Software Version 7.13.2

# Iris Packet Broker (IPB)

## Hardware Installation and Maintenance Guide

Powered by VSS Monitoring

Tektronix communications

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Tektronix Communications, Inc. Proprietary Information
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# Table of Contents

# WHAT'S NEW IN IPB HARDWARE MAINTENANCE VERSION 7.13.2?

| Feature ID | Description | Refer To: |
|---|---|---|
| F-02339 | **Support for IPB420 40G Interface**<br>The IPB420 supports 40G chassis modules, supporting up to 16 connections per IPB.<br><br>**Support for IPB420/IPB220 Configuration from IrisView**<br>The IPB System Management Web GUI can now be accessed from IrisView.<br><br>**Support for IPB420/IPB220 Software Upgrades from IrisView**<br>Administrators can now perform IPB software upgrades using the Iris Admin Software tab. | ■ IPB Models<br>■ IPB Chassis Modules<br><br>■ Configure IPB Settings<br><br>■ IPB Software Upgrades |

# 1 Iris Packet Broker Introduction

## IRIS PACKET BROKERS

Iris Packet Brokers (IPBs) enable you to more effectively utilize your existing Tektronix Communications monitoring solutions, simplify operational complexity, and realize a higher ROI from additional cost savings and service quality improvements. IPB intelligent stacking technology, vMesh, enables traffic capture devices to be deployed in a redundant, low-latency mesh for total, dynamic, fault-tolerant visibility.

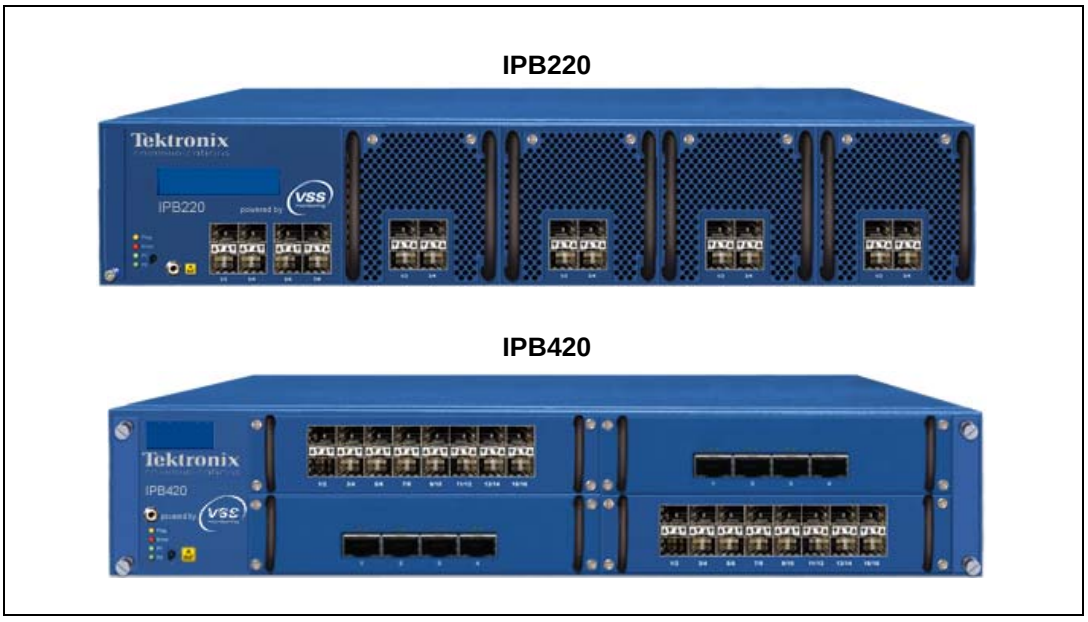



***Figure 1.1 - Iris Packet Brokers***

With the visionary vMesh approach to architecture, you get the flexibility and modularity to deploy just the appliances you need, when you need them, with the ability to scale link-layer visibility and data access to a system-level architecture with up to 256 ports globally. The business benefits include more flexible capital requirements, high tool utilization and ROI, and lower operating costs.

Designed specifically to address high bandwidth interfaces and datacenter applications, the NEBS compliant Iris Packet Broker (IPB) features a scalable, modular architecture that bridges the gap between 1 GigE, 10 GigE, and 40 GigE networks. They also provide all of the intelligent network packet functionality on a large scale. Each model supports a maximum of four SFP+ chassis modules or that support different features, port densities, and port speeds up to a maximum line rate throughput of 240 Gbps for the IPB220 series and 640 Gbps for the IPB420. Additionally, ports and features are enabled as they are needed by license key. Any port can be designated as an ingress/input or an egress/output port.

Hardware-based filtering allows traffic to be distinguished according to source and destination MAC/IP address as well as by specific protocols, such as HTTP, VoIP, GTP, and LTE. A custom filter offers more granular specification of a filter with the payload of a packet. Filters can be ingress, egress, and overlapping.

All IPB models support symmetrical L2 to L4 load balancing. Session aware load balancing is provided by TD140. Select IPB models have optional features including port stamping, time stamping, and microburst protection. To feed third party tools, select IPB models have optional features including protocol/tag stripping (GTP, VLAN, MPLS) and conditional packet slicing.

All IPB models support a connection between multiple units which enables up to 256 ports at a single site. In addition, IPB can be deployed in a redundant, low-latency mesh for total, dynamic fault-tolerant visibility. Select IPB models have an option to support inter-connected IPBs over a LAN or WAN using TCP which enables backhaul of traffic from remote sites to a central monitoring location. To protect against data attacks during backhaul, secure data encryption (AES) is supported. Redundant hot-swappable power supplies, fans and air filters allow seamless transitions between power systems and ensure uptime.

*IPBs are an add-on to TD140 deployments; they do not replace TD140s.*

# IPB Benefits

The IPB provides the following benefits:

- Gain link-layer visibility and data access across entire network
- Centralize tools while increasing their reach
- Quickly provision new tools by eliminating SPAN port contention
- Higher port density with flexibility in speed and media

# IPB Base Features

The IPB provides the following base features:

- Hardware-Based L2-L4 Filtering and Custom Offset Filtering
- Define ingress to egress mapping
  - 1-to-1
  - 1-to-Many (replicates data)
  - Many-to-1 (aggregates data)
  - Many-to-Many (replicates and aggregates data)
- Automatic, symmetrical L2-L4 load balance of egress ports
  - MAC Destination and/or Source
  - IP Destination and/or Source
  - IP and TCP/UDP Combinations
- vMesh Stacking (connected by cables) provides up to 256 ports across multiple units. G10s having an IIC100 configuration are limited to 24 total ingress ports.

# 2 IPB Hardware Reference

## IPB Models

Tektronix Communications offers the following Iris Packet Broker (IPB) models:

- IPB220 Base
- IPB220 Advanced
- IPB420

Table 2.1 shows the features available for each IPB model.

***Table 2.1 - IPB Feature Support per Model***

| Feature | IPB Model | | |
|---|---|---|---|
| | IPB220 Base | IPB220 Advanced | IPB420 |
| Selective Port Aggregation and/or Replication | ● | ● | ● |
| Layer 2 to Layer 4 Filtering | ● | ● | ● |
| Symmetrical L2 to L4 Load Balancing | ● | ● | ● |
| NTP or PTP timing | ● | ● | ● |
| vMesh Direct Connect (connected by cable) | ● | ● | ● |
| Integrated with IrisView Alarms and System Health visibility | ● | ● | ● |

***Table 2.1 - IPB Feature Support per Model (Continued)***

| Feature | IPB Model | | |
|---|---|---|---|
| | **IPB220 Base** | **IPB220 Advanced** | **IPB420** |
| Maximum ports | 24 | 24, up to 16 ports have advanced features | 64 1G/10G and/or 16 40G |
| Integration with GeoProbe platform family | | | G10 only |
| 1G or 10G Ethernet port | ● | ● | ● |
| 40G Ethernet port | | | ● |
| Time & Port Stamping | | ● | ● |
| Option to disable time and port stamping on egress | | | ● |
| Within a GTP tunnel, L3 and L4 Filtering, 10G | | ● | |
| Microburst Protection (High Data Burst Buffer) | | ● | |
| Protocol/Tag Stripping (GTP, VLAN, MPLS) | | ● | |
| vMesh over IP (Interconnect IPB over TCP/IP) | | ● | |

# IPB Chassis Components

## IPB220 and IPB420 Front Panels

**Figure 2.1** shows the front panels for the IPB220 and IPB420.

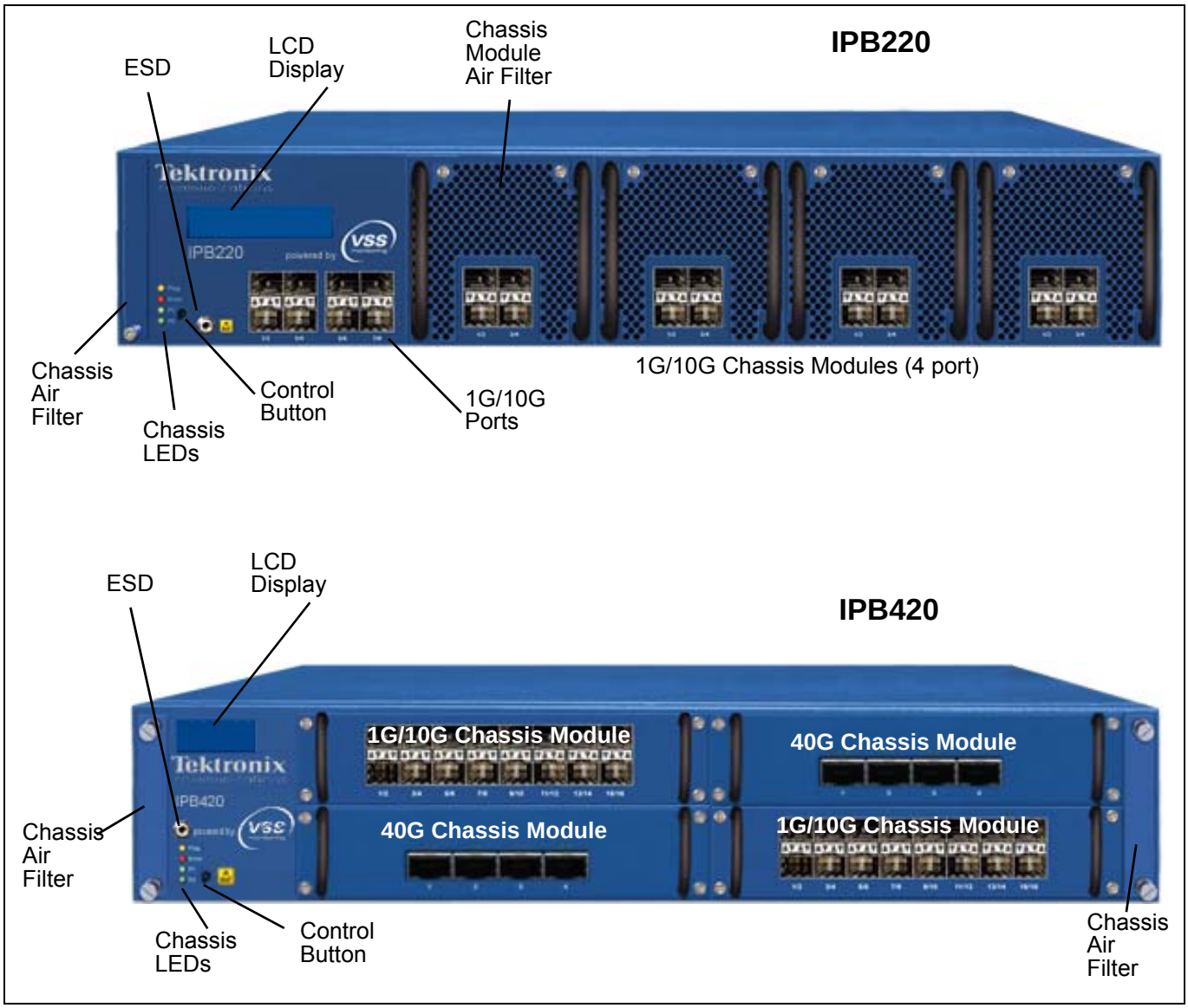



***Figure 2.1 - IPB220 and IPB420 Front Panels***

**Table 2.2** describes the IPB Front Panel components.

***Table 2.2 - IPB Front Panel Component Descriptions***

| Item | Description | |
|---|---|---|
| | **IPB220** | **IPB420** |
| Air Filter | ▪ One replaceable chassis air filter.<br>▪ One replaceable air filter on each installed IPB220 chassis module. | ▪ Two replaceable chassis air filters. |
| Control button | ▪ Press briefly to page through LCD display. | |
| Ethernet Ports | ▪ 8 1G/10G ports built into chassis.<br>▪ 4 1G/10G ports on each installed IPB220 chassis module (up to 16 additional ports). | ▪ 1G/10G Chassis Module: 16 ports on each installed chassis module (up to 64 ports).<br>▪ 40G Chassis Module: 4 ports on each installed chassis module (up to 16 ports). |
| | ▪ Ports can be configured as ingress or egress ports based on configuration requirements. Refer to IPB IrisView Admin Configuration or the ***IPB Software User Guide*** for details. | |
| LCD Display | Displays system information: product model, software release, port status, and system error messages. | |
| ESD | Electro-static Discharge (ESD) connector for ESD devices to prevent electrical damage. | |
| LEDs | Refer to IPB220 and IPB420 Chassis LEDs. | |

## IPB220 and IPB420 Rear Panel

The rear panel for the IPB220 and the IPB420 have the same components (**Figure 2.2**).

