Imagine COMMUNICATIONS™

Installation, Configuration, and Operation Manual

Platinum™ IP3 Controller

Edition C

175-100449-00

Platinum IP3 Controller
Controller

Installation and Operation Manual

Edition C

April 2013

175-100449-00

Publication Information

This publication is designed to assist in the use of the product as it exists on the date of publication of this manual, and may not reflect the product at the current time or an unknown time in the future. This publication does not in any way warrant description accuracy or guarantee the use for the product to which it refers.

Imagine Communications reserves the right, without notice to make such changes in equipment, design, specifications, components, or documentation as progress may warrant to improve the performance of the product.

Trademarks

Contact Information

Imagine Communications has office locations around the world. For locations and contact information see: **http://www.imaginecommunications.com/contact us/**

Support Contact Information

For support contact information see:

- Support Contacts: http://www.imaginecommunications.com/services/technical support/
- eCustomer Portal: http://support.imaginecommunications.com

Contents

Preface

Manual Information

Purpose

This manual details the features, installation, operation, maintenance, and specifications for the Platinum IP3 Controller.

Audience

This manual is written for engineers, technicians, and operators responsible for installation, setup, maintenance, and/or operation of the Platinum IP3 Controller.

Revision History

Table 1-1 Revision History of Manual

Edition	Date	Comments
A	December 2012	Preliminary Version
B	January 2013	First Release
C	April 2013	Second Release corresponding to version 1.1 of the Controller firmware.

Writing Conventions

This manual adheres to the following writing conventions.

Table P-2. Writing Conventions

Term or Convention	Description
Bold	Indicates dialog box, property sheet, field, button, check box, list box, combo box, menu, submenu, window, list, and selection names
Italics	Indicates email addresses, names of books and publications, and first instances of new terms and specialized words that need emphasis
CAPS	Indicates a specific key on the keyboard, such as ENTER, TAB, CTRL, ALT, DELETE
`Code`	Indicates variables or command-line entries, such as a DOS entry or something you type into a field.

Table P-2. Writing Conventions *(Continued)*

Term or Convention	Description
>	Indicates the direction of navigation through a hierarchy of menus and windows.
hyperlink	Indicates a jump to another location within the electronic document or elsewhere
Internet address	Indicates a jump to a Web site or URL
Note:	Indicates important information that helps to avoid and troubleshoot problems

Obtaining Documents

Product support documents can be viewed or downloaded from our website. Alternatively, contact your Customer Service representative to request a document.

Unpacking/Shipping Information

Unpacking a Product

This product was carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble-free service.

1. Check equipment for any visible damage that may have occurred during transit.
2. Confirm that you have received all items listed on the packing list.
3. Contact your dealer if any item on the packing list is missing.
4. Contact the carrier if any item is damaged.
5. Remove all packaging material from the product and its associated components before you install the unit.

   Keep at least one set of original packaging, in the event that you need to return a product for servicing.

Returning a Product

In the unlikely event that your product fails to operate properly, please contact Customer Service to obtain a Return Authorization (RA) number, and then send the unit back for servicing.

Keep at least one set of original packaging in the event that a product needs to be returned for service. If the original package is not available, you can supply your own packaging as long as it meets the following criteria:

- The packaging must be able to withstand the product's weight.
- The product must be held rigid within the packaging.
- There must be at least 2 in. (5 cm) of space between the product and the container.
- The corners of the product must be protected.

Ship products back to us for servicing prepaid and, if possible, in the original packaging material. If the product is still within the warranty period, we will return the product prepaid after servicing.

Safety

This manual contains safety precautions and recommendations specific to the IP3 controller product. The IP3 controller is rack-mountable using rack rails provided with the unit, and it is strongly recommended to do so. See the specifications section for the electrical current load of the product, and connect the redundant power supplies to electrical circuits which are each capable of supplying the full load of the unit. The IP3 controller is forced-air cooled; to prevent marring during handling and transit there are clear plastic coatings which cover the metallic surfaces and obstruct some of the air ventilation holes. Be sure to remove all of these clear plastic coatings before putting the unit into service.

