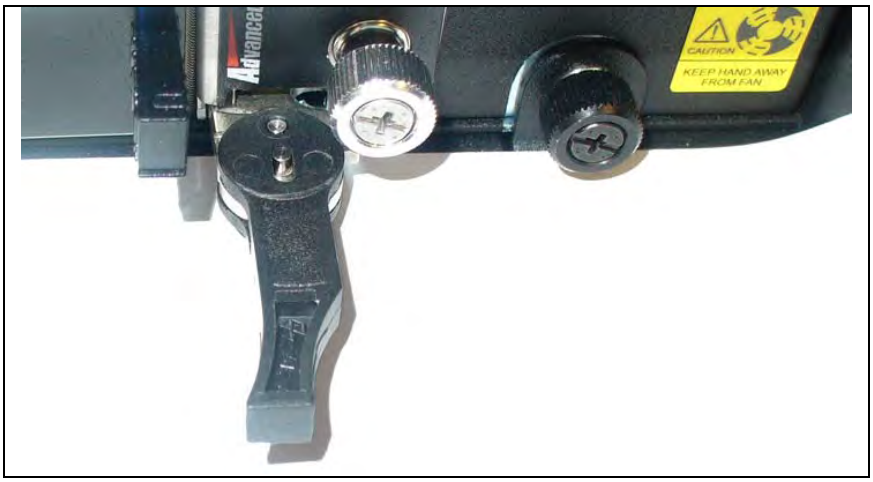


Figure C.22 - IIC Right Ejector Handle

2. Push and **hold** the ejector handle in the forward position and then rotate it outward slightly until it cannot rotate any farther (**Figure C.23**). The blue Hot Swap LED starts to blink, indicating that the blade is shutting down the OS.

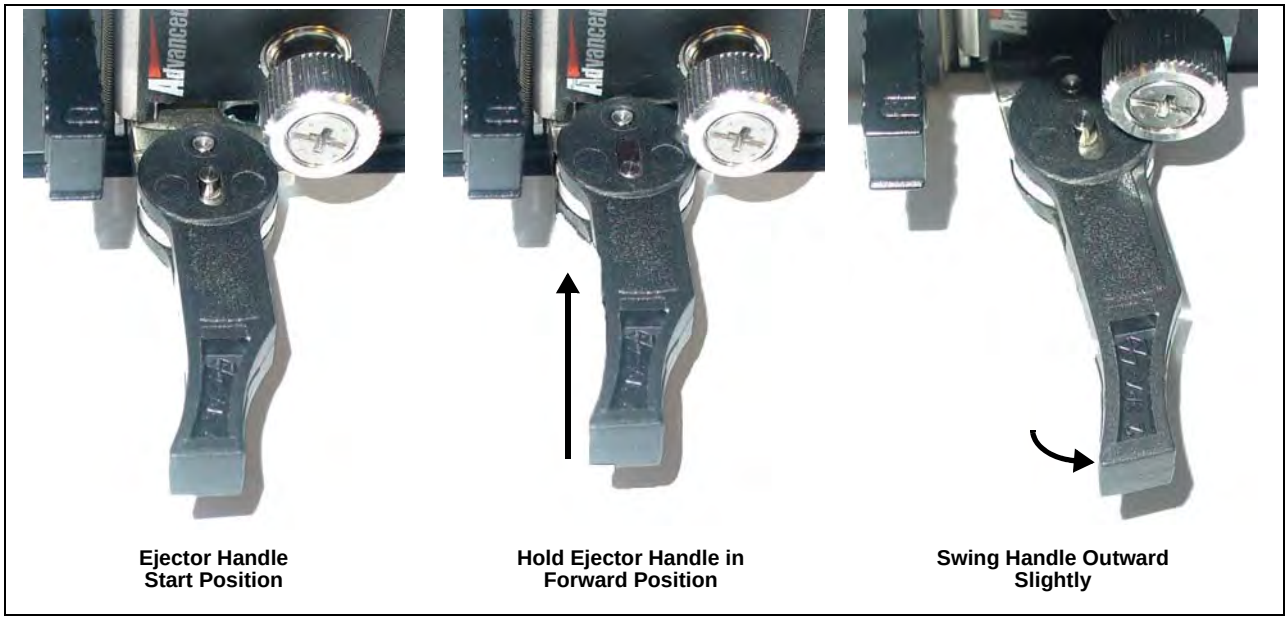


Figure C.23 - IIC Right Ejector Handle Hot Swap Positioning

3. Wait until the IIC Hot Swap LED is solid blue (**Figure C.24**). This indicates the card's OS has powered down completely.

The LPC AMC and the FPC AMC Hot Swap LEDs also blink and turn solid blue. Do NOT remove the AMCs individually. Only the entire IIC100 or IIC200 should be removed or replaced.

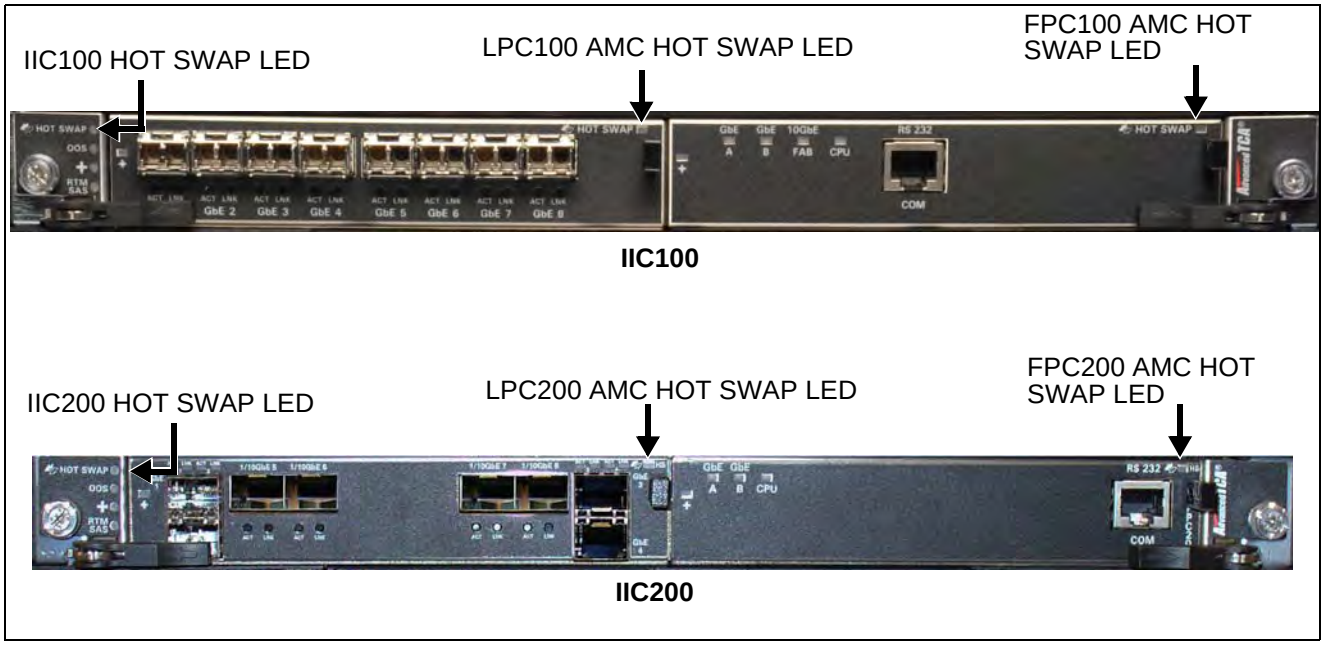


Figure C.24 - G10 IIC Hot Swap LEDs

4. You can perform one of the following:

- Remove the IIC100 or IIC200. To reinstall the blade or install a new blade, refer to Installing the IIC100 or IIC200.
- Push and hold the ejector handle in the forward position and rotate it inward until flush with the front of the chassis (**Figure C.25**). The IIC Hot Swap LED turns off.

Figure C.25 - G10 IIC Ejector Handle Closed

Installing the IIC100 or IIC200

*If you are upgrading a probe by replacing the IIC100 with the IIC200, refer to the **G10 Installation Guide** for a detailed procedure.*

Perform the following to install the IIC until it is completely seated.

Step	Action
1.	Position the left and right ejector handles as shown in **Figure C.26**.

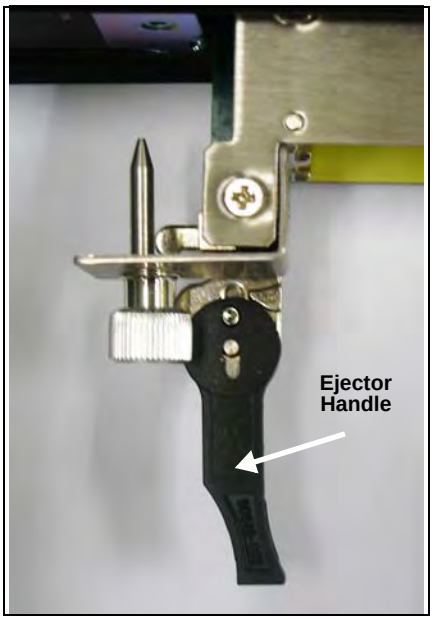


Figure C.26 - G10 IIC Ejector Handle (Left)

2. While keeping the blade still, push and **hold** the ejector handles in the forward position (they will click into place). While continuing to hold the handles in the forward position, swing the handles outward to open the blade latches (**Figure C.27**).

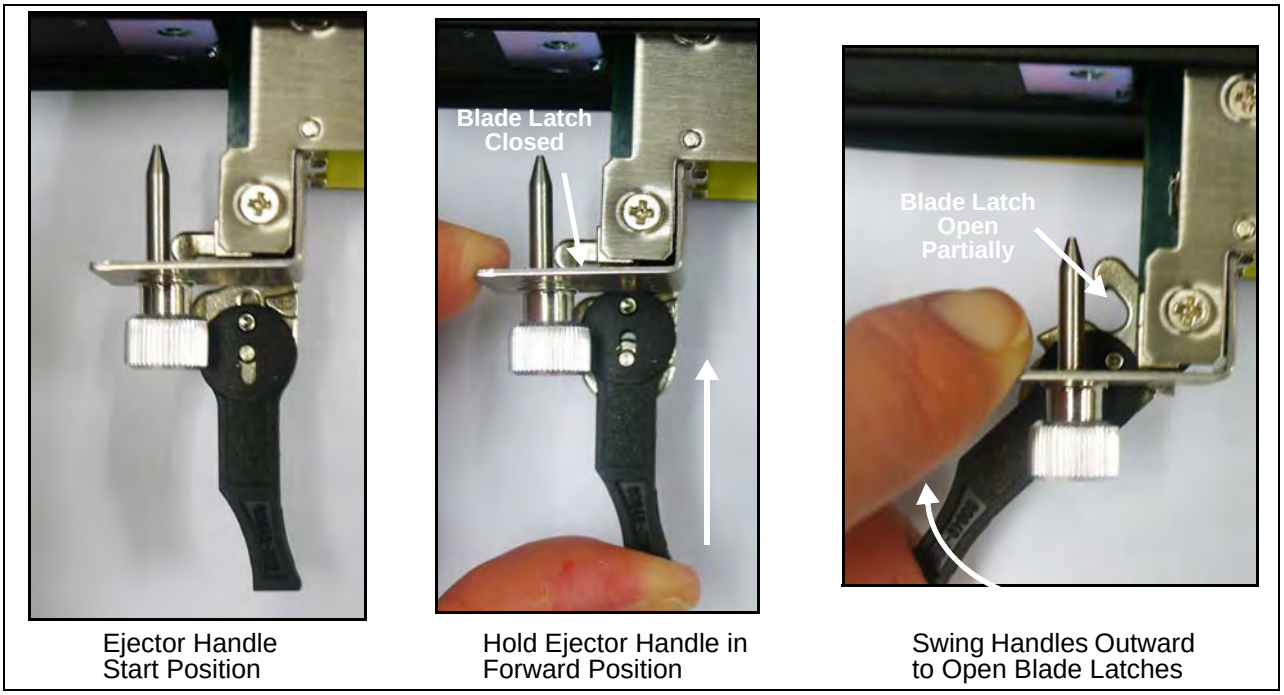


Figure C.27 - G10 IIC Ejector Handle (Left) - Opening Blade Latch

3. Swing the handles outward until the blade latch is open fully (**Figure C.28**) and then release the ejector handle.

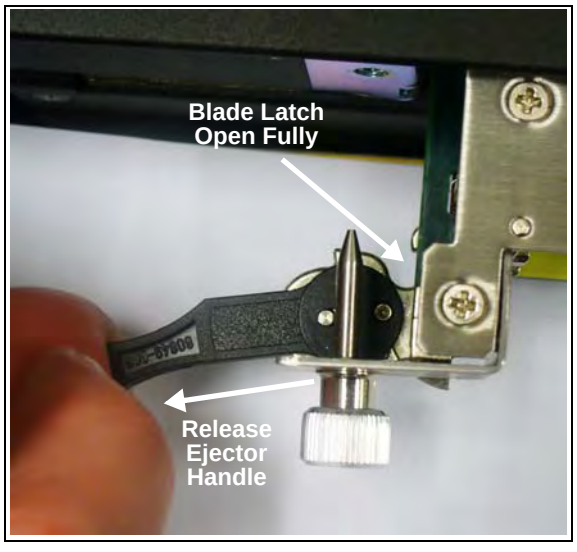


Figure C.28 - G10 IIC Ejector Handle - Open Blade Latch

4. Swing the ejector handles inward until they snap into place just beneath the blade screws (**Figure C.29**). Be sure to release the ejector handles before swinging them inward so the blade latches remain in the open position.