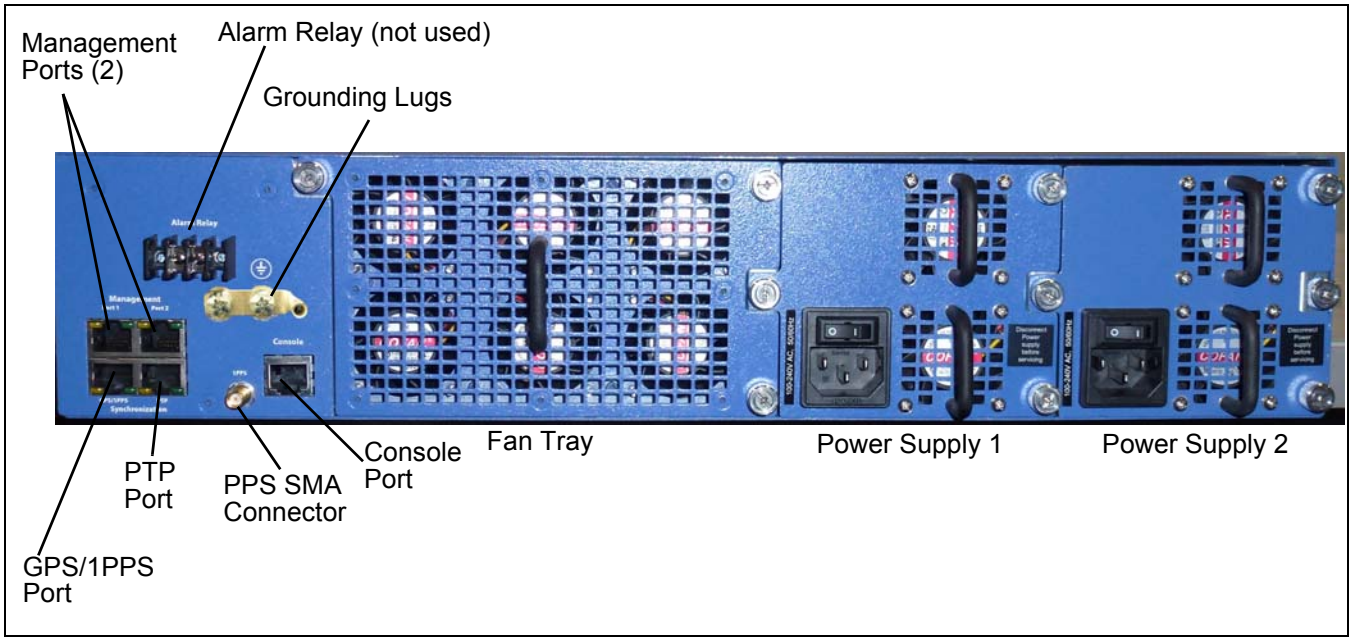



***Figure 2.2 - IPB220 and IPB420 Rear Panel (AC Unit Shown)***

**Table 2.3** describes the IPB Rear Panel components.

***Table 2.3 - IPB Rear Panel Component Descriptions***

| Item | Description |
|---|---|
| Alarm Relay | Not used. |
| Grounding Lugs | Tektronix provides a two-hole grounding lug kit with the AC or DC cabling kit. The grounding lug must be installed on the IPBs to ensure proper electrical protection. |
| Management Ports | RJ45 connectors supporting 10/100/1000 Gigabit Ethernet. Port 1 provides network connectivity to LAN for communications to Iris Server. |
| GPS/1PPS Port | RS-422 connection used for time synchronization with GPS source. GPS synchronization is based on receipt of a 1PPS signal and the TSIP protocol (for time of day and other data).<br><br>Measure the length of the cable from the IPB to the GPS receiver; you will need to know this length when configuring GPS timing source in the IPB GUI to achieve the expected accuracy. Refer to the IPB System Software Guide for details about time stamping synchronization. |
| PTP Port | Used for time synchronization using a Precision Time Protocol (PTP) source. PTP synchronization requires communication with a PTP Master Clock server over an Ethernet or IP network, where the IPB will be a PTP Slave. |
| 1PPS SMA Connector | PPS SMA connector used for time synchronization with Pulse Per Second (PPS) source. |

*Table 2.3 - IPB Rear Panel Component Descriptions (Continued)*

| Item | Description |
|---|---|
| Console Port | RJ45 connector supporting serial RS-232. Not used during normal probe operation. |
| Fan Tray | Each hot-swappable fan tray provides six fans for platform for cooling. |
| Power Supplies | Two redundant hot-swappable power supplies. The P1 and P2 LEDs on the front of the chassis indicate the power status.<br><br>Refer to IPB Power and Heat Specifications for details. |

# IPB220 AND IPB420 CHASSIS LEDS

The front of the IPB chassis provides several LEDs (**Figure 2.3**).


*Figure 2.3 - IPB Chassis LEDs*

**Table 2.4** describes the IPB chassis LEDs.

*Table 2.4 - IPB Chassis LEDs*

| LED | Description | |
|---|---|---|
| Flag | OFF | Normal operation. |
| | YELLOW | Traffic overflow condition. |
| Error | OFF | Normal operation. |
| | Solid RED | Hardware alert, such as missing power supply. |
| | Blinking RED | Hardware condition needs immediate attention. |
| P1 and P2 | OFF | No power present. |
| | Solid GREEN | Power on mode. Power supply outputs are on and power feed is good. |

## IPB220 Chassis Port LEDs

The IPB220 has eight 1G/10G ports built into the chassis itself (**Figure 2.4**). LED behavior for these eight ports differs from the IPB220 and IPB420 1G/10G Chassis Module LEDs.

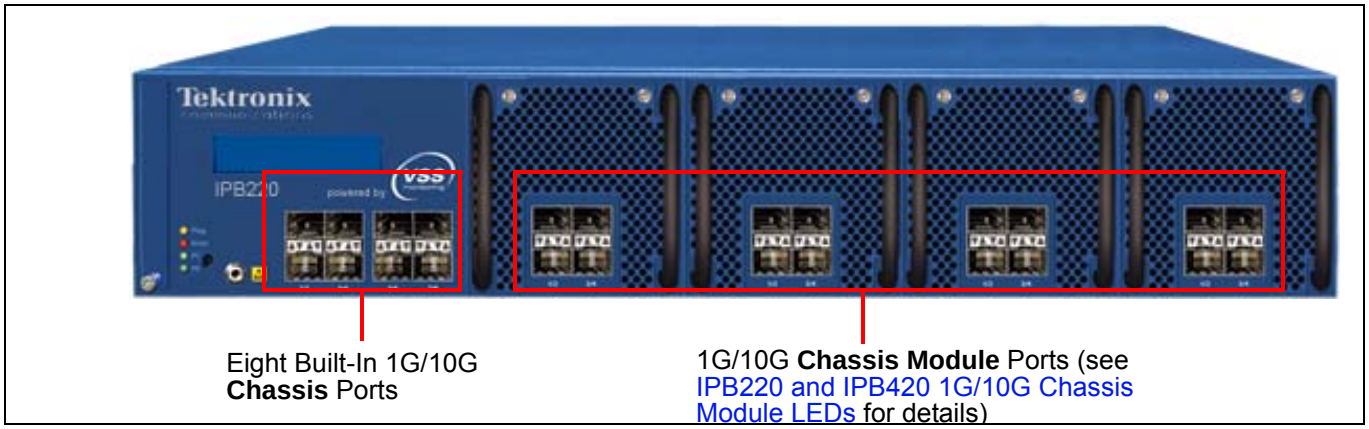



***Figure 2.4 - IPB220 Chassis Port LEDs***

**Figure 2.5** shows the LED usage for the IPB220 built-in chassis ports.

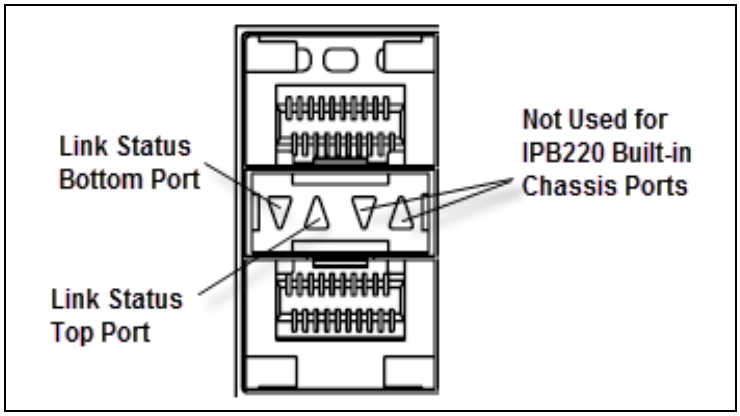



***Figure 2.5 - IPB220 Chassis Port LEDs***

**Table 2.5** describes the front panel Ethernet status LEDs.

***Table 2.5 - IPB220 Chassis Ethernet Status LEDs***

| LED Purpose | State | Explanation |
|---|---|---|
| Link status | Solid GREEN | 10G |
| | Solid AMBER | 1G |
| | Off | No link established |

# IPB INTERCONNECTION SUPPORT

**Table 2.6** lists the IPB interconnection support.

***Table 2.6 - IPB Media/Speed Support per Model***

| Media/Speed | IPB Model | | |
|---|---|---|---|
| | IPB220 Base | IPB220 Advanced | IPB420 |
| 10Gbase-SR (850nm, multi-mode) | ● | ● | ● |
| 10Gbase-LR (1310nm, single-mode) | ● | ● | ● |
| 1000base-SX (850nm, multi-mode) | ● | ● | ● |
| 1000base-LX (1310nm, multi- or single-mode) | ● | ● | ● |
| 1000base-T (Cat5e/Cat6, RJ-45) | ● | ● | ● |
| 40G Base-SR4 (850nm, multi-mode) via single MPO connector | | | ● |
| 40G Base-LR4 (1300/1310nm, single-mode) via duplex LC connectors | | | ● |

IPBs support the following modules:

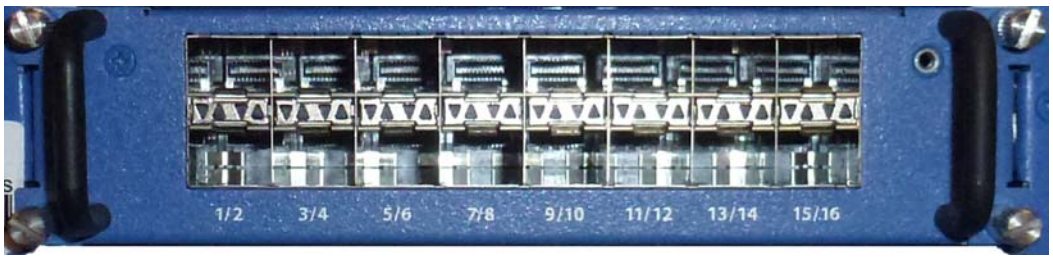
- 10G/1G via SFP+ modules, LC-type fiber connectors
- 40G via QSFP+ modules, either MPO connectors (MMF) or LC connectors (SMF)

# IPB Chassis Modules

**Figure 2.6** shows the IPB220 chassis module and the IPB420 chassis module. Refer to **Table 2.1** for a listing of features per IPB model. Ports can be configured as either ingress or egress depending on configuration requirements. Refer to the ***IPB Software System Guide*** for port configuration details.