IMPORTANT! Only qualified personnel should perform service procedures.

Safety Terms and Symbols in this Manual

WARNING

Statements identifying conditions or practices that may result in personal injury or loss of life. High voltage is present.

CAUTION

Statements identifying conditions or practices that can result in damage to the equipment or other property.

Standards

Refer to the **IP3 Safety and Standards Manual** for details.

Waste from Electrical and Electronic Equipment (WEEE) Compliance

The European Union (EU) Directive 2002/96/EC on Waste from Electrical and Electronic Equipment (WEEE) deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products. The objective of the WEEE Directive is to assign the responsibility for the disposal of associated hazardous waste to either the producers or users of these products. As of August 13, 2005, the producers or users of these products were required to recycle electrical and electronic equipment at end of its useful life, and may not dispose of the equipment in landfills or by using other unapproved methods. (Some EU member states may have different deadlines.)

In accordance with this EU Directive, companies selling electric or electronic devices in the EU will affix labels indicating that such products must be properly recycled. (See our website for more information.) Contact your local sales representative for information on returning these products for recycling. Equipment that complies with the EU directive will be marked with a WEEE-compliant emblem, as shown in **Figure 1-1**.

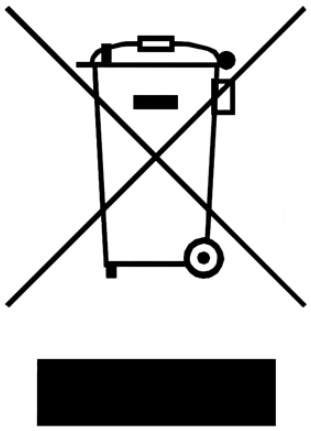


Figure 1-1 WEEE Compliance Emblem

1 Overview

IP3 Controller Overview

The IP3 Controller is the routing protocol engine of the IP3 system and provides a centralized point-of-control for the configuration and operation of the IP3 Routing System. It provides a unified database and protocol engine for routing status and control clients, and provides protocol aggregation and support for configuration, status, and alarm management of the routing system. The IP3 Controller's flexible routing system execution allows for connecting sources and destinations at runtime. The high level of flexibility allows the control system to be aware of different audio channel configurations on different devices, route the signals based on the actual channel alignments as defined in the database, and perform break-away takes based on automation and human control.

The flexibility of the system puts the user in control of complex multichannel audio systems – allowing exact definition of relationships between video and audio, and assignment of attributes to organize the audio channels into sensible services.

The IP3 Controller includes a powerful but easy to use web-based tool for configuration and operation of your IP3 System. Packaged in a commercial 1RU computing server, the IP3 Controller connects to IP3 frames via Ethernet, and to Magellan control panels and other control sources via (separate) Ethernet. A high-level view of a typical system is shown below.