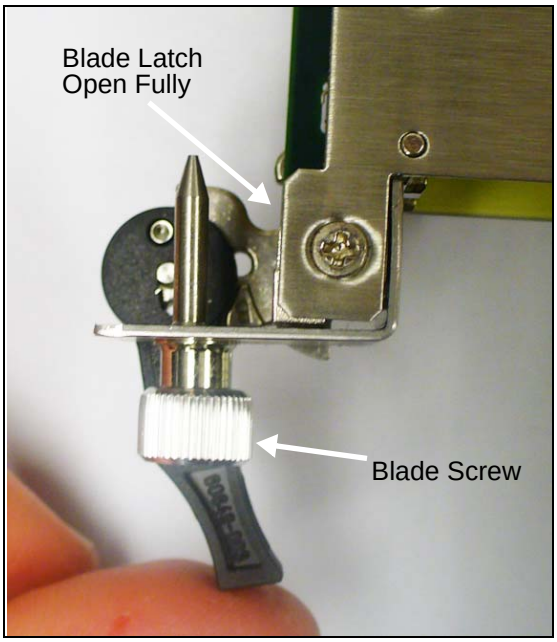


Figure C.29 - G10 IIC Ejector Handle - Open Blade Latch

5. Position your thumbs and forefingers as shown in **Figure C.30** and slide the blade into the chassis until the positioning pins are inserted in the positioning holes in the shelf.

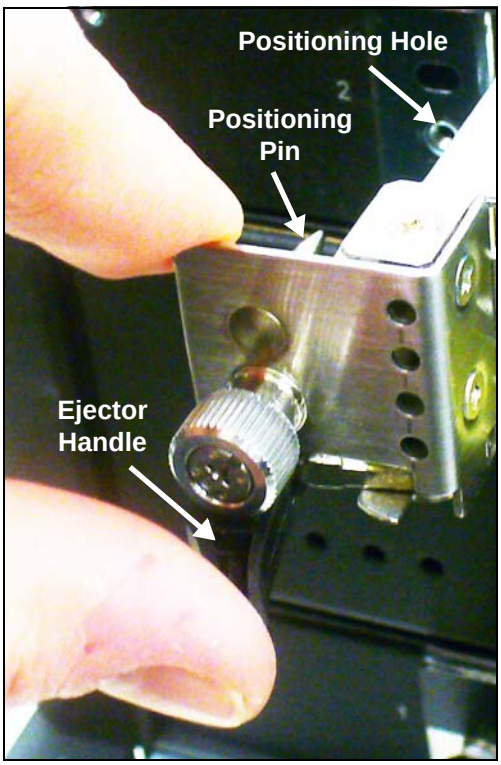


Figure C.30 - G10 IIC Positioning Pin Alignment

6. Push the ejector handles inward until they are flush with the front of the chassis and the blade is inserted fully (**Figure C.31**).

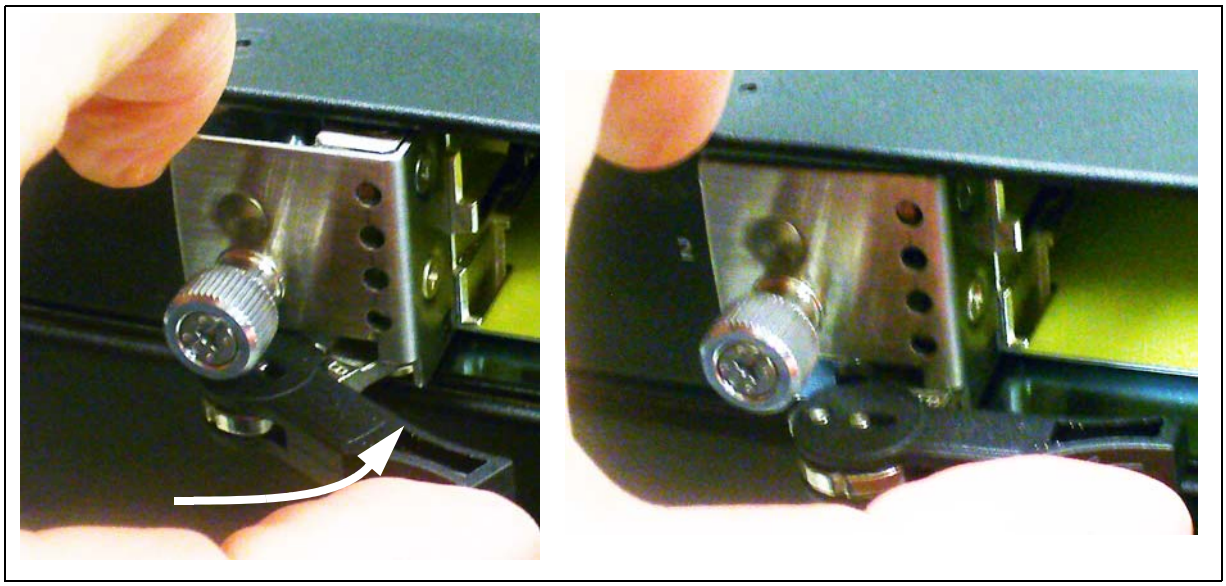


Figure C.31 - G10 IIC Ejector Handle - Seating the Board

7. Verify the following LEDs on the front of the IIC (**Figure C.32**):

   - The CPU LED is AMBER on the FPC100 AMC and GREEN on the FPC200 AMC, indicating that the processor is functioning normally.
   - The + LED on IIC100 or IIC200 is GREEN, indicating that there are no errors in overall health.

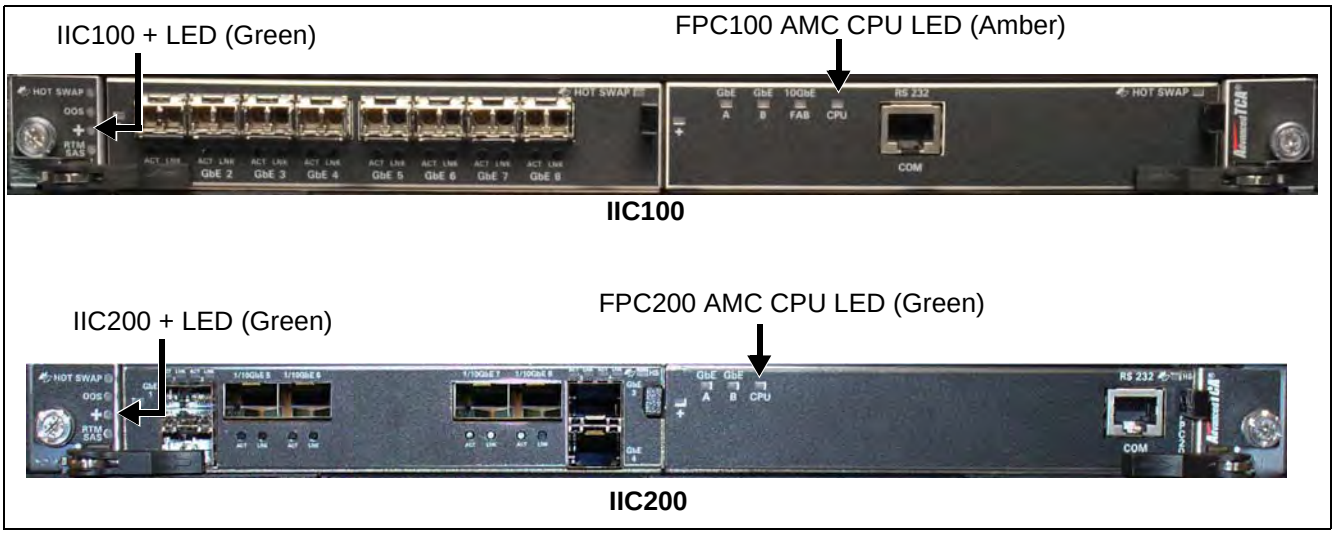


Figure C.32 - G10 IIC100 and IIC200 LED Verification

LPC and FPC AMCs (IIC100 or IIC200)

The LPC100 and FPC100 are located on the IIC100 (**Figure C.33**). The LPC200 and FPC200 AMCs are located on the IIC200.

These AMCs are NOT hot swappable and can be removed ONLY after the IIC has powered down. The G10 does not support removing these AMCs while the IIC is powered on.

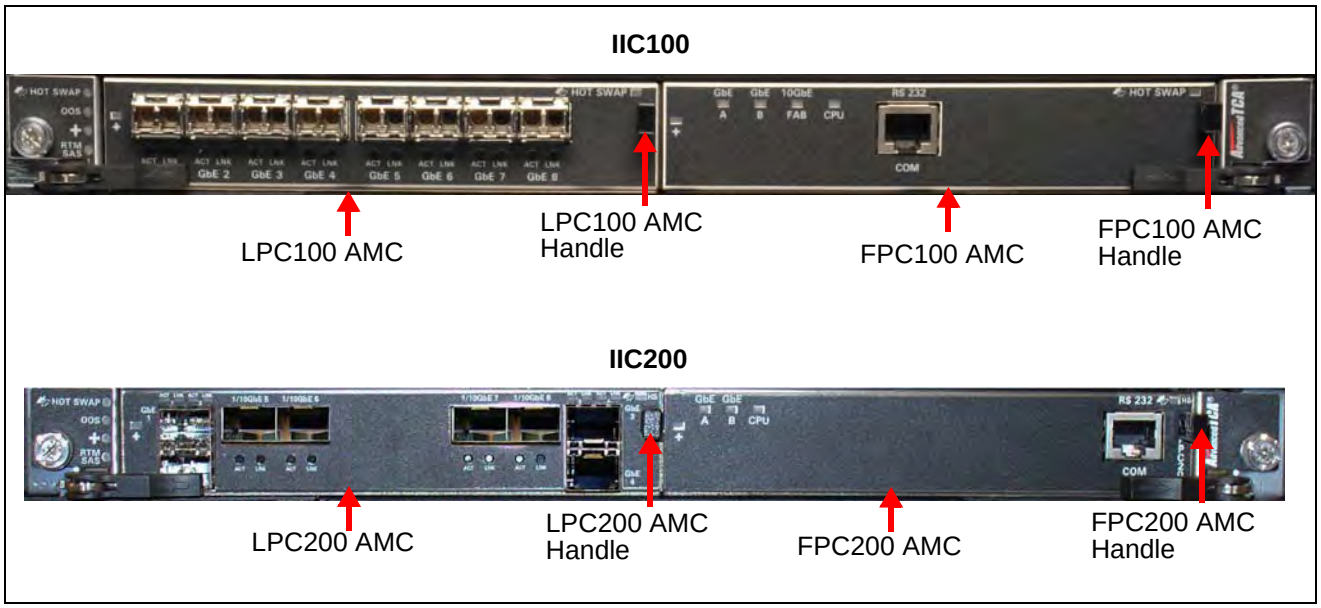


Figure C.33 - G10 IIC100 and IIC200 AMCs

Perform the following steps to remove or replace the LPC AMCs or the FPC AMCs. The procedure is the same for the IIC100 and the IIC200.