**IPB220 1G/10G Chassis Module**

4 1G/10G Ethernet ports, SFP+ connectors




**IPB420 1G/10G Chassis Module**

16 1G/10G Ethernet ports, SFP+ socket


**IPB420 40G Chassis Module**

4 40G Ethernet ports, QSFP+ socket

***Figure 2.6 - IPB Chassis Modules***

## IPB220 and IPB420 1G/10G Chassis Module LEDs

**Figure 2.7** shows the LED usage for the IPB220 and IPB420 1G/10G chassis module ports.

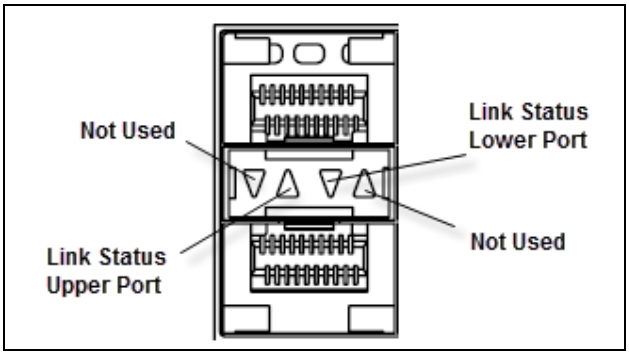



***Figure 2.7 - IPB220 and IPB420 1G/10G Chassis Module Port LEDs***

**Table 2.7** describes the front panel Ethernet status LEDs.

***Table 2.7 - Ethernet Status LEDs***

| LED Purpose | State | Explanation |
|---|---|---|
| Link status | Solid GREEN | 10G |
| | Solid AMBER | 1G |
| | Off | No link established |

## IPB420 40G Chassis Module LEDs

**Figure 2.8** shows the LED usage for the IPB420 40G chassis module ports.

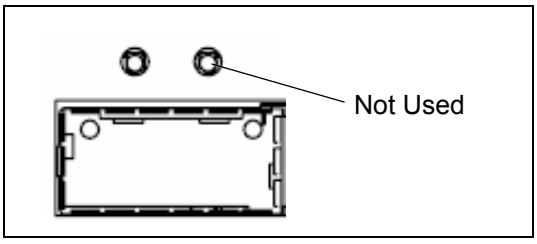



***Figure 2.8 - IPB420 40G Chassis Module Port LEDs***

**Table 2.8** describes the front panel Ethernet status LEDs.

***Table 2.8 - Ethernet Status LEDs***

| LED Purpose | State | Explanation |
|---|---|---|
| Link status | Solid GREEN | 40G |
| | Off | No link established |

# FP100 FUSE PANEL

The FP100 is a GMT dual circuit fuse panel that provides DC power connection, input fusing, and circuit protection for the IPB (see **Figure 2.9**). The fuse panel is not applicable in AC power configurations.

***Figure 2.9 - Fuse Panel Front View***

The fuse panel contains two separate circuits: 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.

The back of the fuse panel provides input and output terminal connections, chassis ground connections, and wire wrap pins for external alarm hookups (see **Figure 2.10**).

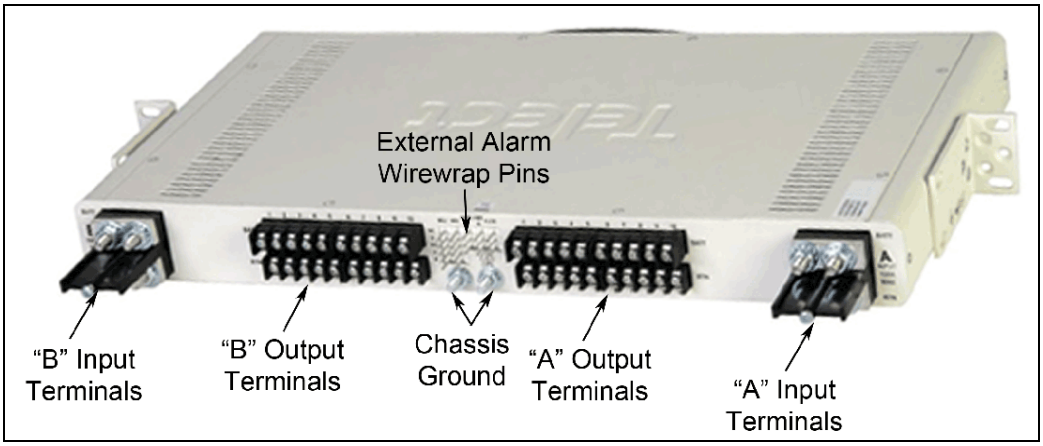



***Figure 2.10 - Fuse Panel Rear View***

**Table 2.9** contains technical specifications for the fuse panel.

***Table 2.9 - Fuse Panel Technical Specifications***

| Specification | Panel Capacity |
|---|---|
| Panel capacity | 20 fuses (dual groups of 10) |
| Current capacity | 0.18 to 20 A per fuse, 100 A max per group (200 A total) |
| Input voltage | 40 to –72 VDC |
| Alarm contact relays | 2 A |

***Table 2.9 - Fuse Panel Technical Specifications (Continued)***

| Specification | Panel Capacity |
|---|---|
| Temperature | -5 C to 55 C |
| Humidity | 0 to 90%, non-condensing |
| Rack mounting | Standard 19 inch rack, 1U high |

# IPB System Level Alarms

The IPB sends alarms to the IrisView server; you can view the alarms in the Alarms Dashboard. Refer to the Iris online help for details about the IPB alarms, including probable cause and recommended action.

# 3 IPB Installation

## OVERVIEW

This procedure describes how to install the IPB into any network for monitoring purposes.

**The IPB should only be installed in a restricted access location such as a data center or network telecommunications facility (for example a central office (CO)). It is not intended for use as customer premises equipment (CPE).**

# HARDWARE INSTALLATION

**The IPBs must be installed in a four-post 19” rack. The IPB can tip and fall causing injury or damage if it is unbalanced or if it becomes unbalanced in its physical location in a rack.**

Perform the following steps to rack mount the IPB unit.

| Step | Action |
|---|---|
| 1. | Install the two front-mount brackets at the front of the chassis and the two rear-mount brackets at the rear of the chassis (**Figure 3.1**). |

- Use the mounting brackets and screws included with the IPB for attaching the bracket wings to the chassis, and for installing the chassis into a 19” rack.
- Ensure that the location of the bracket wings will provide for equal distribution of the unit’s weight during deployment. Also be sure to balance the IPB as you install it into the rack. If it becomes unbalanced, it can tip and fall, causing injury to you or others.

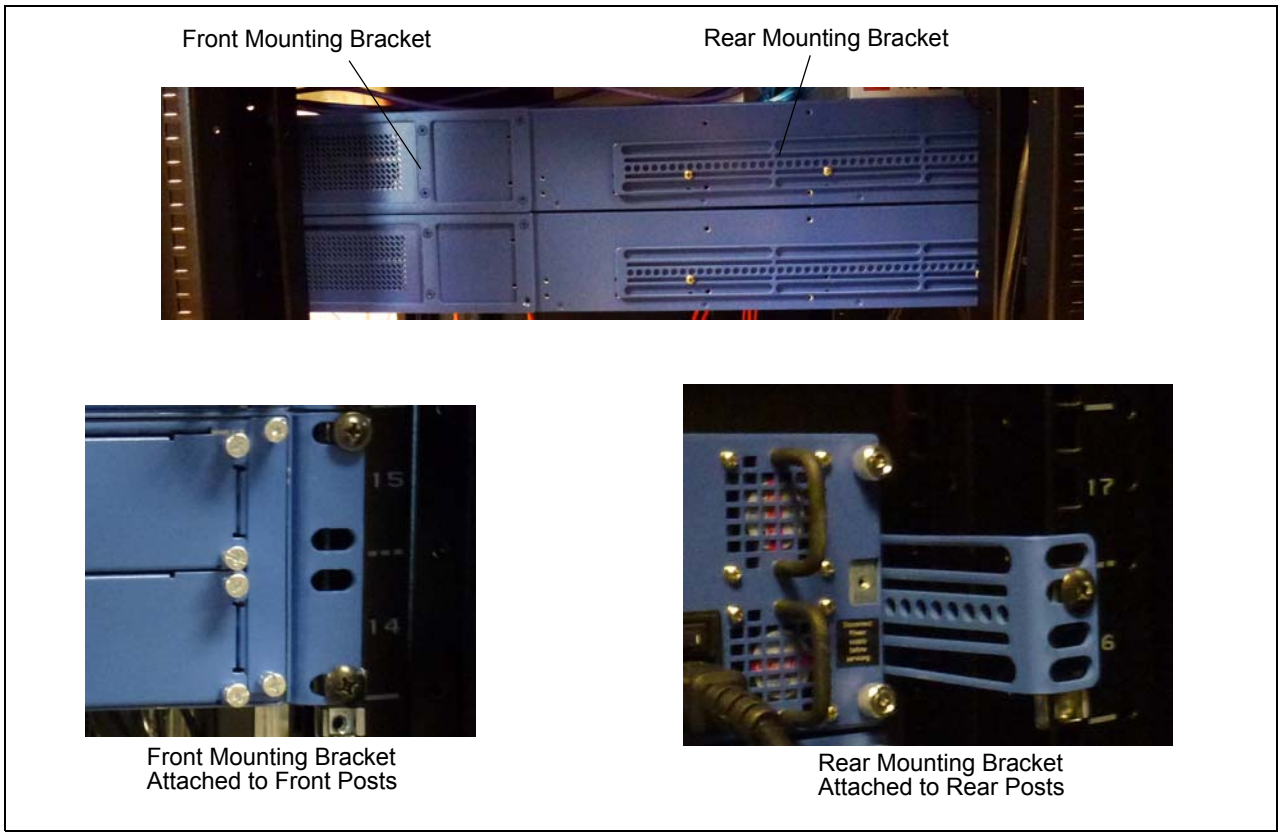



***Figure 3.1 - Installing IPBs (4-Post Rack)***

2. Connect the power cabling:

- Refer to IPB Power and Heat Specifications for power details.
- **AC:** Connect the IPB AC cables into the AC power supplies on the rear of the IPB unit and to the rack power outlet. Do not turn on the power switch.
- **DC:** IPB DC units must connect to a fuse panel. Refer to Fuse Panel Power Cabling (DC Units Only) for details.

# FUSE PANEL POWER CABLING (DC UNITS ONLY)

After the power cabling is connected to the IPB, connect the equipment power cabling to the fuse panel. This applies to DC units only. The IPB connects 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 IPB **before** connecting the cables to the Fuse Panel to minimize risk of electrical hazard. **Do not** connect more than six components to a single fuse panel. Make sure not to exceed the maximum current per each side of the fuse panel.*

Please note the following when wiring the IPB to the fuse panel:

- Use input wire size appropriate for the total output loading of the fuse panel. For 100A input use at least #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.

Perform the following steps to connect the IPBs to the fuse panel.

| Step | Action |
|---|---|
| 1. | Refer to **Figure 3.2** and the following bullets and connect each power feed for the IPB to the Fuse Panel. Refer to the Terminal and Wiring Recommendations for additional wiring and lug recommendations. |

- Connect IPB DC Power Supply 2 to Fuse Panel A Output Terminals and Ground
- Connect IPB DC Power Supply 1 to Fuse Panel B Output Terminals and Ground
- Connect the IPB DC grounding lugs to the fuse panel grounding lugs

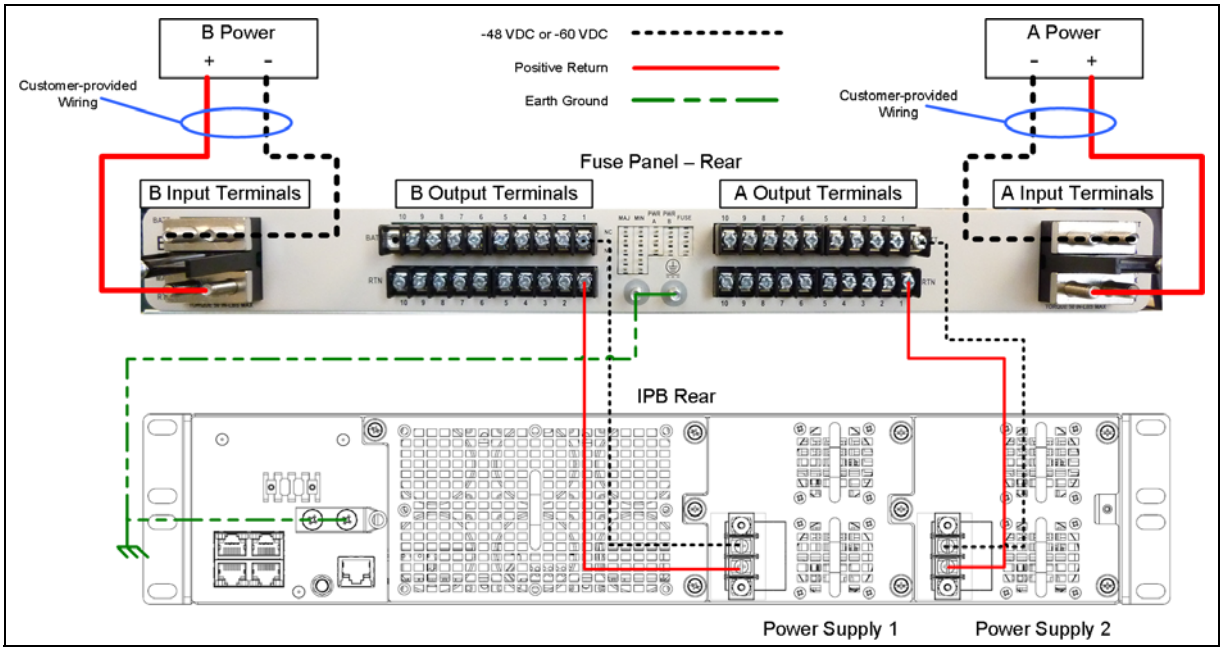



***Figure 3.2 - Component Power Cabling***

*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 IPB.*

*Systems with multiple units require a grounding solution that can adequately ground all units. **Figure 3.3** shows an example grounding solution using a grounding bar. Note that **Figure 3.3** only shows grounding cabling from the components to the grounding bar; refer to **Figure 3.2** for power cabling from the components to the fuse panel.*