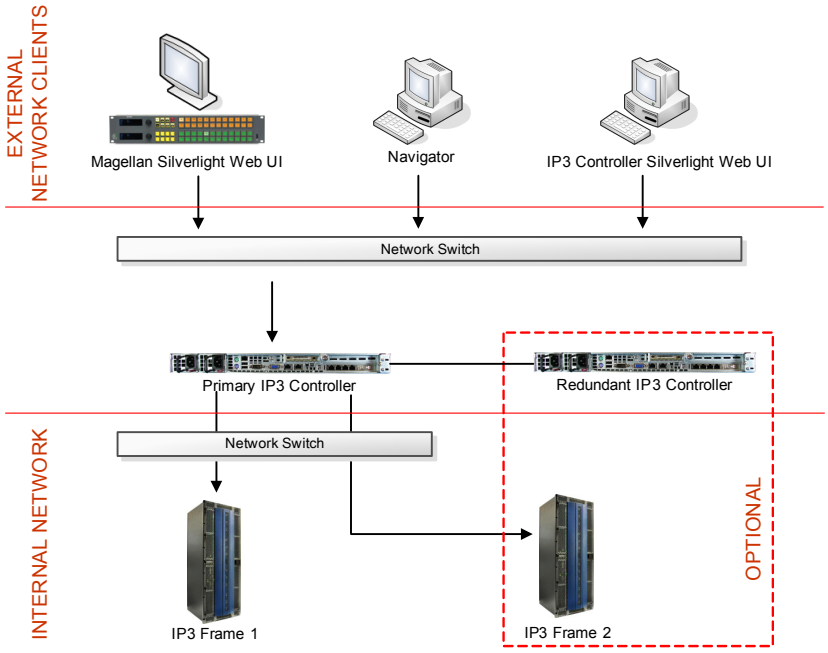


Figure 1-1 IP3 High Level Overview

Features

The IP3 Controller provides or intermediates the following major functions of the routing system:

- Maintenance of the Routing Database (sources, destinations, tielines, etc)
- Routing Control Protocol termination for Northbound Control clients
- Harris Logical Routing Protocol (LRC)
- Harris XY Stream Protocol (XY-Net)
- Management, Configuration, and Status of the routing system
- Event Logging
- Firmware Version Management and Upgrade management
- Web-Browser based Management of the routing system
- Integration with CCS-Navigator and Magellan NMS
- Alarm Generation and Management
- Parametric Control of Processing functions in the routing system
- Signal Route determination and execution across multiple physical IP3 frames
- Tieline Management and Control, including tielines to/from 3rd-party routers

For systems where there is a mix of IP3 and other Harris routing or processing equipment, the IP3 Controller integrates tightly with the Harris unified Command and Control System, CCS-Navigator.

The IP3 Controller acts as an LRC protocol server, and as an XY-NET protocol server, processing routing requests from these protocols into routes across the IP3 routing frames and other routing frames, and generating appropriate control protocol commands to each of those frames. Status from the various frames is aggregated back into full-route status and returned into all of the original protocols to all of the connected clients.

The IP3 Controller enables discover, control, and monitoring of IP3 frames which together form a complete non-blocking router. In the 1.0 release, this is confined to two frames using the IP3 **System Expansion** technique. If a specific configuration requires more than one non-blocking router system (perhaps interconnected by tielines), then separate IP3 Controllers are required for each non-blocking routing complex within the system.

The IP3 Controller can be operated in a full 1:1 redundancy scenario for high availability applications. See **Controller Redundancy**.

Software upgrades to IP3 frames and their modules are done directly by the IP3 Controller. See **Firmware Foundry**.

The user interface of the IP3 Controller is a browser-based application based on Microsoft Silverlight 5.0. It can run in any web browser which supports Microsoft Silverlight 5.0. See **IP3 Controller Web UI**

The IP3 Controller is typically integrated within an overall command and control environment which undertakes higher-level functionality such as alarm logging and system-level aggregation of faults. To support this kind of integration, the IP3 Controller aggregates all of the controls and alarms from the frames underneath it, and presents them through unified northbound protocols to upper-layer management systems such as CCS-Navigator and Magellan NMS.

Controller Protocols

- The IP3 Controller acts as a CCS-P proxy between northbound CCS-P Controllers and the various controllable elements in the Router Frames below.
- The Silverlight control clients communicate with the IP3 Controller using a combination of Microsoft. NET WCF, SOAP over TCP, and CCS-P protocols.
- The IP3 Controller is responsive to LLDC protocol as a client device.
- The IP3 Controller acts as an LRC routing protocol server and translates LRC routing commands into lower-level routing commands across the various IP3 frames.
- The IP3 Controller acts as an XY-Net routing protocol server and translates XY-Net routing commands into lower-level routing commands across the various IP3 frames.
- Status of any routing operation is translated and returned back to all LRC and XY-Net clients.
- The IP3 Controller acts as a CCS-P server, exposing its own configuration items and also acting as a proxy for the configuration and status items of the frames and modules of the IP3 routing system it is managing.