Step	Action
1.	Power down the IIC. Refer to Removing or Resetting the IIC100 or IIC200 for details.
2.	Unseat the IIC approximately 2 inches from the backplane.
3.	Pull the AMC handle out until the latching mechanism is released and remove the AMC.
4.	Insert the replacement AMC and carefully align the edges with the rail guides in the IIC.
5.	Apply equal and steady pressure and slide the module in until the fingers of the module snap into the internal AMC connector. ***DO NOT force the board into the slot.***
6.	Push the AMC handle to the IN position.
7.	Reinsert the IIC. Refer to Installing the IIC100 or IIC200 for details.

RTMs

Perform the following to reset or remove an RTM.

Step	Action
1.	Depending on which RTM you are removing, power down the associated blade first: ▪ SRM200 RTM—Power down the IIC200 first. Refer to Removing or Resetting the IIC100 or IIC200.

Media Probe Configurations Only: If replacing an SRM200 RTM during maintenance, you must verify the J8 jumper setting is TERMINATED prior to installation (see the* Media Probe Installation Guide *for details).

- SRM100 RTM—Power down the IIC100 first. Refer to Removing or Resetting the IIC100 or IIC200.
- TRM100 RTM—Power down the IIC100 first. Refer to Removing or Resetting the IIC100 or IIC200.
- PRM100—Power down the IAP100 first. Refer to Removing or Resetting the IAP100.
- PRM200—Power down the IAP200 first. Refer to Removing or Resetting the IAP200/IAP320.
- PRM300—Power down the IAP320 first. Refer to Removing or Resetting the IAP200/IAP320.

2. When the associated blade's Hot Swap LED is solid blue, its OS has powered down completely.

3. Pinch the latch and lever on the RTM right ejector handle and pull the handle outward slightly. The blue Hot Swap LED starts to blink.

4. Wait until the Hot Swap LED is solid blue. This indicates that the RTM has powered down completely.

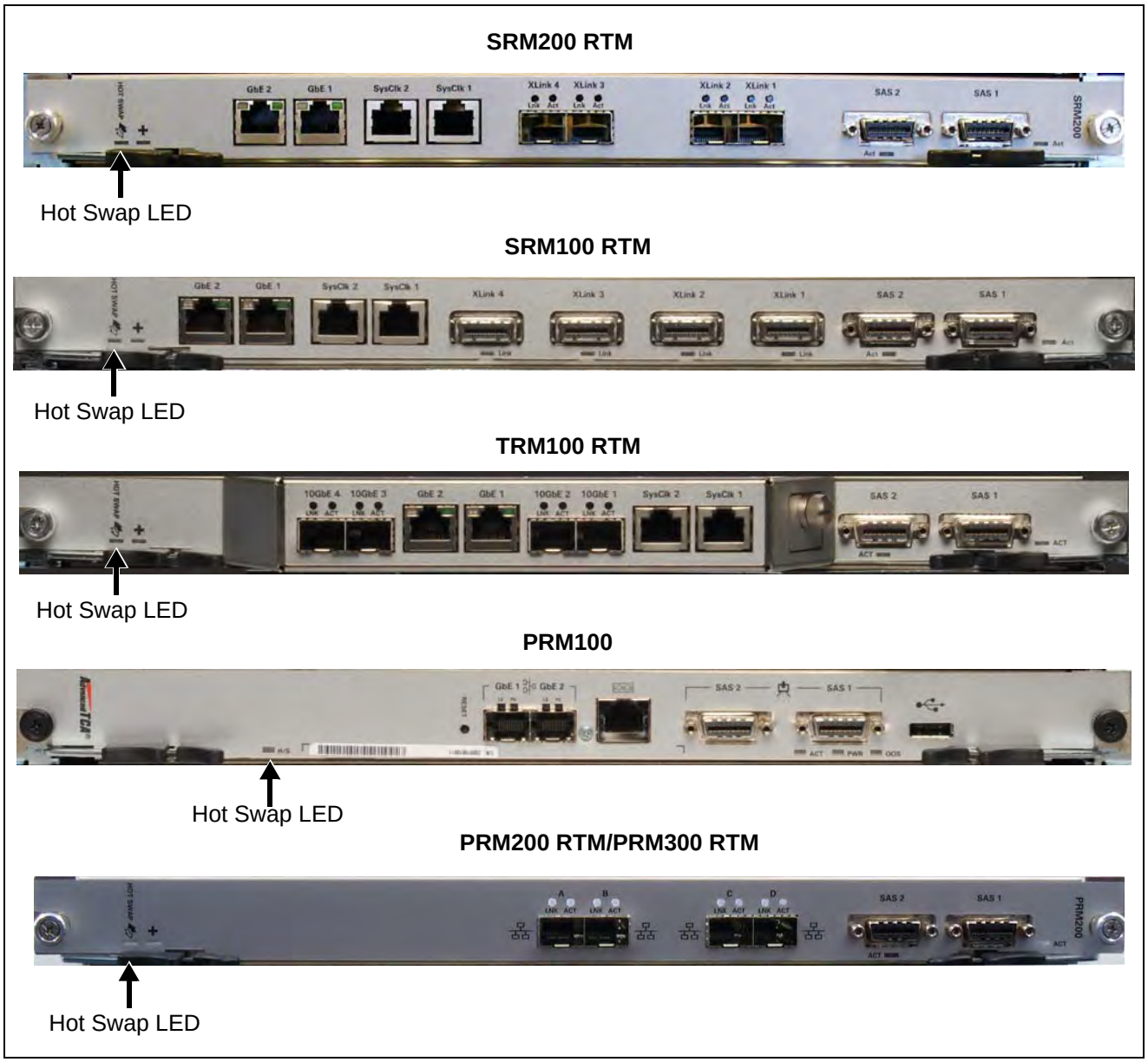


Figure C.34 - RTM Hot Swap LEDs

5. You can perform one of the following:

   - Remove the RTM.
   - Push the latch and lever back in until the Hot Swap LED turns off.

10G Interconnect Card

The 10G Interconnect card is required to support the Deep Packet Classification (DPC) feature. Two 10G interconnect cards must be installed on the rear of the G10 chassis. Tektronix installs the DPC license and enables the DPC feature.

The 10G Interface card requires the IAP200 or the IAP320. If the G10 is deployed with the IAP100, you must first upgrade it to the IAP200 or IAP320 before installing the 10G Interconnect cards. Refer to the upgrade workflows for details.

Installing the 10G Interconnect Card

The following procedure describes the installation of the card. It assumes that your system is powered. If your system is not powered, you can disregard the steps that refer to the blue Hot Swap (H/S) LED.

Step	Action
1.	Put on an ESD wrist strap or appropriate ESD grounding device.
2.	Connect the strap to the shelf by attaching the front or rear ESD jack / ESD snap.
3.	At the rear of the G10, remove the two filler panels by removing the two screws from each panel (**Figure C.35**).

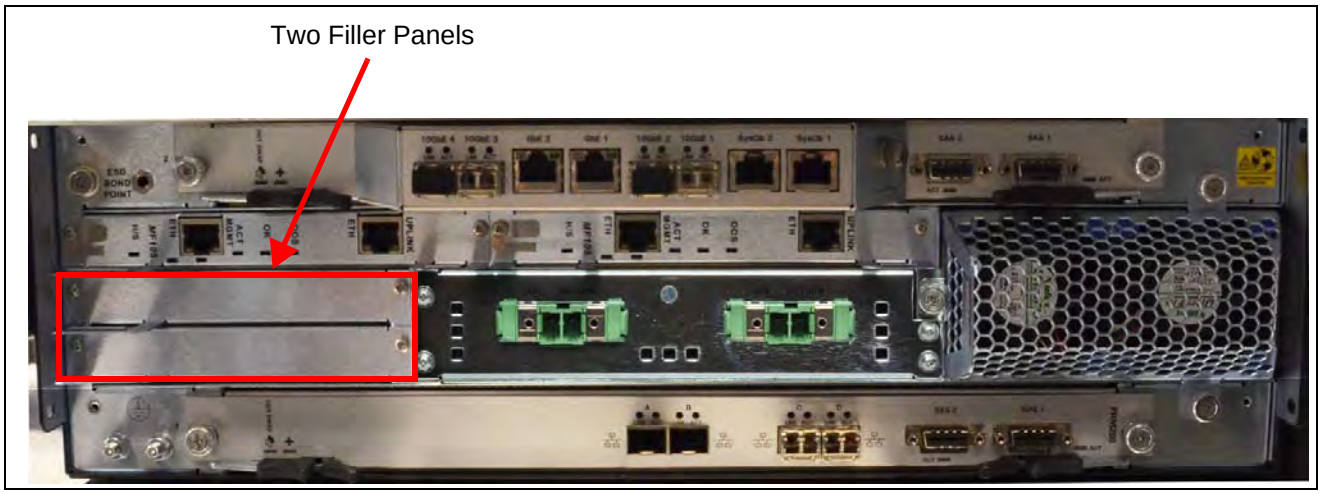


Figure C.35 - G10 Probe Rear View

4.	Insert a card into the shelf by placing the left and right edges of the card in the card guides of the shelf. Ensure that the guiding module of the shelf and the card are aligned properly. The alignment pin facilitates insertion and prevents bent pins.
5.	Slide the card into the shelf by using the extraction handles until you feel resistance.
6.	Wait until the blue LED is illuminated.

7. Tighten the screws on the left and on the right of the card. The blue Hot Swap LED blinks, indicating that the card is powering up.

8. Wait until the blue Hot Swap LED turns off, indicating that the board is activated.

9. Repeat **Step 4** through **Step 8** to insert the second 10G Interconnect Card.

10. Perform the following actions, depending on the type of cable that you are connecting:

Cable Type	Instructions
Fiber	▪ Verify that the SFP modules are inserted in the 10G interface cards. ▪ Attach each end of the Ethernet cable to the SFP module in each card, connecting the two cards. Be sure to connect the Tx in one card to the Rx in the other card: - Card 1 Tx connects to Card 2 Rx. - Card 2 Tx connects to Card 1 Rx.
Copper	▪ Verify that the SFP modules are NOT inserted in the 10G interface cards. ▪ Attach each end of the Direct Attach SFP+ copper cable directly into the SFP socket in each card, connecting the two cards.

11. Tektronix installs the DPC license and enables the DPC feature.

Removing the 10G Interconnect Card

The following procedure describes how to remove the card from a system if you need to replace it. It assumes that the system is powered. If the system is not powered, you can disregard the steps referencing the blue Hot Swap LED.

Step Action

1. Put on an ESD wrist strap or appropriate ESD grounding device.

2. Connect the strap to the shelf by attaching it to the front or rear ESD jack / ESD snap.

3. Remove the Ethernet cable (copper or multi-mode fiber) that is attached to the card. If removing fiber cable, also remove the SFP module to use in the replacement card.

4. Unfasten the screws of the faceplate until the handle is detached from the front panel of the card and the blue Hot Swap LED starts to blink.

5. Wait until the blue LED illuminates solid blue.

6. Remove the card from the shelf using the extraction handles.

7. Insert a replacement card; refer to Installing the 10G Interconnect Card.

Replacing G10 Shelf Managers (SHMMs)

CAUTION: SHMMs must always be replaced in pairs.

Failure to follow these steps can lead to corrupted shelf FRU information (such as part number and serial number), which can render the probe offline and require complete chassis replacement. Contact Tektronix Communications Customer Support for assistance with G10 SHMM replacement.