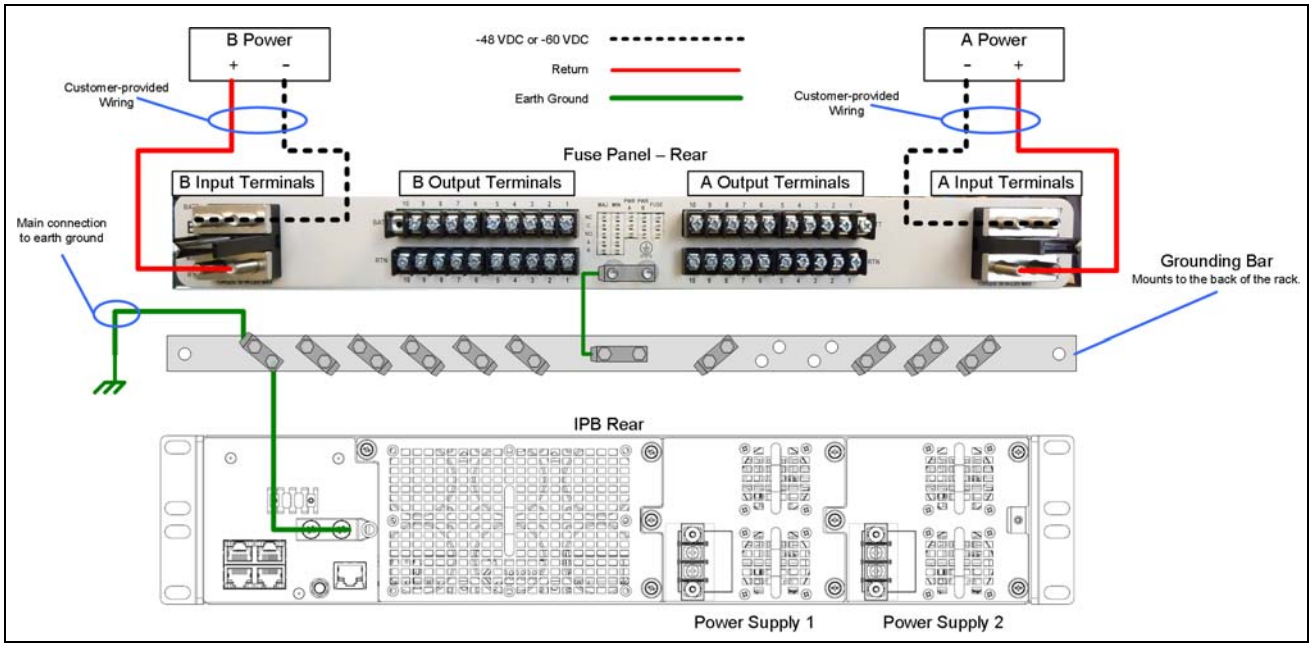



***Figure 3.3 - Example Grounding Solution***

*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 IPB at the rear of the fuse panel.

## Terminal and Wiring Recommendations

This section provides wiring and lug recommendations for the Fuse Panel. Refer to the FP100 Fuse Panel for technical specifications of the fuse panel. **Table 3.1** lists specifications for wiring of the IPB.

***Table 3.1 - IPB to Fuse Panel Wiring and Lug Specifications***

| IPB Terminal | Wire Specifications |
|---|---|
| Power Input (-48VDC or -60VDC)<br>Connect to - Terminal (negative) | #12 AWG copper |
| Return<br>Connect to + Terminal (positive) | #12 AWG copper |
| Earth Ground | #12 AWG copper<br>Ground must be equal to or larger in size than the largest power conductor feeding the equipment. |

Use the following guidelines when connecting IPB power cabling:

- The type of wiring connector to be used must be a NRTL-listed copper or brass ring crimp terminal/lug, suitable for 12 AWG wire, with welded/ brazed seam a #6 center opening for DC on each power source. Examples are TE Connectivity 329697 or Thomas and Betts RC484 for +/- power and ground wires.
- Each power lug must have insulated ends, with correct color coding for wire size.

- The IPB's battery return terminals must be in the configuration of an Isolated DC Return (DC-I).
- All bare conductor wires should be coated with antioxidant before making crimp connections.
- Unplated surfaces intended for bonding and grounding must be cleaned, polished, and coated with an anti-oxidant before assembly.
- When attaching ground wires with screws, a star washer must be used for anti-rotation.
- The grounding wire must be connected to the IPB by the grounding screw using a user-supplied lug.
- When attaching the grounding wire, ensure the screw is torque to 8 to 10 in-lb (0.9 to 1.1 N-m).

**Table 3.2** contains wiring and lug recommendations for the Fuse Panel.

***Table 3.2 - 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<br><br>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<br><br>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) |

# INITIAL SYSTEM CONFIGURATION

**Before beginning this procedure, confirm SSH keys have been generated on Iris Server. Contact Tektronix Communications Customer Support for assistance. Do not connect the IPB to the network until you change the IPB IP address.**

Perform the following to initially setup the IPB system.

| Step | Action |
|---|---|
| 1. | Power up the unit.<br>■ Insert the power cord (for models with one or two AC power supplies) into the rear power connector<br>■ Turn on the power switches to both power supplies. Power to the IPB will illuminate the P1 and P2 LEDs on the front of the IPB. |
| 2. | Change Laptop IP:<br>■ Use 192.168.0.100/24<br>■ Default Gateway: 192.168.0.1<br>■ No DNS |

3. Connect to the IPB:
   - Connect from laptop to IPB with RJ-45 cable
   - Verify Link LEDs on both sides of connection
   - Crossover cable not necessary

4. Connect to the IPB System Software GUI:
   - Launch Web Browser of choice
   - In browser navigate to http://192.168.0.250

   The IPB System Software GUI appears (**Figure 3.4**).


***Figure 3.4 - IPB System Software Login GUI***

5. Log in using the user ID and password provided by Tektronix Communications. The main page appears (**Figure 3.5**).

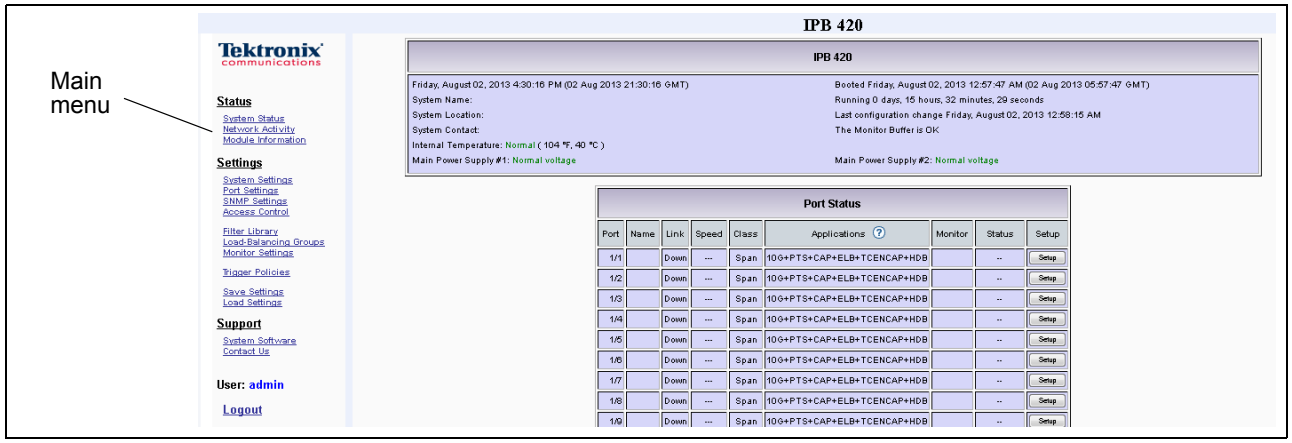



***Figure 3.5 - IPB System Software Main Menu***

6. Select System Settings from the main menu. The System Settings page appears (**Figure 3.6**).

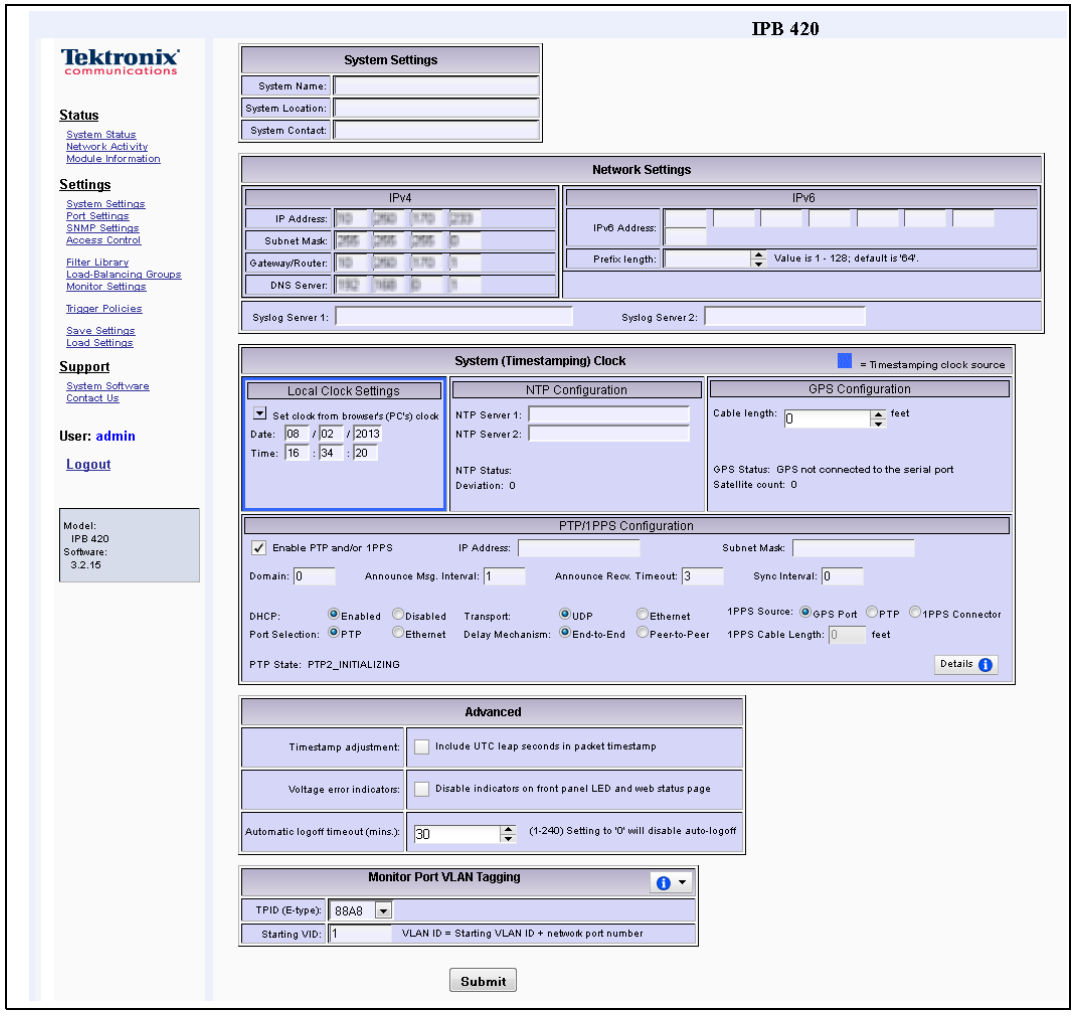



***Figure 3.6 - IPB System Settings Page***

- Change IP Address, Gateway and DNS
- Make other changes if necessary, such as System Name

7. Click **Submit**. The IP address will be changed at this point.

8. Connect an Ethernet cable from Management Port 1 to the LAN/WAN (**Figure 3.7**). Make sure the switch/router is set to Auto/Full for negotiation. ***If timing other than NTP will be used, extra cabling is required. Contact TekComms for assistance.***