Using the Controller

Controller Functionality

Table 1-1 Controller Functionality

Routing System Configuration	See **Routing in IP3**
Controller Discovery	See **Discover the IP3 Controller**
Adding Frames	See **Hardware Foundry**
Dashboard View with System Information and Status	See **Navigation**
Parametric Device Control for Modules	See **Parametric Control**
Frame specific Parameters	See **Frame Parameters**
System Configuration and Monitoring	See **Configuring the System**
Upgrades for Frames, Resource Cards, Modules	See **Firmware Foundry**
Upgrades for Controllers	See **Upgrading Controller Firmware**
Controller Redundancy Support	See **Controller Redundancy**
Access Rights	See **User Foundry**
Logging	See **Logging Server**

Setting up the IP3 Controller System

See **Configuring the System** for details on setting up the IP3 Controller system.

IP3 Controller Dashboard

The IP3 Controller dashboard provides:

- A Physical view of the defined Routing system
- A List View of Modules
- Visual Alarm Status

For more details, see **Navigation**.

System and Network Requirements

The IP3 Controller is shipped on a commercial server-class computing platform. It is expected that the installation will include network connections of at least 100-Base-T (preferably 1000-Base-T) Ethernet between the IP3 Controllers and the IP3 Frames.

IP3 Controller Web UI

Customer-furnished computers can be used to connect to the Controller. The IP3 Controller Web UI is Silverlight based, so Browsers on those computers must meet the minimum requirements specified for support of Microsoft Silverlight 5.0 or higher.

Note: *Ensure the appropriate Silverlight version is used based on the Operating System running on the PC, be it 32-bit (x86) or 64-bit (x64). The officially supported browser is Internet Explorer 8 or 9.*

Magellan Control Panel Web UI

The Magellan Control Panel Web UI is also Silverlight based, and the same requirements apply as stated above.

PCs running Navigator

Navigator needs be installed on a separate PC running either Windows 7 Professional (both 32-bit and 64-bit operating systems are supported), Windows XP (SP 3), Windows 2003 Server (SP2).

Controller IP Address

The IP3 Controller ships with a pre-configured IP Address - ***192.168.100.247***. Use this IP Address to log into the system through the Silverlight UI and then change the IP Address if required.

2 IP3 Controller Setup

IP3 Controller Application Overview

The IP3 Controller runs on a server-class computing platform provided by Harris. The IP3 Controller services, and some related applications and libraries, come pre-installed on the unit and start at power-on automatically.

Generally, the IP3 Controller is accessed remotely using routing protocols and web service technologies; however, it is necessary during installation, diagnostic, and service operations to be able to access the console of the IP3 Controller, either through a KVM or through Remote Desktop techniques.

Default Controller PC Credentials (Username/Password)

The pre-installed **username** on the IP3 Controller machine is **harris**, and the pre-installed password for that username is **harrisadmin**. This login has full administrative rights on the local machine.

Upgrading Controller Firmware

Note: *If your software package includes specific upgrade instructions, follow those instead of the below.*