Replacing the First (Standby) SHMM

DO NOT power off the probe to swap SHMMs. The probe MUST remain powered ON.

A Tektronix Communications Customer Support representative will assist you with the following steps to remove the SHMM from the G10.

Step	Action
1.	Log in to the **active** SHMM and verify that it is “active” or “running alone.”
2.	Remove the Ethernet cables from the **standby** SHMM.
3.	Unfasten the screws of the faceplate until the handle is detached from the front panel of the board (**Figure C.36**). The blue Hot Swap LED starts to blink. WAIT until the blue LED stops blinking and is solid blue.

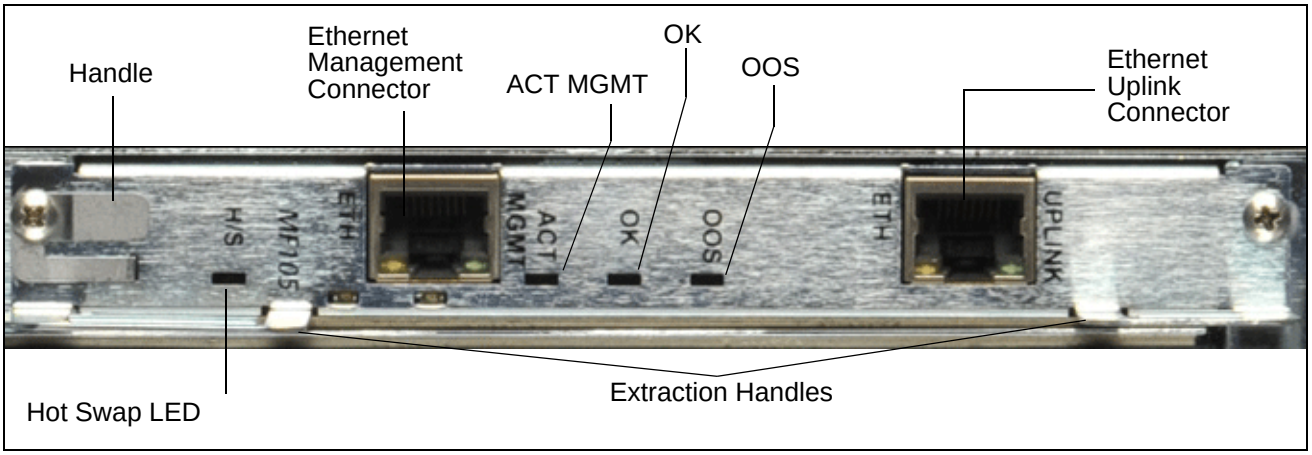


Figure C.36 - SHMM Faceplate

4.	Remove the SHMM from the shelf using the extraction handles (**Figure C.36**).
5.	Insert the replacement SHMM into the shelf by placing the left and right edges of the board in the card guides of the shelf.
6.	Slide the board into the shelf by using the extraction handles until you feel resistance.
7.	Wait until the blue Hot Swap LED is illuminated.

8. Tighten the screws on the left and right sides of the board so the handle switch activator is closed and the board can be powered. The blue Hot Swap LED blinks.

9. Wait until the blue Hot Swap LED turns off, indicating that the board is activated.

10. Run the status on the active SHMM until it reports “active” status. It will report “running alone” immediately after swapping the standby SHMM. Continue running the status every few seconds until the board reports “active” status.

11. Reattach the Ethernet cables to the front panel connectors as necessary.

Replacing the Second (Active) SHMM

Step	Action

1. Remove the Ethernet cables from the **active** SHMM.

2. Unfasten the screws of the faceplate until the handle is detached from the front panel of the board (**Figure C.36**). The blue Hot Swap LED starts to blink. WAIT until the blue LED stops blinking and is solid blue.

This causes the active SHMM to failover to the newly replaced SHMM.

3. To confirm a successful failover, log in to the first SHMM (that you just replaced) and verify that it is “running alone.”

4. Remove the second SHMM from the shelf using the extraction handles (**Figure C.36**).

5. Insert the replacement SHMM into the shelf by placing the left and right edges of the board in the card guides of the shelf.

6. Slide the board into the shelf by using the extraction handles until you feel resistance.

7. Wait until the blue Hot Swap LED is illuminated.

8. Tighten the screws on the left and on the right of the board so the handle switch activator is closed and the board can be powered. The blue Hot Swap LED blinks.

9. Wait until the blue Hot Swap LED turns off, indicating that the board is activated.

10. Reattach the Ethernet cables to the front panel connectors as necessary.

11. Run the status on the both SHMMs to verify the “active” status.

12. Tektronix Communications Customer Support will complete the probe setup to provision the IP addresses of the new SHMMs.

Serial Over LAN (SOL) Support

The G10 probe provides Serial Over LAN (SOL) support that enables administrators to access remote serial console ports securely on the IAP and IIC blades. The SOL access helps administrators troubleshoot and debug hardware issues, view console messages, and monitor blade boot-up sequences. Use of Serial Over LAN eliminates the need to maintain a terminal server with the probes.

Perform the following to launch an SOL session:

Step	Action
1.	From any workstation, open a Command window.
2.	Type `ssh <Public IP address of either G10 SHMM>` to log in to the G10 probe.
3.	Perform one of the following at the SHMM command line prompt: ▪ To log in to the IAP blade, type `iconsole 1.1`. ▪ To log in to the IIC blade, type `iconsole 1.2`. A console window opens from which you can view console messages and blade activities.

G10 Probe and Array Start Up/Shut Down Sequence

Tektronix recommends powering the probes and associated arrays on and off in a specific sequence. The equipment can withstand unexpected power outages; but a proper power on/off sequence should be followed whenever possible.

Start Up Procedure

Perform the following steps in the specific order listed to properly power up the G10 probe(s) and storage enclosures.

Step	Action
1.	**G10 AC Units only: Ensure that the G10 AC power cables are NOT connected to the rack power outlet.**
2.	Turn on the circuit breakers at the power distribution panel.
3.	Power on the storage arrays. Power on the expansion enclosures first and then the controller enclosures. a. Press the power switches to the ON position on both power modules at the back of each enclosure. b. Verify the following storage enclosure LEDs:

- The Unit Locator ID LED is OFF, indicating normal operation.
- The Fault/Service Required LED is OFF, indicating that there are no fault conditions.
- The FRU OK (Heartbeat) LED is GREEN, indicating that the enclosure is powered on with at least one power supply operating normally.
- The Temperature Fault LED is GREEN, indicating that the enclosure temperatures are normal.
- All disk module Power LEDs are GREEN, indicating that the module is operating normally.

Ensure that all storage enclosures are powered on and operating normally before continuing with this procedure.

4. Turn on the power to the **G10 Primary or Standalone chassis.** ***In multiprobe configurations, do NOT power on the expansion chassis yet***.
   - **AC Units:** Connect the AC power cables into the rack power outlets.
   - **DC Units:** Press the ON/OFF switch to the ON position on both PEMs on the front of the G10 chassis.
5. Verify the following LEDs on the front of the G10 chassis:
   - **DC Chassis Front**
     - The IN LEDs are GREEN, indicating that the power is connected properly
     - The BACKPLANE LEDs are GREEN, indicating that the PEM is sending power through the backplane
   - **AC Chassis Front**
     - The Status LED is GREEN.
6. Verify the following LEDs on the front of the IIC:
   - The + LED on IIC100/IIC200 is OFF, indicating that there are no errors in overall health.
   - The CPU LED is AMBER on the FPC100 AMC and GREEN on the FPC200 AMC, indicating that the processor is functioning normally.
7. Verify that the SHmm OK LEDs on the rear of the chassis are GREEN.
8. Verify that the + LED is GREEN on the SRM200 RTM, SRM100 RTM, or TRM100 RTM, indicating that there are no errors.
9. Verify that the + LED on PRM200/PRM300 RTM is GREEN, indicating that there are no errors.

10. Wait about 10 minutes for the IAP blade to boot up. The OOS LED transitions from RED (board booting) to AMBER (applications starting) to OFF, indicating that the probe is up.

If LEDs are behaving differently than described in this procedure, contact Tektronix Communications Customer Support.

11. For multiprobe configurations, after the G10 Primary Chassis is powered up successfully, turn on the power to the G10 Expansion Chassis. Verify the LEDs on the expansion chassis as described in **Step 6** through **Step 9** in this procedure.

Shut Down Procedure

Perform the following steps in the specific order listed to properly power down the G10 probe(s) and storage enclosures.

Step	Action

1. In multiprobe configurations, start the power down procedure with the **expansion** chassis by performing the following:
   - Initiate the hot-swap mode for both IIC or IAP blades. Refer to Removing or Resetting the IIC100 or IIC200 or Removing or Resetting the IAP200/ IAP320 for details. *Note that no action is required for the Rear-Transition Modules.*
   - **Wait** until the hot-swap LED is solid blue.
   - Unseat both blades approximately 2 inches from the backplane.
2. On the **primary** or **standalone** chassis, initiate hot-swap mode for the IIC and wait until the hot-swap LED is solid blue. *Note that no action is required for the Rear-Transition Module.*
3. On the **primary** or **standalone** chassis, initiate the hot-swap mode for the IAP blade and wait until the hot-swap LED is solid blue.
4. Unseat the IIC and IAP on the **primary** or **standalone** chassis approximately 2 inches from the backplane.
5. Turn off the power to the **expansion** chassis:
   - **AC Units:** Disconnect the AC power cables from the rack power outlets.
   - **DC Units:** Press the ON/OFF switch to the OFF position on both PEMs on the front of the G10 chassis.
6. Turn off the power to the **primary** or **standalone** chassis:
   - **AC Units:** Disconnect the AC power cables from the rack power outlets.
   - **DC Units:** Press the ON/OFF switch to the OFF position on both PEMs on the front of the G10 chassis.

7. Power off the storage arrays:

   - Power off the **controller** enclosure first and then the **expansion** enclosures.
   - Press the power switches to the OFF position on both power modules at the back of each enclosure.

Storage Array Maintenance Procedures

This section contains the following procedures:

- Replacing a Power Supply
- Bezel (Air Filter) Procedures
- Replacing a Controller or Expansion Module
- Replacing a Drive Module
- Replacing the Disk Array Chassis

Electrostatic discharge can damage circuits or shorten their life. Before touching blade or electronic components, make sure that you are working in an ESD-safe environment and wearing an ESD wrist or foot strap.

Storage Array Maintenance Guidelines

The G10 supports the following storage enclosures:

- RAID: SA100R or SA200R
- JBOD: SA100J, SA200J, SA210J

Please note the following guidelines when maintaining the storage arrays:

- An SA200 part must be replaced with an SA200 part.
- SA100 controllers can be replaced by SA200 controllers in an SA100 enclosure. Both controllers must be replaced; you cannot mix controller models (one enclosure cannot have one SA100 controller and one SA200 controller).
- SA100 parts are not compatible with the SA200 enclosure.

Replacing a Power Supply

This section details procedures for removing and replacing a failed AC or DC power supply unit (PSU).

Removing the Power Supply

Be careful when replacing the power supply so as not to disconnect other cables causing the disks to go offline. It is recommended that you perform this procedure during a maintenance window; however, if immediate replacement is necessary, ensure that all cables are secured, and carefully proceed.

Step	Action
1.	Verify the failed component; the PSU's status LED color changes to amber to indicate a fault condition.

Removing a PSU disrupts the enclosure's airflow significantly; therefore, do not remove it until you have the replacement module ready.

2. Press the power switch on the power supply module to the OFF position. Note that some new AC units do not have an on/off switch.

3. Remove power:
   - DC: Shut off the main circuit breaker to the failed power supply and remove power cables:
     - Loosen the cable-locking screws attaching the connector to the PSU.
     - Disconnect the power cable from the PSU.
   - AC: Unplug the AC cable from the power supply unit.

4. Turn the thumbscrew at the top of the latch counterclockwise to loosen and disengage it from the module; however, do not remove the thumbscrew from the latch (**Figure C.37**).