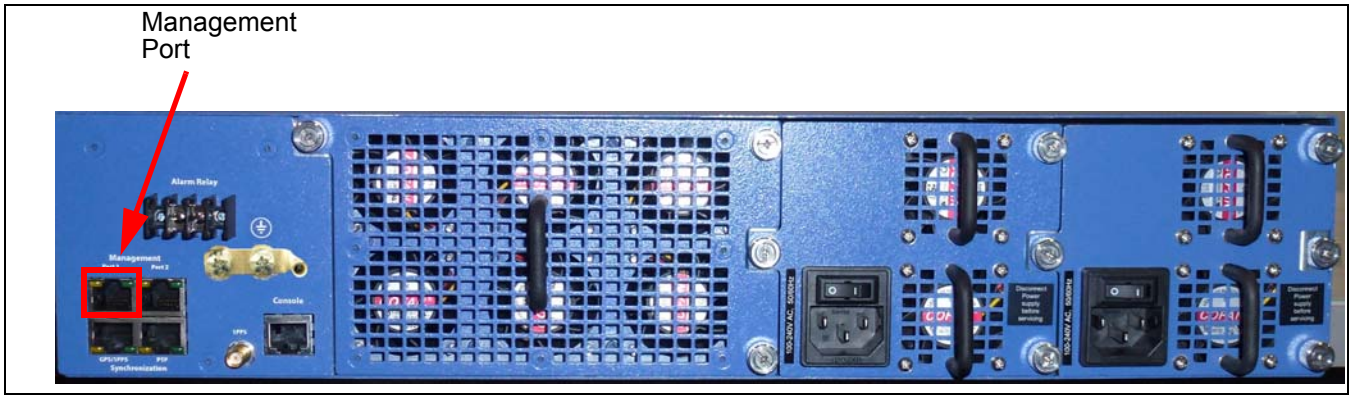



***Figure 3.7 - IPB Rear Panel (AC Unit Shown)***

9. Contact Tektronix Communications customer support to connect the IPB to the Iris server.

10. Select Access Control from the main menu. The following page appears (**Figure 3.8**).

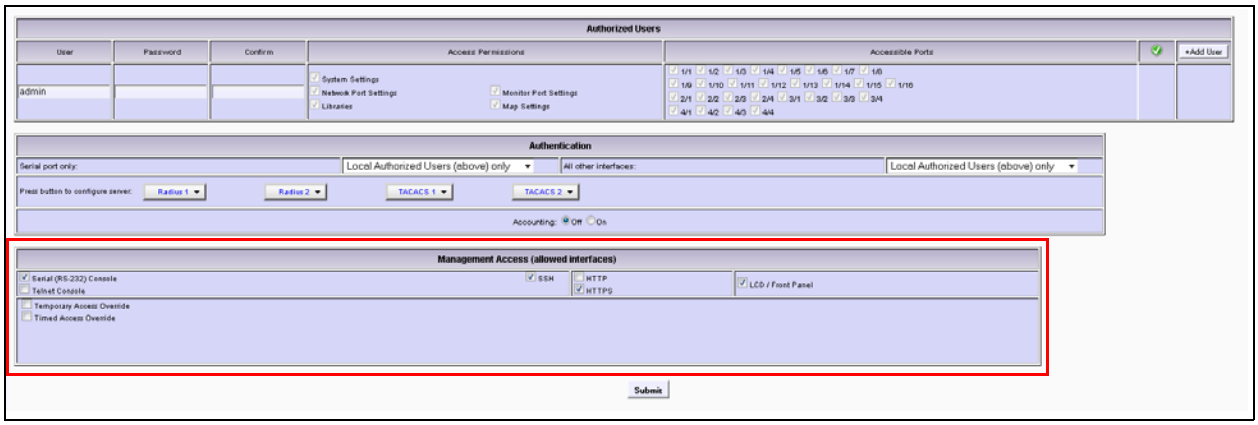



***Figure 3.8 - IPB Access Control Page***

11. For maximum security, configure the IPB to allow only these interfaces:
    - **Serial**
    - **SSH**
    - **HTTPS**
    - **LCD/Front Panel**

12. Change the password for the admin user. **DO NOT delete or rename the default admin account.**

***13. Notify Tektronix of the following information:***
    - ***IP address of unit for final configuration***
    - ***New password for the admin user***

14. Click **Submit**.

# Connecting IPB Network Ports

***Cabling IPB ingress and egress ports is dictated by the specific features installed on the chassis modules. Because installed features can vary per chassis module, it is very important to ensure proper cabling. Contact Tektronix Communications for assistance in cabling the IPB network ports.***

IPB Egress ports must connect directly to G10 probes, TD140 load balancers, and SpIprobes (no router/ switch in between.)

Connect each device to its corresponding ingress or egress port on the IPB. For copper SFP ports, either straight-through or crossover cables can be used since the IPB has Auto-MDI/X. The corresponding link status LEDs should turn on when the cable is plugged in.

# IPB IrisView Admin Configuration

**Contact Tektronix Communications for assistance connecting the IPB devices to the Iris Server so you can view it in the Probe tab in IrisView Admin.**

After the IPB connects to the IrisView server, you can view it the Probes tab in Iris Admin. All provisioned G10 probes (G), TD140s (T), and IPBs (I) appear in the Probe Tab. You can perform the following procedures:

- Configure IPB Settings
- Bind G10s to IPB420 Devices
- Bind G10s and IPB Devices to an Aggregation Cluster

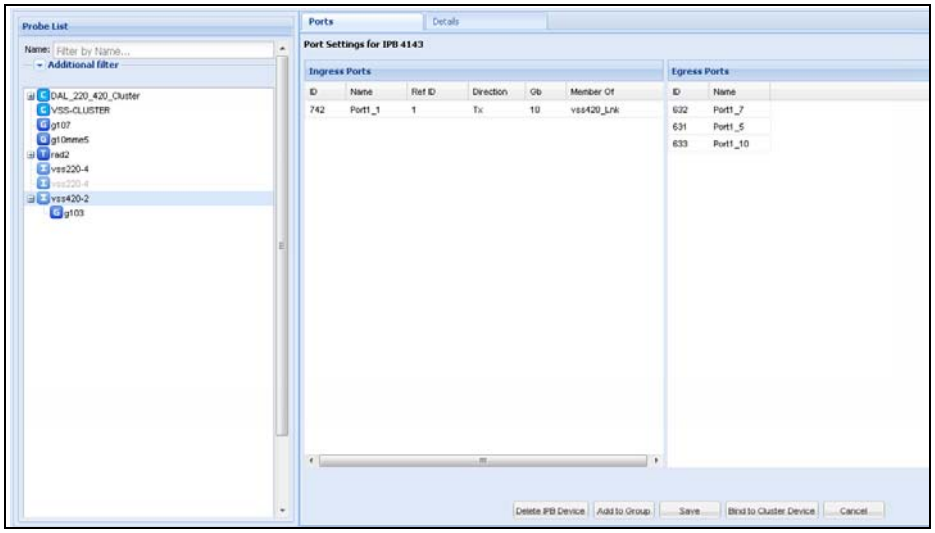



***Figure 3.9 - IrisView Admin Probe Management Tab (IPB)***

# Configure IPB Settings

Perform the following to access the IPB System Management Web GUI from within IrisView.

*Tektronix Communications service personnel must initially setup the IPB to enable IrisView to access its configuration GUI. Contact Tektronix Communications for details.*

| Step | Action |
|---|---|
| 1. | From IrisView, select **System Config** from the Admin menu. The Probes tab appears. |
| 2. | Select an IPB ("I" icon) in the Probe List (**Figure 3.10**). The right pane displays the IPBs Ports tab, Details tab, and IPB Configuration tab. |

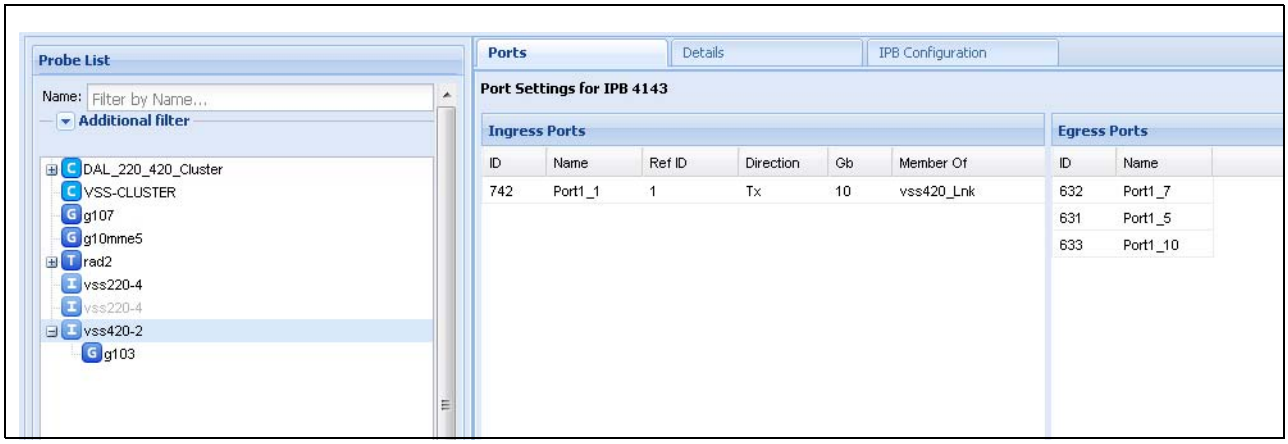



***Figure 3.10 - IrisView Probes Tab***

| Step | Action |
|---|---|
| 3. | Select the IPB Configuration tab to access the IPB System Management Web GUI (**Figure 3.11**). |

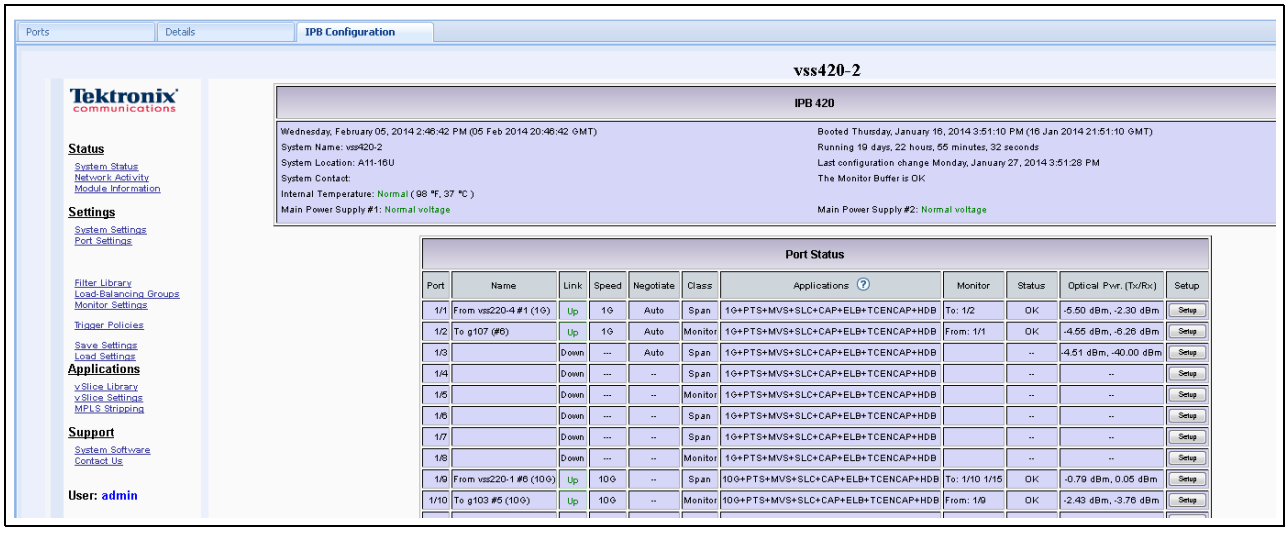



***Figure 3.11 - IrisView IPB Configuration Tab***

*Some pages on the IPB System Management Web GUI are not accessible via IrisView: Access Control, Logout, and the Software Update option on System Software page. You can only access these pages when directly accessing the IPB device.*

The main System Status page appears (**Figure 3.11**). This page consists of two panes:

- Menu Pane, which allows selection of other pages, such as System settings and Port settings.
- Port Status pane, which displays a summary of configured ports.

Refer to the ***IPB Software User Guide*** for details about configuring the IPB using this GUI.

## Bind G10s to IPB420 Devices

For first time setup, it is recommended you follow these steps to ensure optimum provisioning of the IPB.

| Step | Action |
|---|---|
| 1. | Bind the G10 probe to the IPB. On the Probes tab, select a G10 probe in the Probe List pane. |
| 2. | Click the **Bind to Aggregation Device** button in the Probe Details tab (**Figure 3.12**). This button is only visible if at least one IPB device has connected to the Iris server. A message appears warning you of the following consequences:<br>■ Any currently configured physical links on the G10 probe will be deleted<br>■ Loss of data will occur on G10 probe and IPB.<br>■ Once binding starts, the changes cannot be reverted. |

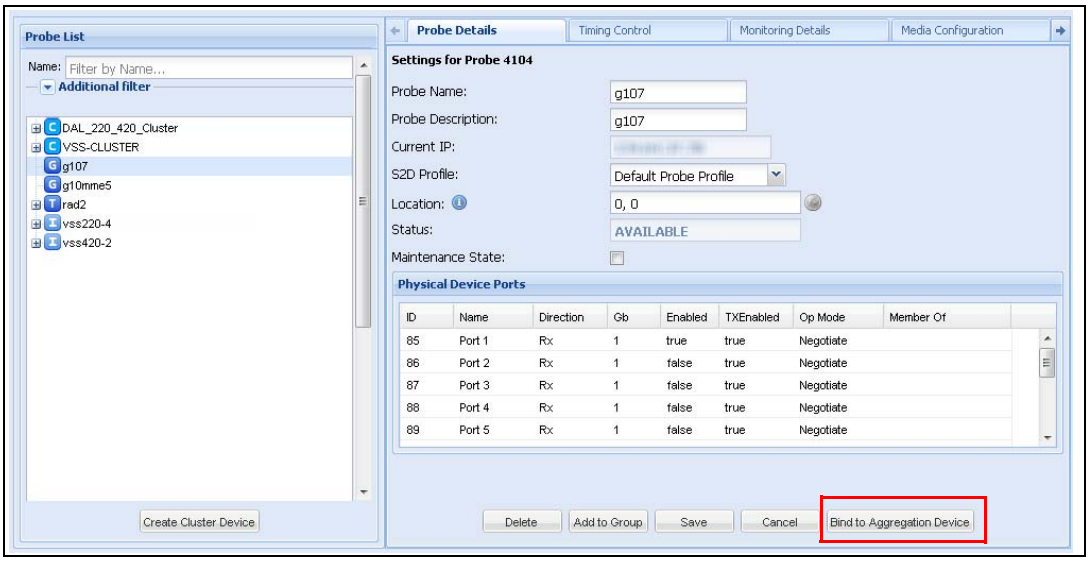



***Figure 3.12 - IrisView Admin Probe Management Tab (IPB)***

3. Select the IPB to associate with the G10 and then click OK. The G10 will be moved under the IPB device in the Probe List pane.