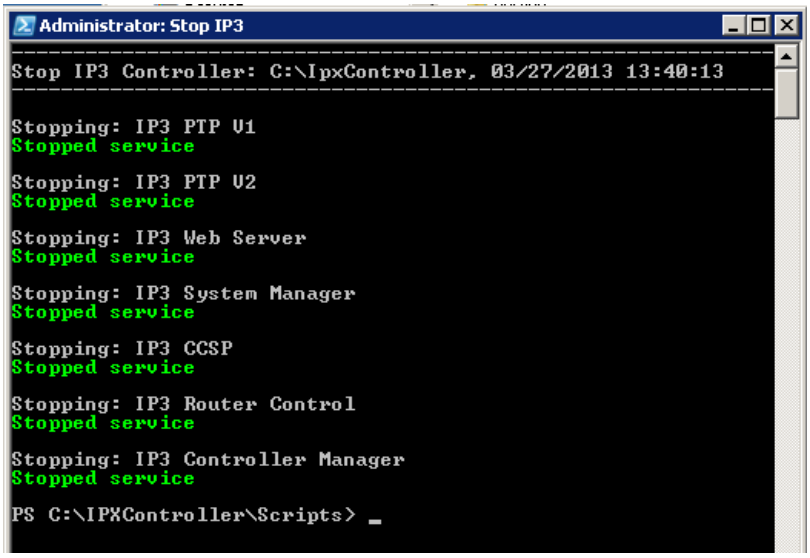
The following steps are involved in upgrading Controller Firmware:

Pre-Installation Steps

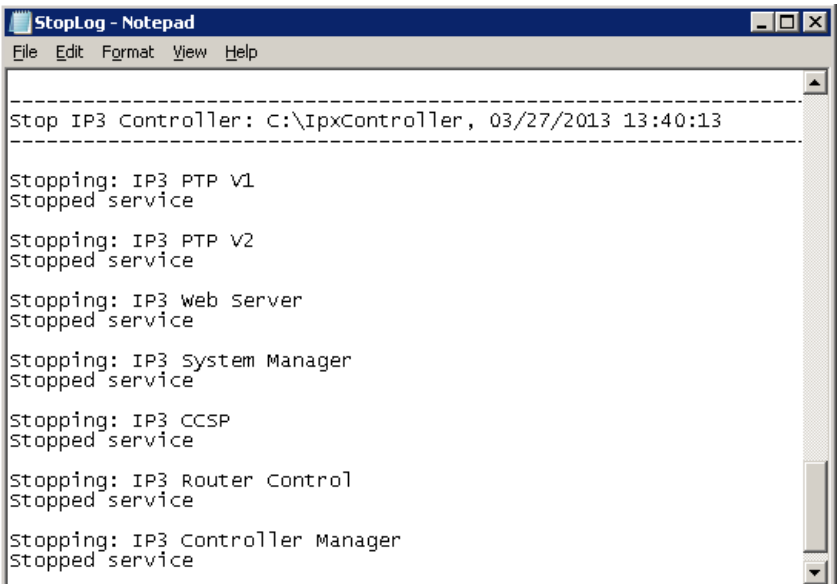
1 First double click the **Stop IP3** link (script) on the Desktop to stop IP3 services.

a A console opens up and prompts for confirmation to stop IP3 Controller Services.

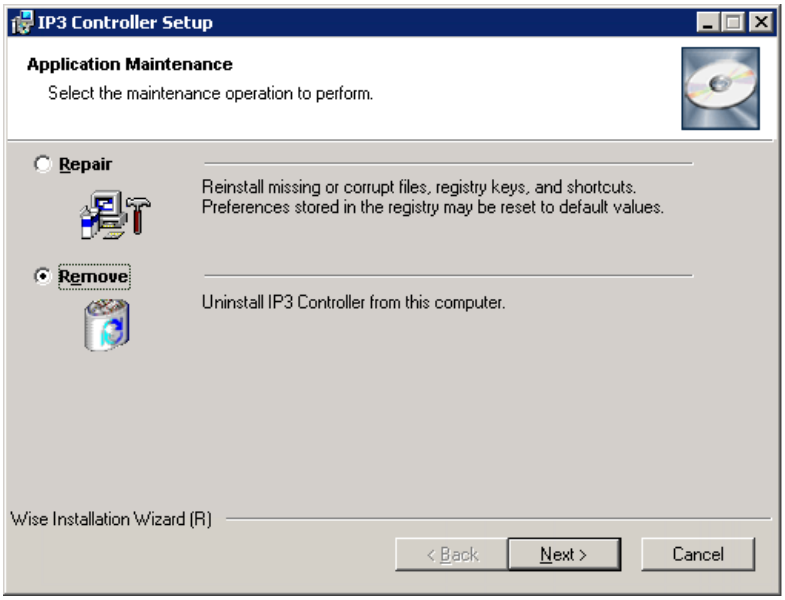
b Enter **Y** for Yes and hit enter. Wait for all services to stop