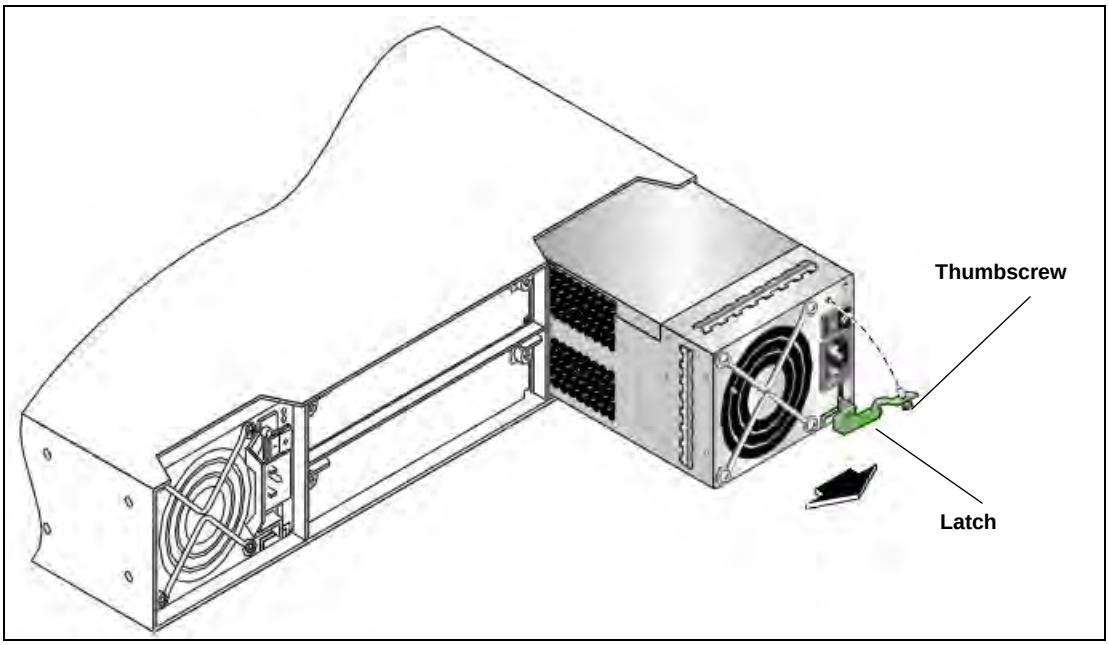


Figure C.37 - Remove PSU Module

5. Rotate the latch downward to 45 degrees, supplying leverage to disconnect the module from the internal connector.

6. Use the latch to pull the module straight out of the chassis.

Do not lift the module by its latch; doing so can break the latch. Lift and carry the module using its metal casing.

Installing the Power Supply

To install a power supply module, perform the following steps:

Step	Action

1. Orient the PSU with the AC or DC connector and power switch toward the right, as shown in **Figure C.38**.

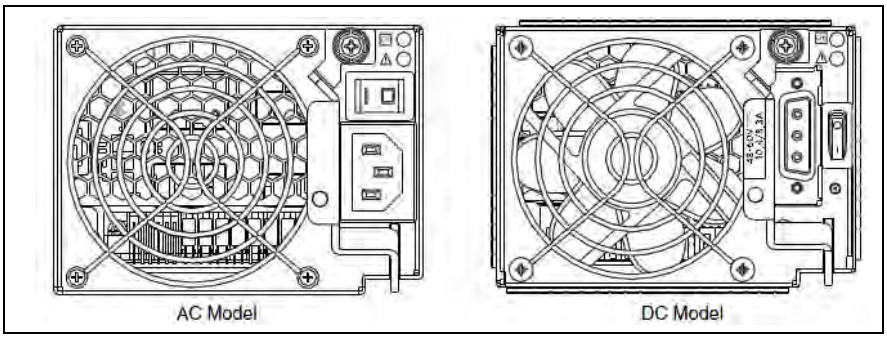


Figure C.38 - Power Supply Module

2. Verify that the latch is rotated downward to 45 degrees.
3. Slide the module into the power supply slot as far as it will go.
4. Rotate the PSU latch upward until it is flush against the PSU face, ensuring that the connector on the PSU engages the connector inside the chassis.
5. Turn the thumbscrew located at the top of the power supply latch clockwise, until it is finger-tight, to secure the latch to the power supply unit within the enclosure.
6. Ensure that the main circuit breaker in the rack is shut off.
7. Reconnect the power cables:
   - For DC power cables:
     - Ensure that the DC Module power switches are in the OFF position.
     - Attach the cable connector to the DC PSU cable connector and tighten the screws to attach the cable securely to the DC PSU.

Be sure the DC Plugs do not touch the Grounding Posts (located under the power switches) to minimize risk of electrical hazard.

   - For AC power cables:
     - Ensure that the AC Module power switches are in the OFF position (if applicable).

- Connect the AC power cables to the AC power connectors on the rear of the storage enclosure.

Enclosures are shipped with a grounding-type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet. Site wiring must include an earth ground connection to the AC power source. Grounding must comply with local, national, or other applicable government codes and regulations.

Bezel (Air Filter) Procedures

The storage enclosure has a bezel assembly that attaches to the front of the storage array and contains the air filter. Refer to the following procedures for details about the bezel assembly:

- Installing the Bezel
- Removing the Air Filter
- Replacing the Air Filter

General guidelines concerning air filters in inventory:

- Replacement air filter storage:
  Air filters in inventory should be stored in an environment that is cool, dry, and dark. Heat, humidity, and ultraviolet light can damage air filters.
- Replacement air filter inventory on hand:
  Purchase a cost-effective quantity of replacement air filters to maintain a sufficient inventories for no more than a few months. This approach enables you to avoid stock-outs and mitigate inventory loss due to shrinkage.

Installing the Bezel

Perform the following steps to install the storage enclosure bezel assembly.

Step	Action
1.	Put on an ESD wrist strap.

Electrostatic discharge can damage circuits or shorten their life. Before touching the blade or electronic components, ensure that you are working in an ESD-safe environment.

2.	Remove the bezel assembly from its box and verify that it includes the installed air filter subassembly.
3.	Align the bezel assembly with the front of the enclosure so the integrated ear covers slide onto the push-fit ball studs, while taking care to guide the LED indicators through ear-cover openings (**Figure C.39**).

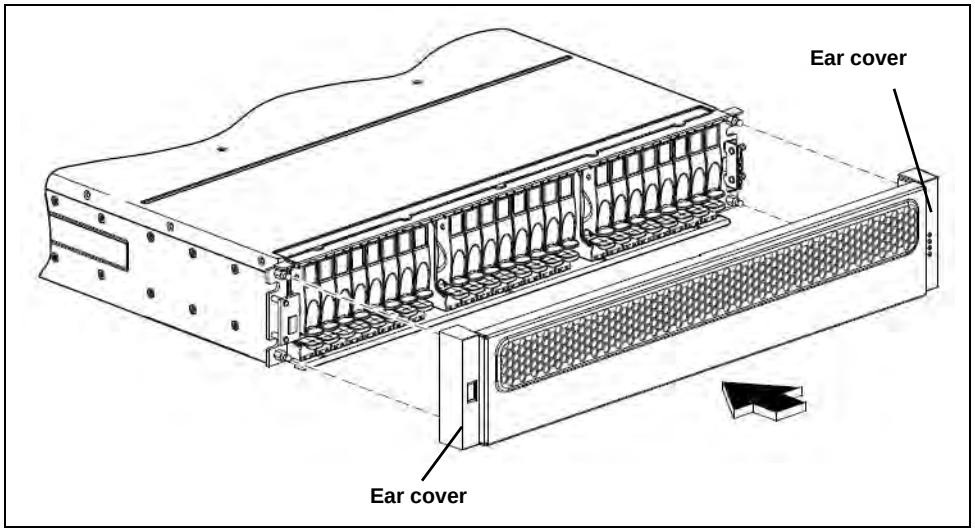


Figure C.39 - Bezel Assembly Installation

4. Gently push-fit the ear caps onto the ball studs to secure the bezel in place.

Removing the Air Filter

To replace the bezel's dust-filtration air filter, first remove the bezel assembly from the enclosure. After the bezel is detached from the enclosure, you can remove its air filter.

To ensure that the storage enclosures operate efficiently, Tektronix Communications requires the air filters to be changed every 3 months.

Perform the following steps to remove the air filter.

Step	Action
1.	Put on an ESD wrist strap.

Electrostatic discharge can damage circuits or shorten their life. Before touching the blade or electronic components, ensure that you are working in an ESD-safe environment.

2. While facing the front of the enclosure, place your index and middle fingers of each hand on the top of the bezel with your thumbs on the bezel's bottom. To release the bezel from the ball studs, pull the top of the bezel gently, while applying slight inward pressure below (**Figure C.40**).

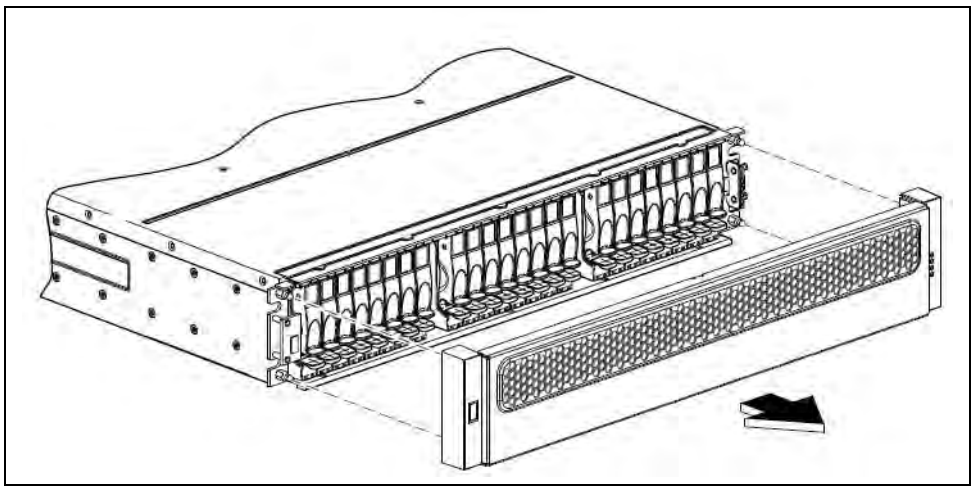


Figure C.40 - Bezel Assembly Removal

3. While holding the bezel in one hand, slip your thumb or index finger gently between the top of the filter frame and its foam insert on the back side of the bezel.

4. As indicated by the large arrow in **Figure C.41**, pull the top of the filter frame downward and outward gently to dislodge its laminated external foam pads from the bezel's interior walls.

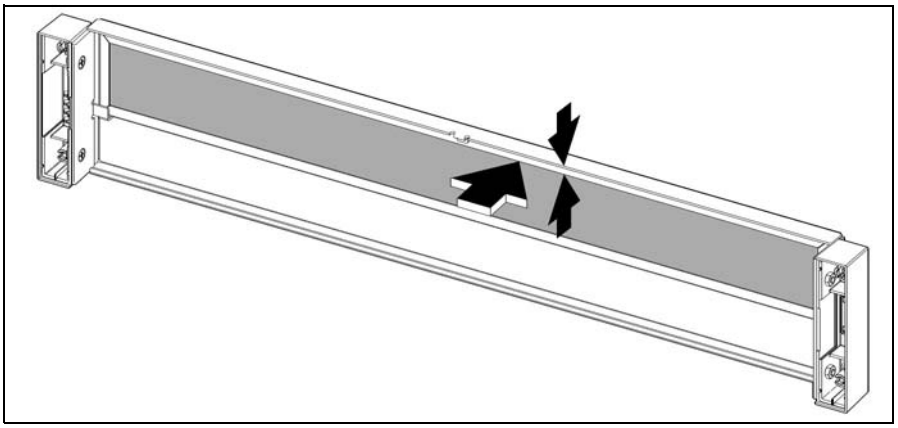


Figure C.41 - Air Filter Removal

5. Tug the top of the filter frame gently to revolve it away from its vertical position and then pull upward to release the filter from the bezel's two mounting channels (**Figure C.42**).