**If you need to unbind a G10 from an IPB420, first ensure the G10 is not currently being upgraded during execution of a software campaign. Refer to IPB Software Upgrades for details.**

4. IPB Ingress and Egress Port settings appear in the IPB Ports tab based on their configured Port Settings in the IPB GUI. Refer to ***Configure IPB Settings*** and the ***IPB Software User Guide*** for details.

   - **Ingress** ports are the equivalent of **span** ports with Time and Port stamping enabled in the IPB GUI. Both IPB220 and IPB420 devices can have ingress ports appear in Iris Admin.
   - **Egress** ports are the equivalent of **monitor** ports with TekComms format port stamping enabled. Only IPB420 devices can have egress ports appear in Iris Admin.

5. Create physical links for the IPB device. The IPBs are available in the Probe Selection drop-down menu as shown in **Figure 3.13**.

   When you select an IPB device, the ingress ports of the IPB appear in the Physical Device Ports area (**Figure 3.13**).

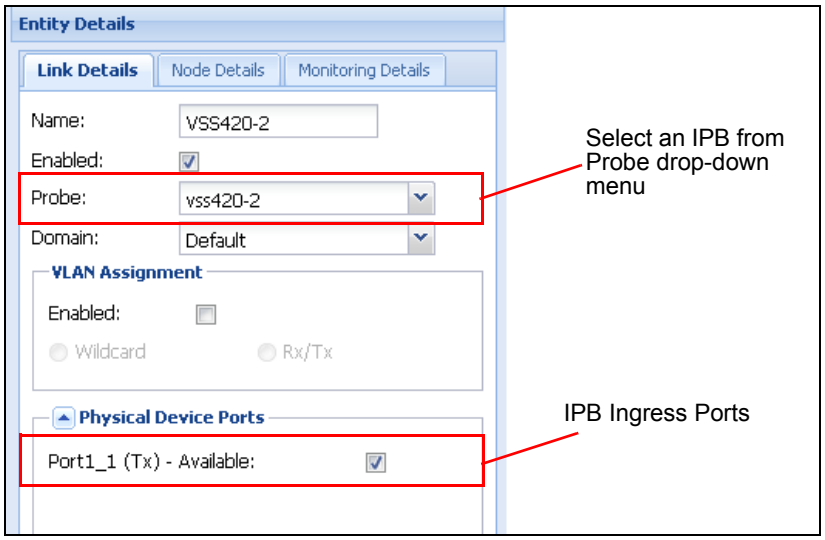



***Figure 3.13 - Iris Admin Topology Tab - Physical Links Pane***

6. Click the Physical Device Port check box and click **Save**.

7. The IPB port settings on the Probes tab displays the configured physical link in the Member Of column of the Ingress ports area (**Figure 3.17**).

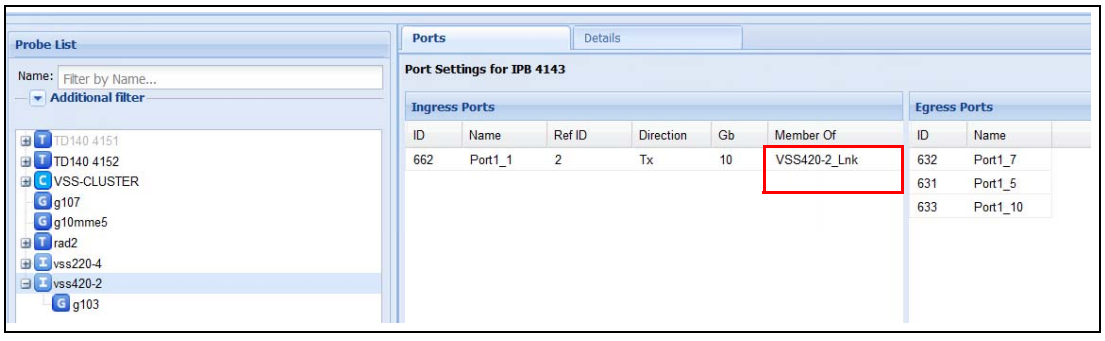



***Figure 3.14 - Iris Admin Probes Tab - Physical Link Assigned for IPB***

# Bind G10s and IPB Devices to an Aggregation Cluster

When configuring a large number of IPBs to feed data to a G10 probe, you can combine the elements in an aggregation cluster to simplify displaying statistics within Iris applications.

| Step | Action |
|---|---|

1. On the Probes tab, click the **Create Cluster Device** button to create an aggregation cluster. IPBs appear with an “I” icon and aggregation clusters appear with a “C” icon in the tree hierarchy.

2. On the Probes tab, select an IPB in the Probe List pane, and click the **Bind to Aggregation Device** button in the Probe Details tab (**Figure 3.15**).

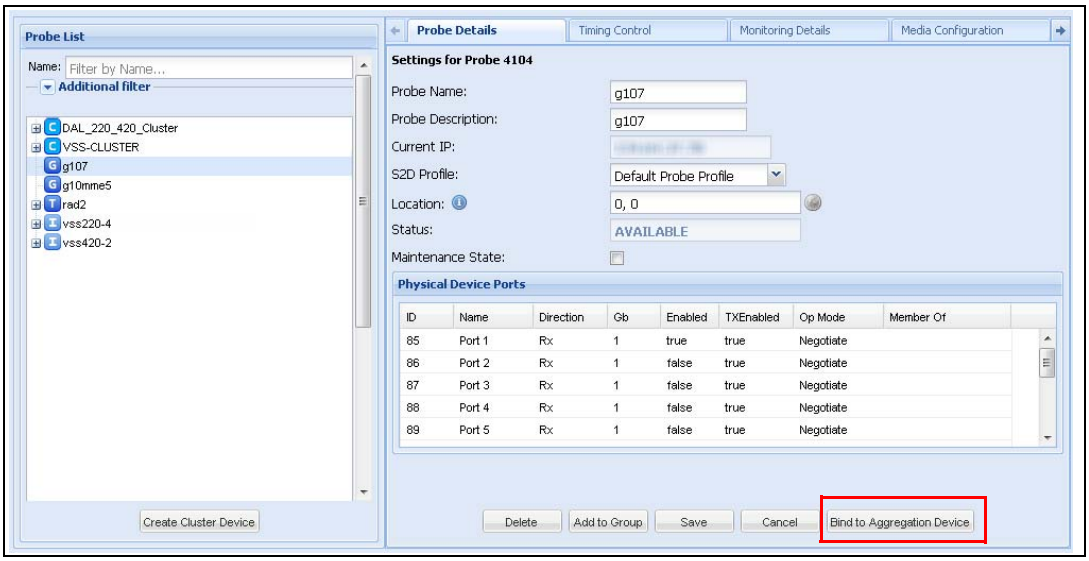



***Figure 3.15 - IrisView Admin Probe Management Tab (IPB)***

3. Select the cluster to associate with the IPB and then click OK. The IPB is moved under the cluster in the Probe List pane.

**If you need to unbind an IPB from an Aggregation Cluster, first ensure the IPB is not currently being upgraded during execution of a software campaign. Refer to IPB Software Upgrades for details.**

4. Repeat **Step 2** and **Step 3** for each IPB you want to bind to the Aggregation Cluster.

5. Once the IPB420 has been added to the cluster, you can add the G10 probe to the cluster. ***You will not be able to add the G10 probe to the cluster until the IPB420 (with configured Egress ports) has been bound to the aggregation cluster.***

6. Aggregation Cluster Ingress and Egress Port settings appear in the Cluster Ports tab based on the IPB Port Settings configured in the IPB GUI. Refer to ***Configure IPB Settings*** and the ***IPB Software User Guide*** for IPB port setting details.

   - **Ingress** ports are the equivalent of **span** ports with Time and Port stamping enabled in the IPB GUI. Both IPB220 and IPB420 devices can have ingress ports appear in Iris Admin.
   - **Egress** ports are the equivalent of **monitor** ports with TekComms format port stamping enabled. Only IPB420 devices can have egress ports appear in Iris Admin.

7. Create physical links for the Aggregation Cluster ingress ports. The clusters are available in the Probe Selection drop-down menu as shown in **Figure 3.16**. G10s and IPBs currently bound to other clusters do not appear in the Probe Selection list.

   When you select a cluster, the ingress ports of the cluster appear in the Physical Device Ports area (**Figure 3.16**).

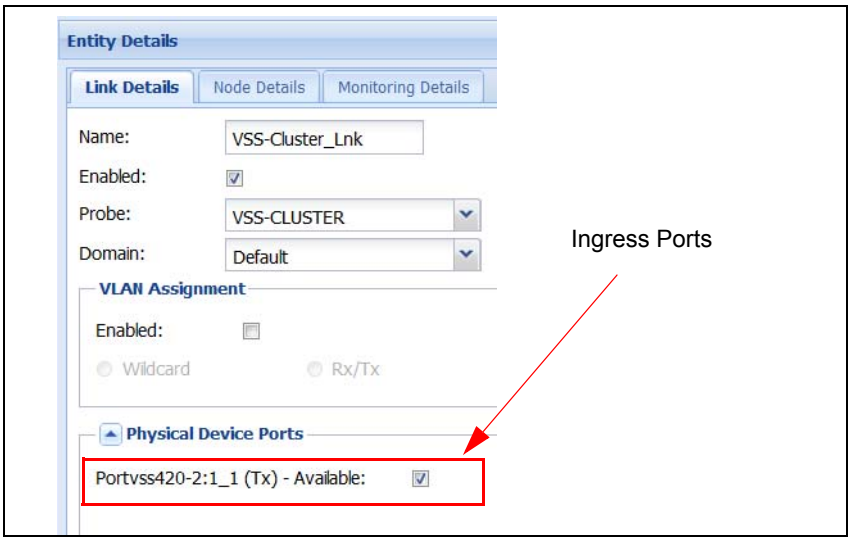



***Figure 3.16 - Iris Admin Topology Tab - Physical Links Pane***

8. The Cluster port settings on the Probes tab displays the configured physical link in the Member Of column of the Ingress ports area (**Figure 3.17**).

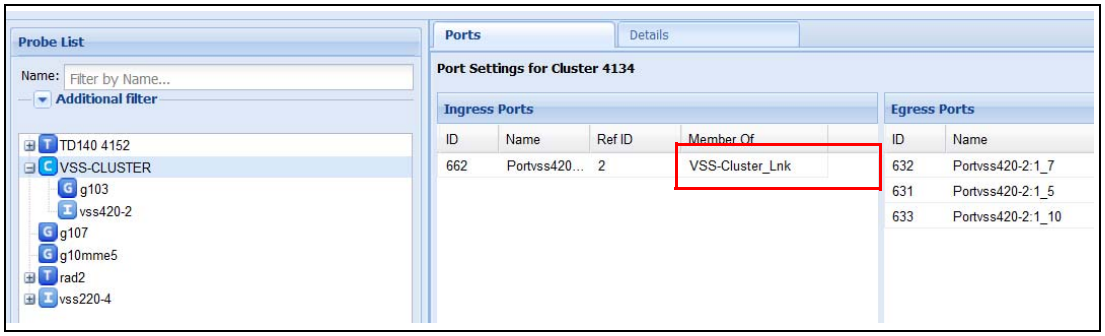



***Figure 3.17 - Iris Admin Probes Tab - Physical Link Assigned for Cluster***

# 4 IPB System Operating Specifications

## OVERVIEW

The design of the Iris Packet Broker (IPB) enables you to install it in common switching, or other equipment frame lineups found in telecommunications central office environments. The following sections list the physical specifications, power and ground requirements, and appropriate specifications to which the IPB conforms.

# IPB Physical Dimensions

Table 4.1 lists the physical dimensions for the IPB models.