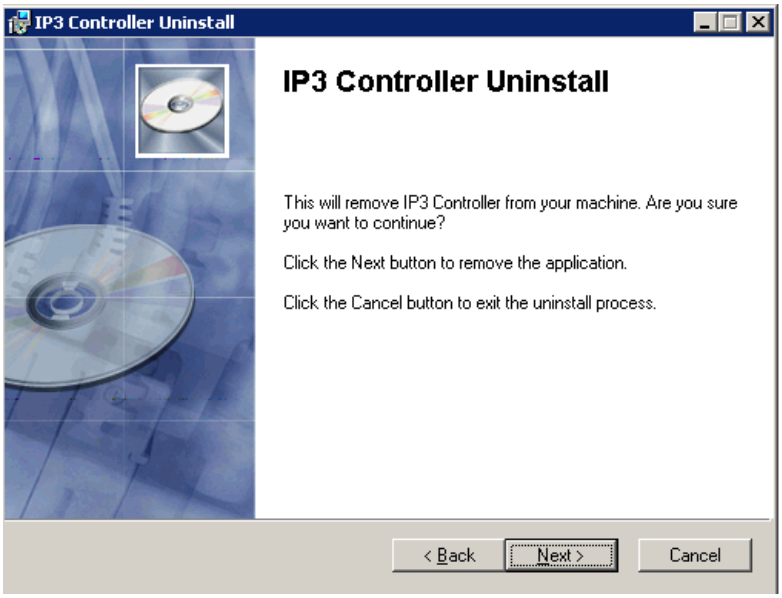
c You can also confirm by reviewing the last entry in the C:\IPXController\StopLog.txt log file.



2 Run the **IP3 Controller** installation package. If an installed version of the Controller is detected, it will provide an option to remove it. Select the **Remove** option to uninstall the IP3 Controller.