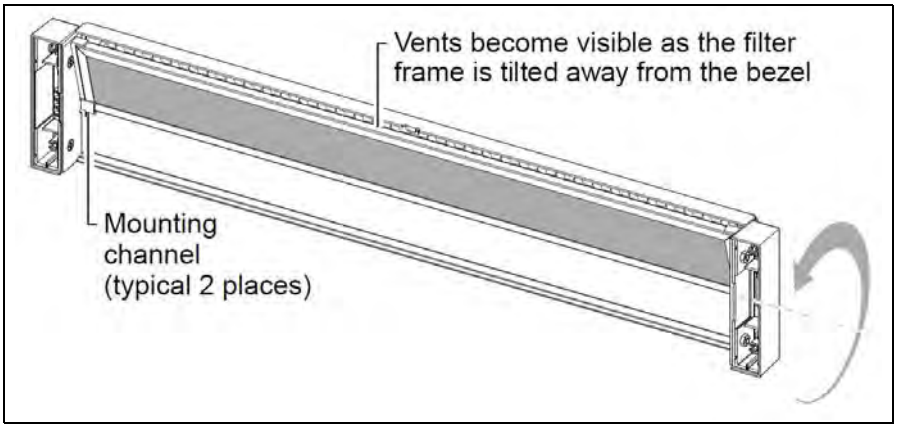


Figure C.42 - Air Filter Removal

Only one of the mounting channels is shown in Figure C.42. The other channel is hidden by the ear cover on the right.

6. Extract the air filter carefully from the bezel.

7. See Replacing the Air Filter for details about the next steps.

Replacing the Air Filter

Whether replacing an air filter or reusing one that has been reconditioned, you need to install the air filter into the bezel before attaching the bezel to the front of the enclosure.

To ensure that the storage enclosures operate efficiently, Tektronix Communications requires the air filters to be changed every 3 months.

Perform the following steps to replace the air filter.

Step	Action

1. Put on an ESD wrist strap.

Electrostatic discharge can damage circuits or shorten their life. Before touching the blade or electronic components, ensure that you are working in an ESD-safe environment.

2. On the back side of the bezel, insert the air filter with the foam facing toward the bezel's vents. Align the bottom corners of the air filter per the thrust lines as (**Figure C.43**).

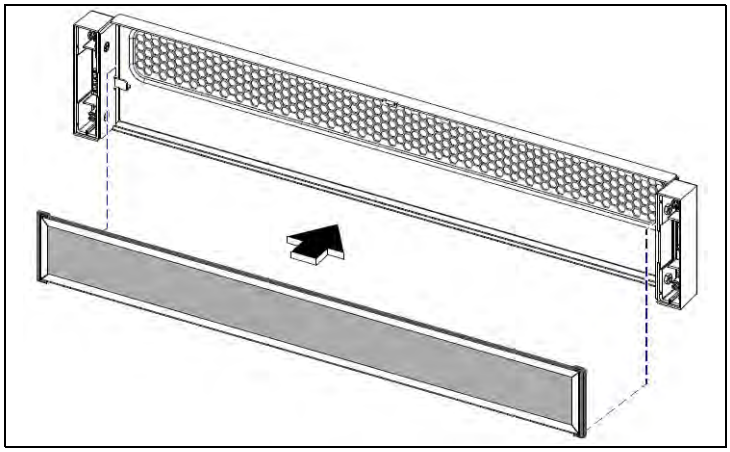


Figure C.43 - Air Filter Replacement

3. Insert the bottom edge of the air filter frame into the two mounting channels.

4. While tilting the air filter frame slightly away from the bezel, slip its bottom edge into the mounting channels as far as the filter will go.

5. Revolve the air filter gently into its vertical position, while taking care to ensure that the filter frame's exterior foam pads seat snugly against the bezel's interior walls (**Figure C.44**).

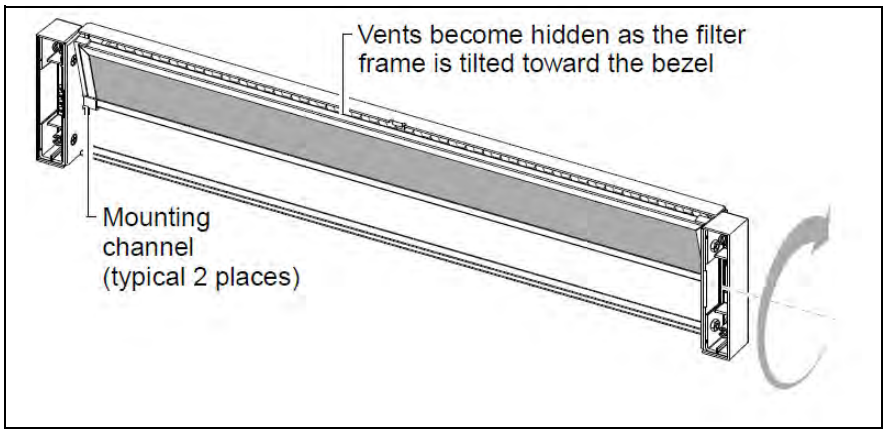


Figure C.44 - Air Filter Replacement

Figure C.45 shows a properly seated air filter.

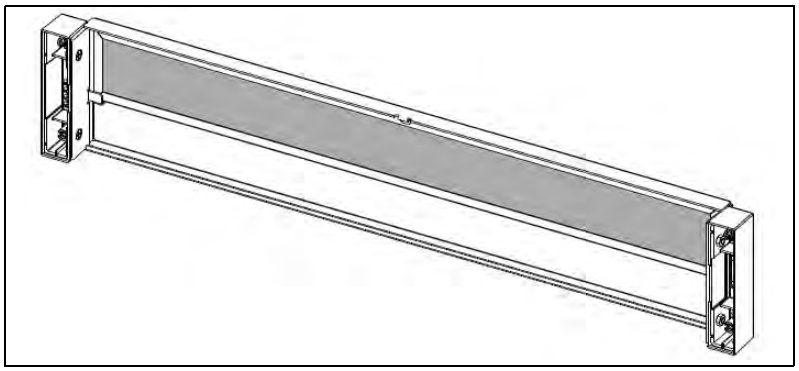


Figure C.45 - Air Filter Replacement

6. After the filter is installed successfully within the bezel, you can re-attach the bezel to the front of the enclosure. Refer to Installing the Bezel for details.

Replacing a Controller or Expansion Module

Prior to replacing a controller module, you MUST power down the probe. See the Power Down Procedure for details on powering down the probe.

If you are replacing both controllers, special commands must be performed before and after hardware replacement. Contact Tektronix Communications Customer Support for assistance.

Be sure to review Storage Array Maintenance Guidelines before proceeding to ensure component compatibility.

Removing the Controller Module

Perform the following actions to remove a controller or expansion module.

Step	Action
1.	Contact Tektronix Communications Customer Support for assistance in troubleshooting storage array issues. Storage Array Maintenance (SAMTCE) alarms can be monitored in the IrisView Alarm Browser to help isolate failed components.
2.	Disconnect any cables from the failed enclosure module.

3. Turn the thumbscrews counterclockwise until they disengage from the module (**Figure C.46**).

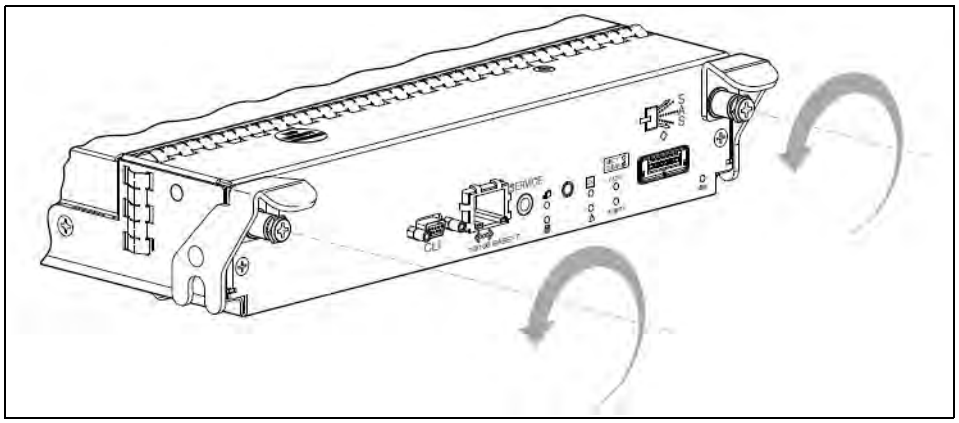


Figure C.46 - Disengaging a Controller Module

4. Press both latches downward to disconnect the module from the midplane (**Figure C.47**).

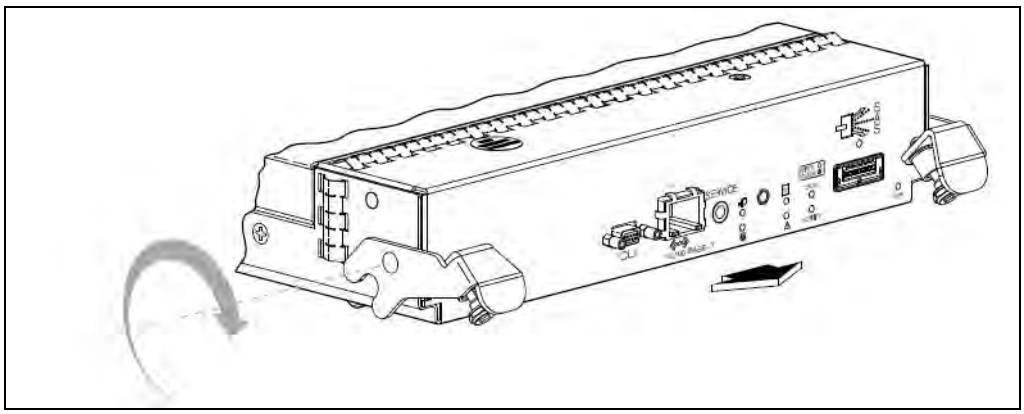


Figure C.47 - Extracting a Controller Module

5. Pull the module straight out of the enclosure (**Figure C.48**).

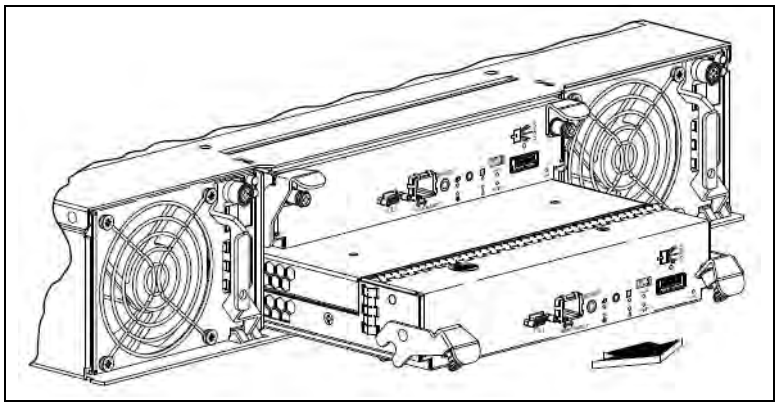


Figure C.48 - Removing a Controller Module

Installing the Controller Module

Prior to replacing a controller module, you MUST power down the probe. See the Power Down Procedure for details on powering down the probe.

If you are replacing both controllers, special commands must be performed before and after hardware replacement. Contact Tektronix Communications Customer Support for assistance.

Be sure to review Storage Array Maintenance Guidelines before proceeding to ensure component compatibility.