***Table 4.1 - Physical Dimensions***

| Dimension | IPB220 | IPB420 |
|---|---|---|
| Measurements | 17.3 in. (w) x 27.5 in. (d) x 3.5 in. (h)<br>441 mm x 699 mm x 89 mm | 17.3 in. (w) x 27.5 in. (d) x 3.5 in. (h)<br>441 mm x 699 mm x 89 mm |
| Weight | 42 lbs.<br>19.1 kg. | 46.5 lbs.<br>21.1 kg. |
| Rack Mount | 4-post, 19-inch, front mount | 4-post, 19-inch, front mount |

# IPB Power and Heat Specifications

Table 4.2 lists the power and heat specifications for the IPB models.

***Table 4.2 - Power and Heat Dimensions***

| Dimension | | IPB220 | IPB420 |
|---|---|---|---|
| Power consumption<br>(all chassis modules installed) | AC | 450W Max<br>418W Typical | 720W Max<br>426W Typical |
| | DC | 450W Max<br>397W Typical | 600W Max<br>397W Typical |
| Heat Dissipation | AC | 1536 BTU/hr Max<br>1427 BTU/hr Typical | 2457 BTU/hr Max<br>1455 BTU/hr Typical |
| | DC | 1535 BTU/hr Max<br>1355 BTU/hr Typical | 2048 BTU/hr Max<br>1355 BTU/hr Typical |
| Voltage | AC | 100-240 Vrms, nominally | 100-240 Vrms, nominally |
| | DC | -48 VDC nominally<br>-40 VDC to -60 VDC | -48 VDC nominally<br>-40 VDC to -60 VDC |
| Amps | AC | 5.0 Amps Max | 7.2 Amps Max |
| | DC | 11.25 Amps Max | 15 Amps Max |
| Per chassis module | AC | 72W, 10G/1G SFP+ | 74W, 10G/1G SFP+<br>68W, 40G QSFP+ |
| | DC | 68W, 10G/1G SFP+ | 68W, 10G/1G SFP+<br>61W, 40G QSFP+ |

# IPB Environmental Specifications

- Temperature
  - 0 to +55°C (131°F), operating
  - -20°C (-4°F) to +100°C (212°F), storage
- Humidity: +5% to +95%, non-condensing
- Designed for NEBS Level 3

# 5 IPB Software Upgrades

## IPB Upgrades

IPB software is initially installed by Tektronix Communications system engineers. You can perform subsequent software upgrades using the IrisView Software tab to create upgrade campaigns. A campaign is a defined set of configuration parameters for upgrading software packages for one or more IPBs. Campaigns enable you to:

- Perform individual or multi-IPB software upgrades
- Schedule IPB activation during non-peak hours

## Prerequisites

Tektronix Communications loads software upgrades on the Iris server to make them available for installation on the IPB using campaigns. Available upgrades appear in the Software List pane on the Available Patches Tab.

# To Verify IPB Software Packages

You must verify the software package integrity prior to updating IPB. Follow these steps to verify software packages on the Iris server prior to installing them on the IPBs.

1. Click the Software tab, and then click the Available Patches tab. Under the Software List Pane, you will see the software packages that were loaded on the Iris server and not yet verified. IPB Software package names will be in the format REL-XXX-<version>.ISO.

2. Select the package you want and click the **Verify** button.
   - If the package is valid, it is moved to the Available Software Summary Pane.
   - If the package cannot be verified, an error message displays and the package remains in the Software List Pane. Call Customer Support for assistance.

3. In the Available Software Summary Pane, verify the patch software has the correct version and date.

# To Create a IPB Software Upgrade Campaign

Once IPB packages are verified, you can create a campaign to upload, install, and activate the software packages to one or more IPBs.

***Campaigns also support reverting back to a previous release of IPB software. However, the IPBs will become inaccessible from OAM due to the IPB configuration being reset. Therefore, you must manually backup the IPB configuration before reverting and manually restore the configuration after reverting to a previous release. Refer to Backing Up and Restoring an IPB Configuration for details. Previous release packages must be listed in the Available Patches Tab in order to be accessible for selection in revert campaigns.***

Follow these steps to create a campaign for upgrading software on one or more IPBs.

**If reverting to a previous release of IPB software, backup the IPB configuration prior to continuing with the procedure.**

| Step | Action |
|---|---|

1. Click the **Software** tab, and then click the **Probe Campaigns** tab. The Campaigns pane appears (**Figure 5.1**).

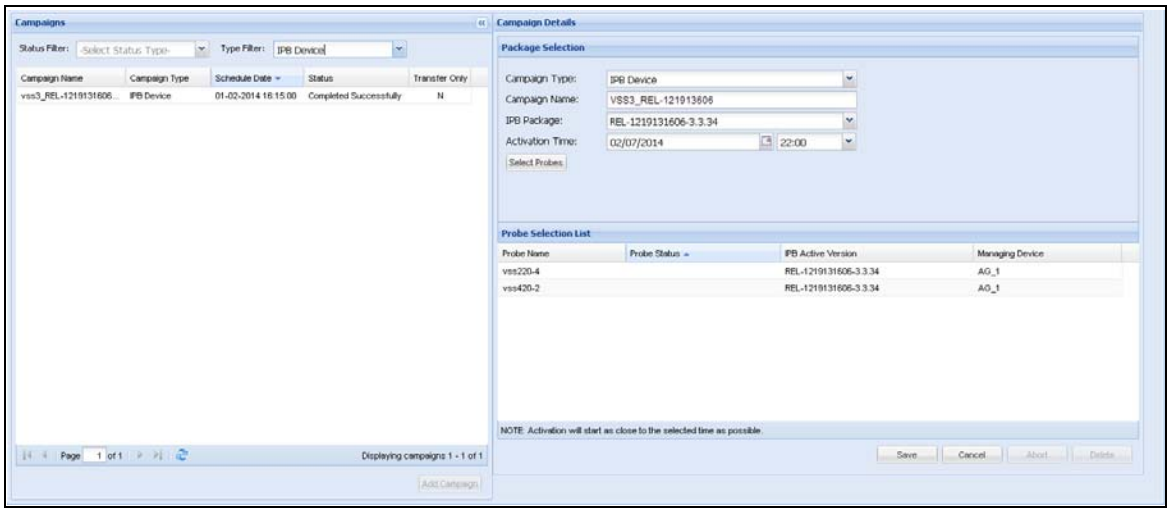



***Figure 5.1 - Probe Campaigns Tab - IPB***

2. Click **Add Campaign**; the Campaign Details Pane appears.

3. Select **IPB Device** from the Campaign Type drop-down menu.

4. Enter a name for the campaign.

5. Select a IPB package. You can choose from packages that have been verified and are listed in the Available Software Summary Pane on the Available Patches Tab.

6. Select a date and time to transfer and activate the software package. IPB package transfer is started at activation time, it is not started immediately upon campaign saving as it is done for G10 and TD140 campaigns.

**Tektronix Communications recommends scheduling activation during non-peak hours. The IPBs require a reboot after activation and this process can take up to 5 minutes. During reboot, the IPB does not send heartbeats to the Iris Server.**

7. Click **Select Probes** to open the Probe Selector dialog box. It displays a list of available Aggregation Clusters and IPB devices. Note the following about bound devices:
   - All IPBs bound to an aggregation cluster can only be upgraded together
   - All G10 probes bound to an IPB can only be upgraded together

8. Select the check boxes for the IPB devices you want to include in the campaign and click **OK**. You cannot select a IPB for the campaign if it is disconnected, or part of another current campaign. The IPBs you select appear in the Probe Selection List in the Campaign Details Pane.

9. Verify your selections and click **Save**. The IPB package transfer and activation will begin at the scheduled time. After activation, the IPB(s) reboot. It may take up to 5 minutes for applications to shutdown before the IPB(s) restart. Campaign and IPB status will update to show success or failure.

10. Monitor IPB status in the Campaign Details Pane; monitor campaign status in the Campaigns Pane.

## Upgrading G10 Probes Bound to IPB

- G10 probes bound to an IPB device must be on the same version of software (EP and SP).
- The bound G10s are upgraded at the same time within one campaign; they cannot be upgraded individually.
- If a campaign failed on a bound G10 probe, a new campaign CANNOT be scheduled immediately. The user must wait until the previous campaign completes before scheduling a new one.

## Upgrading IPBs Bound to an Aggregation Cluster

- IPBs bound to an aggregation cluster must be on the same version of software (REL version).
- The bound IPBs are upgraded at the same time within one campaign; they cannot be upgraded individually.
- If a campaign failed on a bound IPB, a new campaign CANNOT be scheduled immediately. The user must wait until the previous campaign completes before scheduling a new one.

## Campaign Status

**Table 5.1** shows campaign status messages that appear in the Campaigns Pane.

***Table 5.1 - IPB Status Messages***

| Message | Description |
|---|---|
| Transferring Packages | Iris server is transferring packages to one or more IPBs. |
| Transfer Failed | Transfer of packages failed to one or more IPBs. Review the IPB status messages for details. |
| Activation Scheduled | Transfer of packages was successful to all IPBs. Activation will begin at scheduled time. |
| Activating | Activation of all IPBs is in process. |
| Partial Success | One or more IPBs failed package transfer or failed activation. Review the IPB status messages for details. |
| Transferring Packages | Iris server is transferring packages to one or more IPBs. |

# BACKING UP AND RESTORING AN IPB CONFIGURATION

***Campaigns support reverting back to a previous release of IPB software. However, the IPBs will become inaccessible from OAM due to the IPB configuration being reset. Therefore, you must manually backup the IPB configuration before reverting and manually restore the configuration after reverting to a previous release.***

Refer to the following procedures for manually backing up and restoring an IPB configuration.

## Backup an IPB Configuration

| Step | Action |
|---|---|
| 1. | From IPB main GUI, select Save Settings to access the Save Configuration Settings page (**Figure 5.2**). |


***Figure 5.2 - Save Settings- IPB GUI***

2. Perform one of the following:
   - Click the Tap Configuration link to save the config.vss file in the Downloads folder.
   - Right-click the Tap Configuration link to save the config file to any folder.

## Restore an IPB Configuration

| Step | Action |
|---|---|

1. From IPB main GUI, select Load Settings to access the Load Configuration Settings page (**Figure 5.3**).

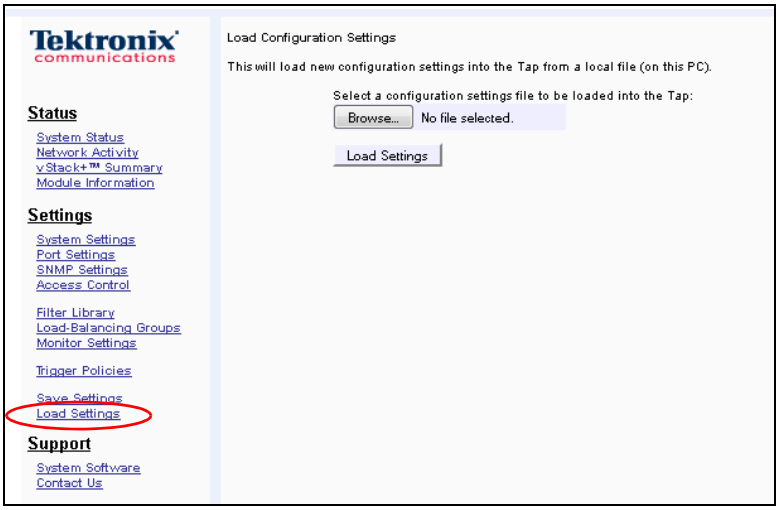



***Figure 5.3 - Load Settings- IPB GUI***

2. Click the Browse button and select a config file.
3. Click the Load Settings button.
4. Restart the IPB.

# 6 IPB Maintenance Guidelines

## IPB Maintenance Procedures

This chapter provides the maintenance procedures for the following components:

- Air Filters
- Power Supplies
- Fan Tray
- Chassis Modules

***Electrostatic discharge can damage circuits or shorten their life. Before performing any maintenance procedures, or touching electronic components, ensure that you are working in an ESD-safe environment.***

# AIR FILTERS

**Figure 6.1** shows the location of the IPB chassis air filters. ***To ensure that the IPB unit operates efficiently, Tektronix requires the air filters to be cleaned every 3 months.***