3 Click Next to start uninstallation of the IP3 Controller.

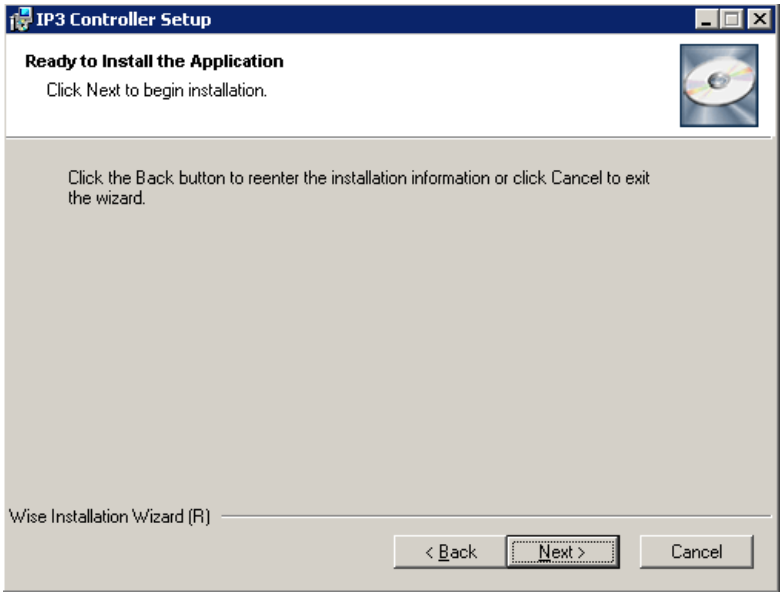


4 When completed, click **Finish**.

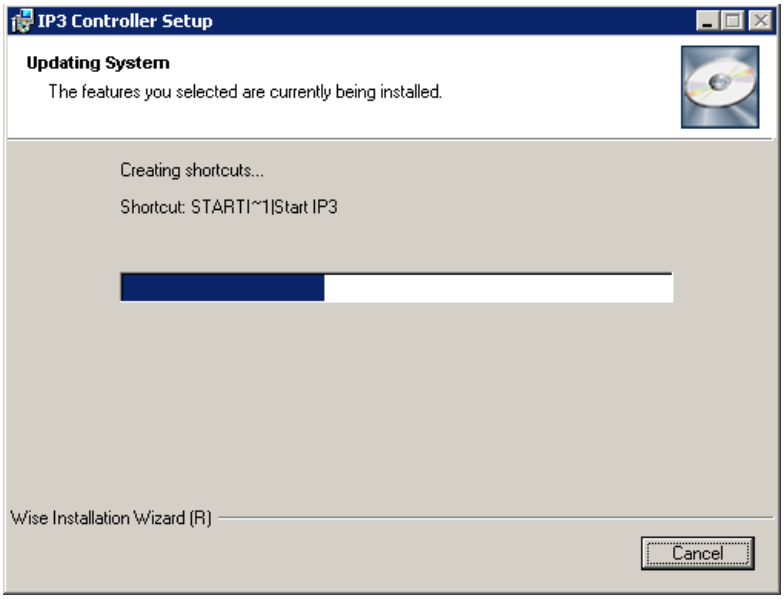
Installation

1 Run the **IP3 Controller** installation package. Click **Next** on the Welcome screen.

2 Click **Next** again to start the installation.



3 Installation starts and progress will be indicated**.**



4 Once complete, you will see the a message confirming successful installation.

Controller Ethernet Settings

Each IP3 Controller has **six (6) Ethernet interfaces**, and requires use of at least two of them to perform correctly.

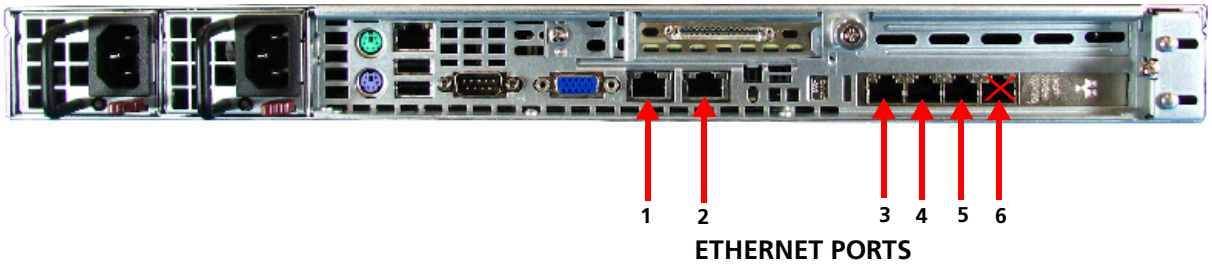


Figure 2-1 Ethernet Ports 1-6 on the IP3 Controller

Note: *While all six Ethernet interfaces need to be configured, ENET6 is not currently used, and should not be connected even though it needs to be configured. ENET5 has to be set in order for the Controller to be able to connect to IP3 frame(s). All 6 ENETs should have unique IP addresses.*

Figure 2-2 shows the role of the six interfaces in a large-scale system.