Step	Action

1. Loosen the thumbscrews and press the latches downward (**Figure C.49**).

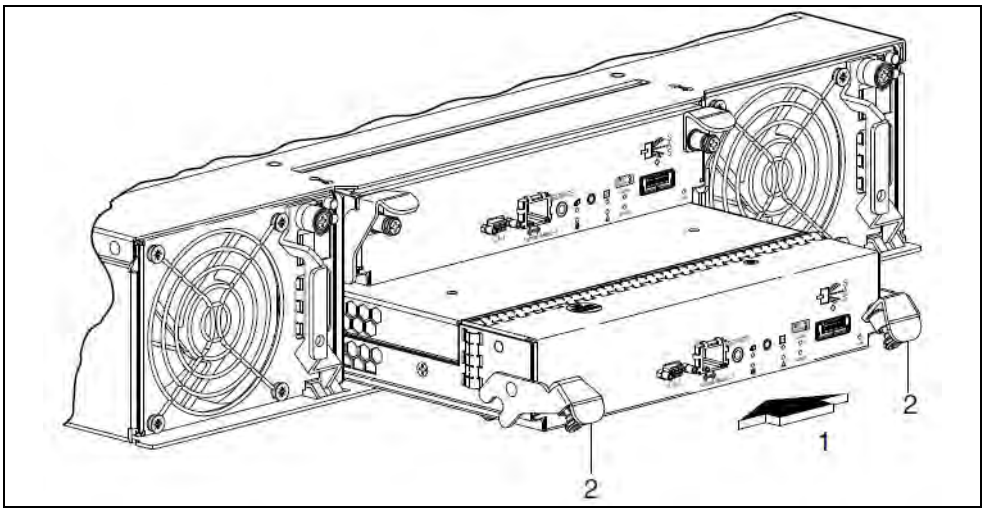


Figure C.49 - Inserting a Controller Module

2. Slide the controller module into the enclosure as far as it will go. See (1) in **Figure C.49**.

3. Press the latches upward to engage the controller module. See (2) in **Figure C.49**. Turn the thumbscrews clockwise until finger tight.

4. Reconnect the cables.

5. Power on the probe. See the probe start up procedure for details on powering up the probe.

6. Check that the FRU OK LED (back) is green, indicating that the controller has completed initializing, is online, and is operating normally.

7. Contact Tektronix Communications Customer Support to complete the controller/expansion module installation.

Replacing a Drive Module

A drive module consists of a disk drive in a sled. Drive modules are hot swappable, which means that they can be replaced without halting I/O to the vdisks or powering off the enclosure. The new drive module must be of the same type and possess a capacity equal to or greater than the one being replaced.

Removing Air Management Modules

Step	Action
1.	Squeeze the latch release flanges inward to disengage the drive module (**Figure C.50**).

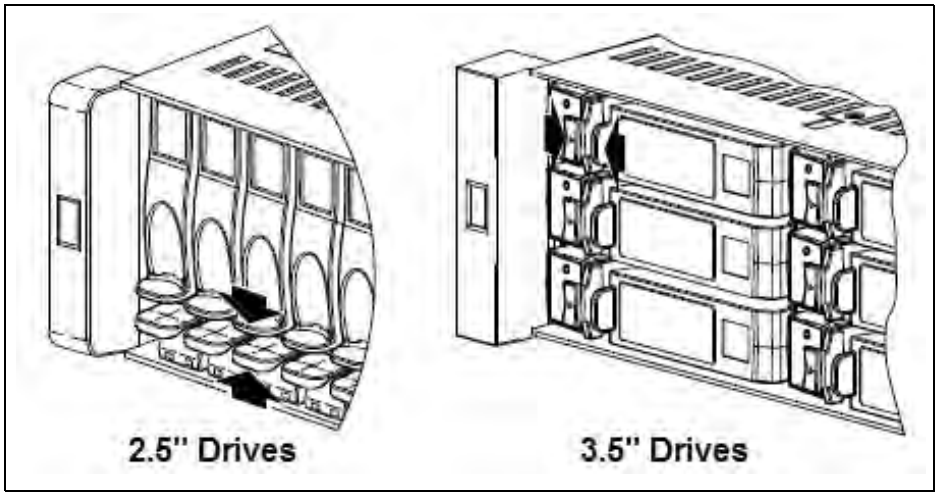


Figure C.50 - Disengaging an Air Management Sled (AMS)

Step	Action
2.	Wait 20 seconds for the internal disks to stop spinning.

3. Pull the drive module straight out of the chassis (see **Figure C.51**). Return the failed disk and carrier to Tektronix Communications.

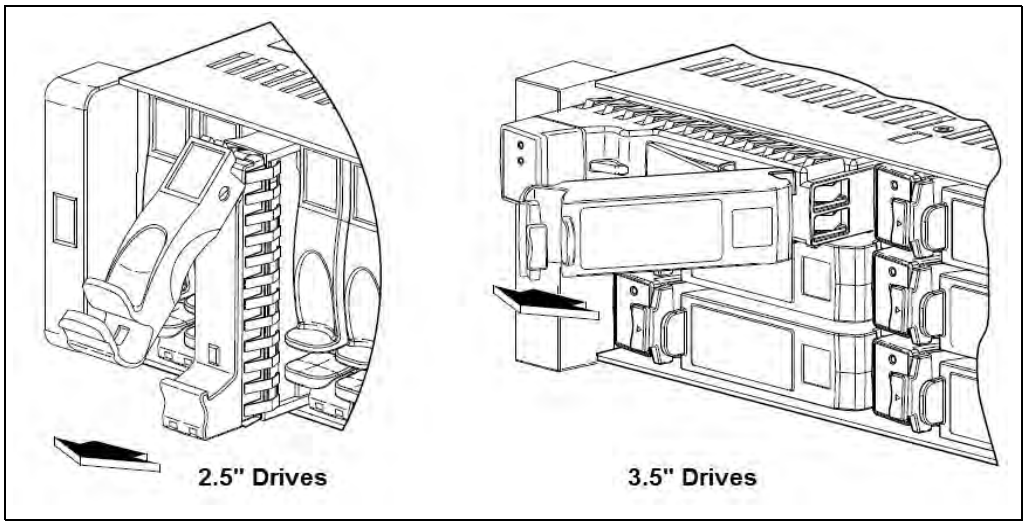


Figure C.51 - Removing an AMS

Installing Drive Modules

Step	Action

1. On new drive, prior to inserting, squeeze the latch release flanges together, and then pull the latch, rotating it outward until it is fully open.

2. Perform one of the following steps, according to your product's drive type (see **Figure C.52**):
   - 2.5" Drives—With the LEDs oriented to the bottom, slide the drive module into the drive slot as far as it will go.
   - 3.5" Drives — with the LEDs oriented to the left, slide the drive module into the drive slot as far as it will go (see **Figure C.52**).

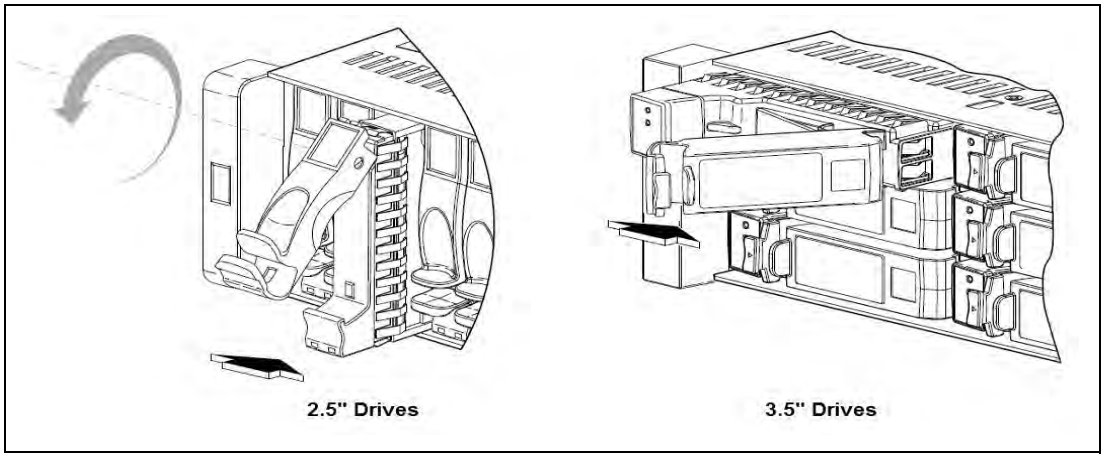


Figure C.52 - Installing a Drive Module

3. Rotate the latch inward until it clicks closed to firmly seat the drive module in the enclosure's midplane.

4. Check that the Power/Activity LED located on the drive is illuminated green (see **Figure C.53**).

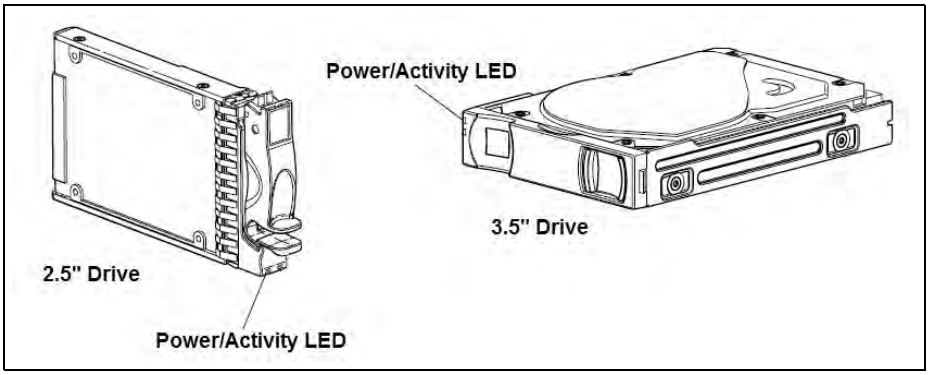


Figure C.53 - Drive Module LEDs

5. Contact Tektronix Communications Customer Support for assistance in bringing the disk drive into service.

Replacing the Disk Array Chassis

Prior to replacing the disk array chassis, you MUST power down the probe. See the Power Down Procedure for details on powering down the probe.

Prior to replacing the disk array chassis, see the *Iris Installation and Upgrade Guide* ***to perform the required G10 Probe Health Check. Contact Tektronix Communications Customer Support for assistance.***

Identify which disk array is being replaced (Controller 0, Controller 1, or an Expansion Disk array {JBOD}).

If you are replacing both controllers, special commands must be performed before and after hardware replacement. Contact Tektronix Communications Customer Support for assistance.

Verify that all cables, terminating at the disk array, are properly labeled. Record the cable connections, for use when reconnecting the cables.

Be sure to review Storage Array Maintenance Guidelines before proceeding to ensure component compatibility.

Removing the Disk Array Chassis

Perform the following actions to remove the disk array chassis.

Step	Action
1.	Contact Tektronix Communications Customer Support for assistance in troubleshooting storage array issues. Storage Array Maintenance (SAMTCE) alarms can be monitored in the IrisView Alarm Browser to help isolate failed components.
2.	Power down the faulty disk array. Press the power switch, on both power supply units, to the OFF position. (**Figure C.54**) Note that some new AC power units do not have an on/off switch.

Figure C.54 - DC Power Switch on Disk Array

3. Remove power:
   - DC: Shut off the main circuit breakers to the power supply units and remove the power cables:
     - Loosen the cable-locking screws attaching the connectors to the PSUs.
     - Disconnect the power cables from the PSUs.
   - AC: Unplug the AC cables from the power supply units.
4. Verify that all cables (power, Ethernet and SAS) are properly labeled and then disconnect all cables from the disk array.
5. Unscrew the disk array from the brackets and using two people, slide the disk array out from the brackets.
6. If the new disk array shipped with all new components (RAID controllers, expansion controllers, and disks [HDDs]), then skip this step. Otherwise, the working components from the original disk array will be reused for any components not shipped.
   - Extract all of the disks (HDDs) from the original disk array and slot them, in the same order, into the new disk array.
   - Extract the RAID controllers or expansion controllers from the back of the original disk array and slot them, in the same order, into the new disk array.

Installing the Disk Array Chassis

Prior to replacing the disk array chassis, you MUST power down the probe. See the Power Down Procedure for details on powering down the probe.

Identify which disk array is being replaced (Controller 0, Controller 1, or an Expansion Disk array {JBOD}).

If you are replacing both controllers, special commands must be performed before and after hardware replacement. Contact Tektronix Communications Customer Support for assistance.

Verify that all cables, terminating at the disk array, are properly labeled. Record the cable connections, for use when reconnecting the cables.

Be sure to review Storage Array Maintenance Guidelines before proceeding to ensure component compatibility.