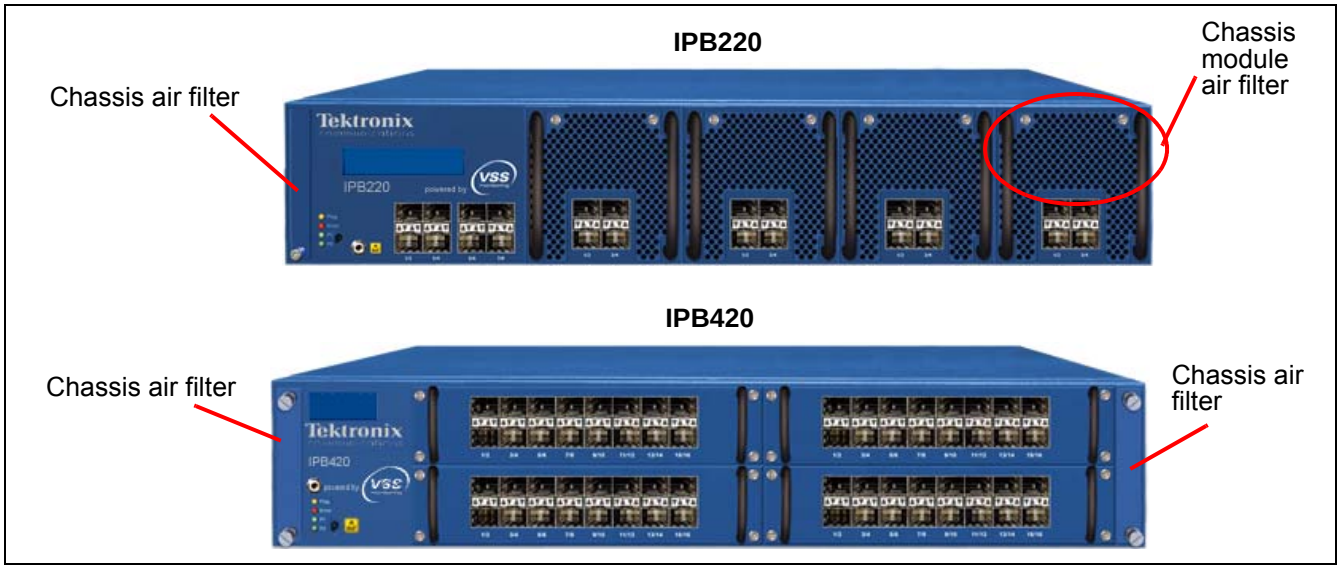



***Figure 6.1 - IPB Air Filters***

## Removing the Chassis Air Filter

Perform the following steps to remove the IPB chassis air filter. Refer to **Figure 6.1** for location of filters for each unit. You can remove the air filter while the unit is still powered on.

| Step | Action |
|---|---|
| 1. | Loosen the two retention thumbscrews and pull the air filter unit out (**Figure 6.2**). |


***Figure 6.2 - IPB Chassis Air Filter Removal***

2. Remove the filter tray screws and remove the air filter from the tray (**Figure 6.3**).

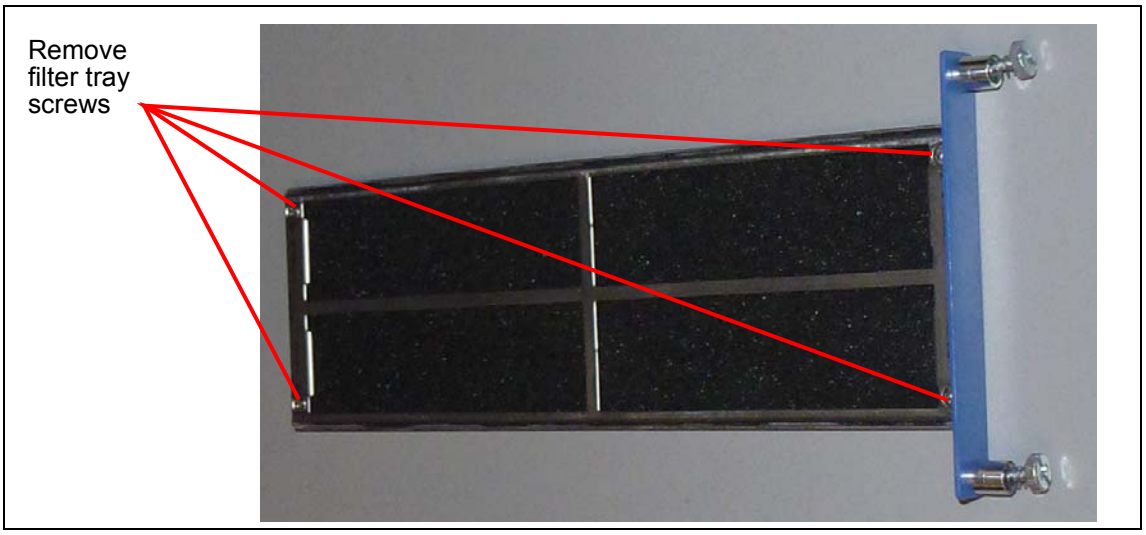



***Figure 6.3 - IPB Chassis Air Filter Removal***

3. Remove the filter from the tray.

4. When visible dust is present, clean the filter by vacuuming it or gently rinsing it with cold water.

5. Once dry, reinstall the filter.

## Removing the IPB220 Chassis Module Air Filter

Perform the following steps to remove the IPB220 chassis module air filter. You can remove the air filter while the unit is still powered on.

| Step | Action |
|---|---|
| 1. | Loosen the retention thumbscrew in the center of the chassis module and slightly pull out the air filter tray (**Figure 6.4**). |


***Figure 6.4 - IPB Chassis Air Filter Removal***

| | |
|---|---|
| 2. | Remove the filter from the tray. |
| 3. | When visible dust is present, clean the filter by vacuuming the filter or gently rinsing with cold water. |
| 4. | Once dry, reinstall the filter. |

# POWER SUPPLIES

This section provides the information needed to remove and replace the power supplies. The IPB chassis is equipped with two AC or DC power supplies, accessible from the chassis rear. Before replacing a power supply, verify that a second power supply is present and working properly.

## *Replacing a Power Supply*

*Hot power supplies may cause injury. Allow them to cool before servicing.*

Perform the following steps to replace a power supply.

| Step | Action |
|---|---|
| 1. | Perform one of the following:<br>▪ AC units: Switch the breaker of the power supply to the OFF position.<br>▪ DC units: Disconnect power from the rack power supply. |
| 2. | Remove the power cables from the power supply. |
| 3. | Loosen the three retention screws of the power supply (**Figure 6.5**). |
| 4. | Remove the power supply from the unit by pulling the handles. |

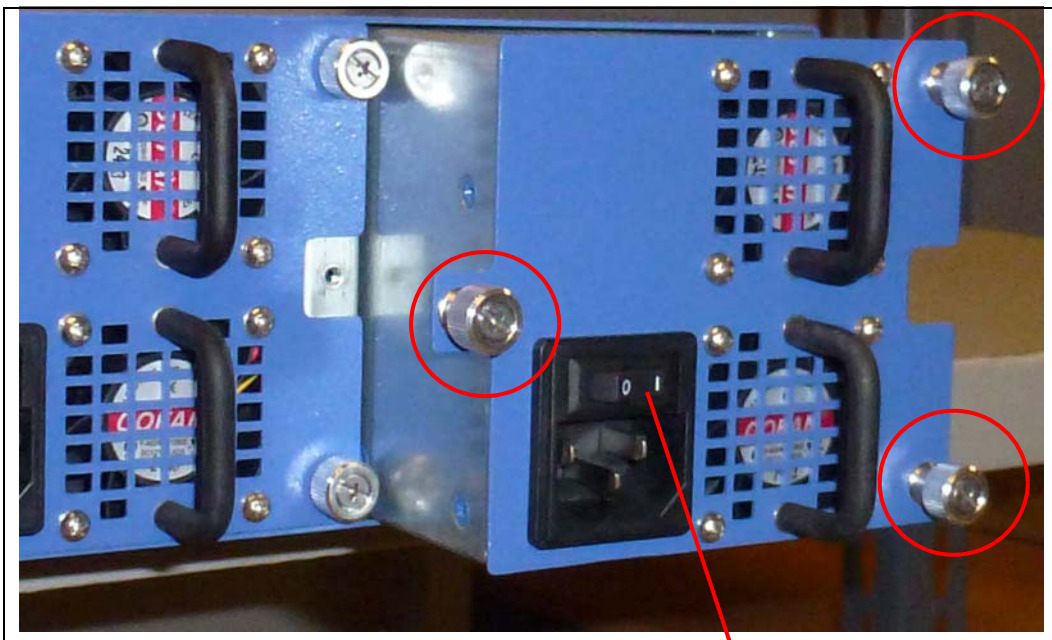



***Figure 6.5 - Loosen Retention Screws***

5. AC units: Before inserting the replacement power supply, ensure the breaker switch is OFF.

6. Insert the replacement power supply, and tighten the retention screws.

7. Reconnect the power cables to the power supply.

8. Perform one of the following:

   - AC units: Switch the breaker of the power supply to the ON position.
   - DC units: Reconnect power to the rack power supply.

## FAN TRAY

If the fan tray starts to fail or has failed, it can be removed while the unit is still powered. Perform the following steps to remove the IPB fan tray.

| Step | Action |
|---|---|

1. Loosen the three retention thumbscrews and pull the fan tray out (**Figure 6.6**).

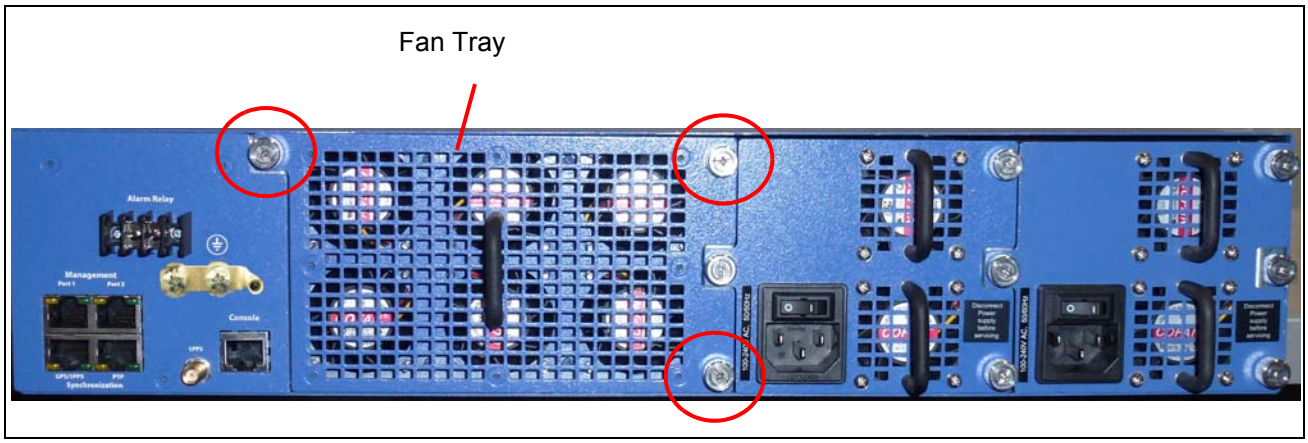



***Figure 6.6 - IPB220 and IPB420 Fan Tray***

2. Insert the replacement fan tray, and tighten the retention screws.

# CHASSIS MODULES

***Installed features can vary per chassis module, so it is very important to ensure you are replacing a chassis module with the same features as the original. Contact Tektronix Communications for assistance in chassis module replacement.***

Perform the following steps if a chassis module needs to be replaced due to an actual or suspected failure:

| Step | Action |
|---|---|
| 1. | Loosen the thumb screws of the existing cover plate or chassis module. |

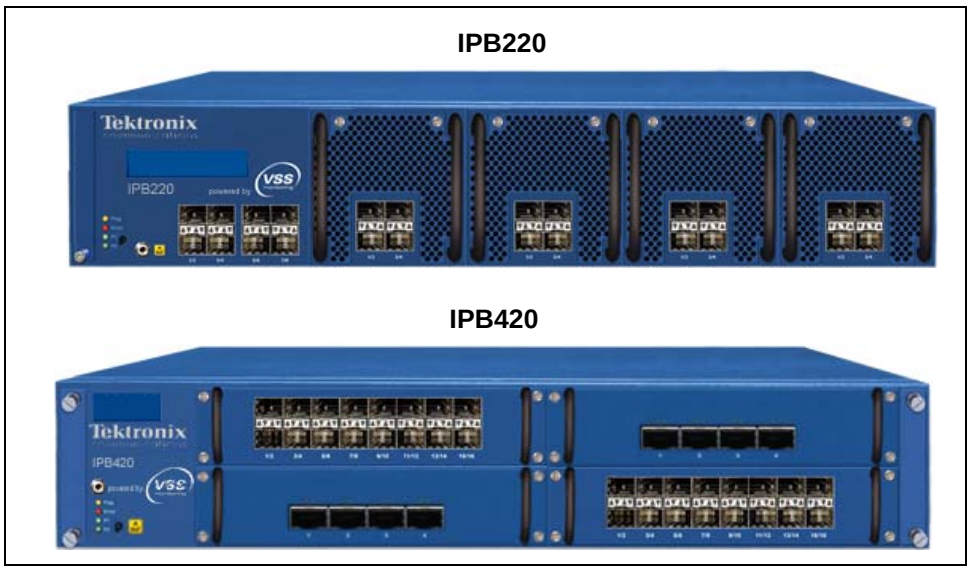



***Figure 6.7 - IPB Chassis Modules***

2. Remove the cover plate or chassis module.
3. Insert the new chassis module, ensuring it is completely seated.
4. Tighten all thumb screws.