Step	Action
1.	Using two people, slide the disk array into the brackets in the same position as the original disk array chassis and secure the new disk array chassis using the same screws from the original disk array.
2.	Reconnect the power, Ethernet, and SAS cables according to what was recorded previously. For detailed cabling information, see the cabling section of the installation guide for your specific probe type and configuration.
3.	Restore power: ▪ DC: Connect the power cables to the PSUs. - Tighten the cable-locking screws attaching the connectors to the PSUs. - Open the main circuit breakers to the power supply units. ▪ AC: Plug in the AC cables to the power supply units.
4.	Power up the new disk array. Press the power switch, on both power supply units, to the ON position. (**Figure C.55**) Note that some new AC power units do not have an on/off switch.

Figure C.55 - DC Power Switch on Disk Array

5. Reconnect the cables.

6. Power on the probe. See the probe start up procedure for details on powering up the probe.

7. Check that the FRU OK LED (back) is green, indicating that the controller has completed initializing, is online, and is operating normally.

8. See the *Iris Installation and Upgrade Guide* to configure the G10 Probe and complete the disk array replacement. Contact Tektronix Communications Customer Support for assistance.

D G10 NEBS Requirements

Overview

This document provides information necessary for ensuring the G10 probes and storage enclosures comply with Network Equipment Building Systems (NEBS) requirements.

G10 Probe Signal Port Requirements

When installing the G10 probe signalling ports, you must comply with the following NEBS requirements:

To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the signal ports only to intra-building or unexposed wiring or cable that is shielded and grounded at both ends. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 6) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

STORAGE ENCLOSURE BONDING AND GROUNDING REQUIREMENTS

This section provides guidelines for installing storage enclosures for compliance with NEBS Bonding and Grounding requirements of GR-1089-CORE, Issue 6. These bonding and grounding connections satisfy the Telcordia NEBS requirements for supplemental bonding and grounding connections. If you are not installing the equipment in a NEBS environment, you can choose to bypass these guidelines and rely on the safety earth ground connections to the DC PDUs.

Use the following guidelines when grounding equipment:

- Ground equipment to a Common Bonding Network.
- Use only copper wire cables for grounding purposes.
- Ensure the equipment's battery return terminals are in the configuration of an isolated DC Return (DC-I), which means the equipment is grounded at the battery source.
- Install equipment in a secured or controlled area that restricts access to trained personnel when installing equipment in network telecommunication facilities. The equipment should not be accessible to untrained personnel or the general public without proper authorization and supervision.

Although the power cabling shipped with the storage enclosure provides a safety earth ground connection as part of the cabling to Power Distribution Units (PDUs), Tektronix recommends that you connect the central office ground system or interior equipment grounding system to the supplemental bonding and grounding connections on the back of the storage enclosure (**Figure D.1**) using a grounding bar. **Figure D.1** shows grounding cabling from the storage enclosure to the grounding bar; refer to **Fuse Panel Power Cabling (DC Units Only)** for complete power cabling information and diagrams.

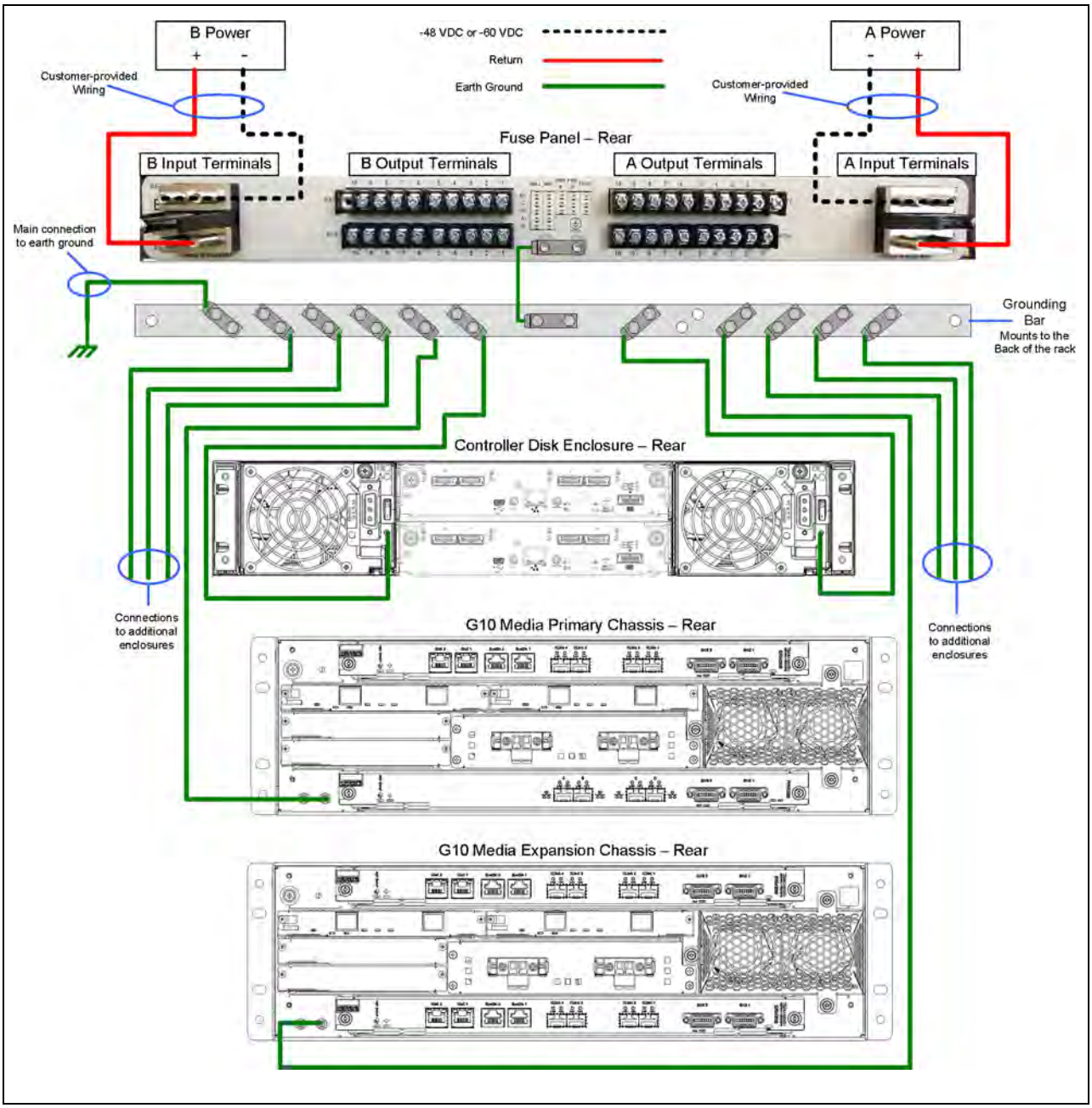


Figure D.1 - NEBS Grounding Solution

The supplemental grounding cable connects to the enclosure grounding post under the power switch. This grounding point is also referred to as the network equipment building system (NEBS) bonding and grounding stud. **Figure D.2** shows the location of the grounding post on the rear of the storage enclosure.

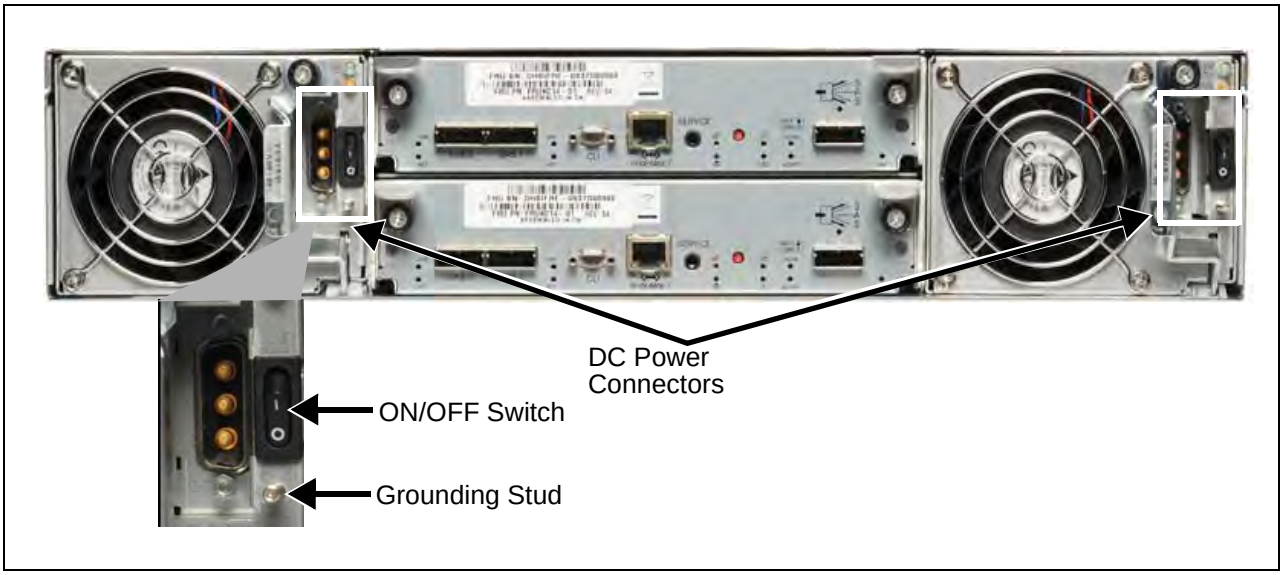


Figure D.2 - Storage Enclosure Rear View

To ensure a proper supplemental ground connection to the storage enclosure, use the parts listed in **Table D.1**.

Table D.1 - Required Parts

Item	Description	
Tektronix-Provided Parts		
Dual Hole Lugs	For connection to grounding bar (per storage enclosure) 90° dual-hole lugs for #10 studs on 5/8” centers (Burndy YA8CL2TC10-90 or equivalent) 4 hex-head nuts and star washers for anti-rotation	
Ring Lugs	For Connection to Storage Enclosure 2 Tyco Electronics Ring Lugs PN 320634 (LUG, RING, PIDG type, 12-10 AWG, #6 stud) 2 hex-head nuts and star washers for anti-rotation	

Table D.1 - Required Parts (Continued)

Item	Description
Customer-Provided Parts[a]	
Supplemental Grounding Cables	Each storage enclosure requires two earth ground 12 AWG cables for supplemental grounding. Tektronix recommends that you use a commensurately rated, high-strand-count copper wire cable. The length of the cables depends on your equipment location from the source power.
Grounding Bar	Examples of suitable grounding bars from Telect are: 19” wide racks—Telect PN 02114-T19 23” wide racks—Telect PN 02144-T23 These grounding bars use #10 bolts (1/2” minimum length) and nuts to serve as grounding studs. Each grounding connection requires two bolts/nuts.

a. These parts are not available from Tektronix, but are available from most commercial equipment vendors.

Bare conductors must be coated with antioxidant before crimp connections are made to prevent corrosion.

EQUIPMENT COOLING REQUIREMENTS

The G10 probe, disk storage arrays, and fuse panel may require special equipment room cooling. Contact Tektronix for more information.

Plano, Texas USA - serves North America, South America, Latin America
+1 469-330-4581 (Customer Support voice)
uaservice@tek.com (Customer Support USA email)

London, England UK - serves Northern Europe, Middle East, and Africa
+44-1344-767-100 (Customer Support voice)
uaservice-uk@tek.com (Customer Support UK email)

Frankfurt, Germany DE - serves Central Europe and Middle East
+49-6196-9519-250 (Customer Support voice)
uaservice-de@tek.com (Customer Support DE email)

Padova, Italy IT - serves Southern Europe and Middle East
+39-049-762-3832 (Customer Support voice)
uaservice-it@tek.com (Customer Support IT email)

Melbourne, Australia - serves Australia
+61 396 330 400 (Customer Support voice)
uaservice-ap@tek.com (Customer Support Australia and APAC email)

Singapore - serves Asia and the Pacific Rim
+65 6356 3900 (Customer Support voice)
uaservice-ap@tek.com (Customer Support APAC and Australia email)