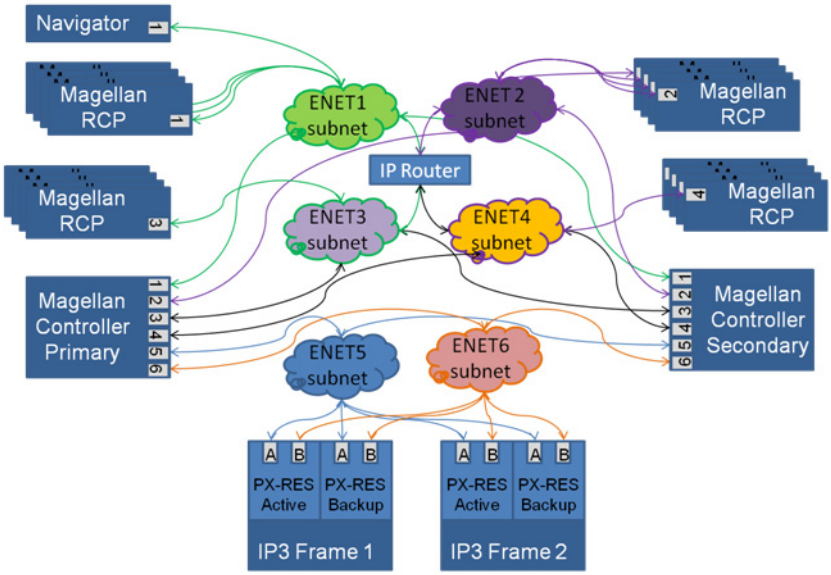


Figure 2-2 Ethernet Interfaces on the IP3 Controller

ENET5

ENET5 is a private network between the IP3 Controllers and the IP3 Frames. While there are some maintenance operations which require network access to the IP3 Frames, they can all be done from the IP3 Controller which has access to those networks. Often the private range **192.168.x.x** family of addresses are used for these private networks (as in the example below).

ENET1

ENET1 is the primary "External" network interface for the IP3 Controllers, and must be a distinct subnet from **ENET5**. This subnet is generally interconnected with other control points in the facility, such as automation or tally systems, and needs to be coordinated within the general IP networking schema for the facility. The IP3 Controller(s) each require an address on **ENET1**, and additionally, a third address on **ENET1** is required which will be "shared" between the two IP3 Controllers to route traffic always to the active Controller.

Note: *The IP3 Controller ships from the factory with an address of* ***192.168.100.247*** *on* ***ENET1****, but it is expected that this will be changed on installation.*

ENET2

ENET2 is a secondary "External" network interface on the IP3 Controllers; it can be on a different subnet from **ENET1** or be on the same subnet. Each IP3 Controller requires an address for **ENET2**, and additionally a shared address is required similar to **ENET1**. Facilities use **ENET2** to segment traffic in case of switch failures, or to enable separation of the network with the control panels from the network that connects to automation, or for other reasons unique to each facility.

ENET3 and ENET4

ENET3 and **ENET4** are similar in use to **ENET2**, used for separating traffic between different domains within the facility which must all eventually communicate with the router. Even though **ENET3** and **ENET4** each require a unique IP address, note that these do not use a third "shared" IP address like **ENET1** and **ENET2** do.

The IP3 Controller requires that all six ENET interface be **enabled** from an operating system perspective, and that addresses be provisioned for all six. If ENET2, ENET3, or ENET4 is not being used in a given facility, then the best approach is to assign them addresses on a harmless subnet (like an unused part of the private range) and leave them unconnected (no link). Note that ENET6 should also be configured but left unconnected.

Table 2-1 Default IP Addresses

ENET	IP Address	Subnet
ENET1	192.168.100.247	255.255.255.0
ENET2	192.168.100.248	255.255.255.0
ENET5	192.168.100.249	255.255.255.0
ENET3	192.168.101.247	255.255.255.0
ENET4	192.168.101.248	255.255.255.0
ENET6	192.168.101.249	255.255.255.0

Controller Services

Verify that the IP3 system services started up correctly.

There are SEVEN Services that run on the IP3 Controller machine:

- IP3 CCSP (CCSP Proxy Services)
- IP3 Controller Manager
- IP3 Router Control
- IP3 System Manager
- IP3 Web Server
- IP3 PTP V1 (see **Time Synchronization**)
- IP3 PTP V2 (see **Time Synchronization**)

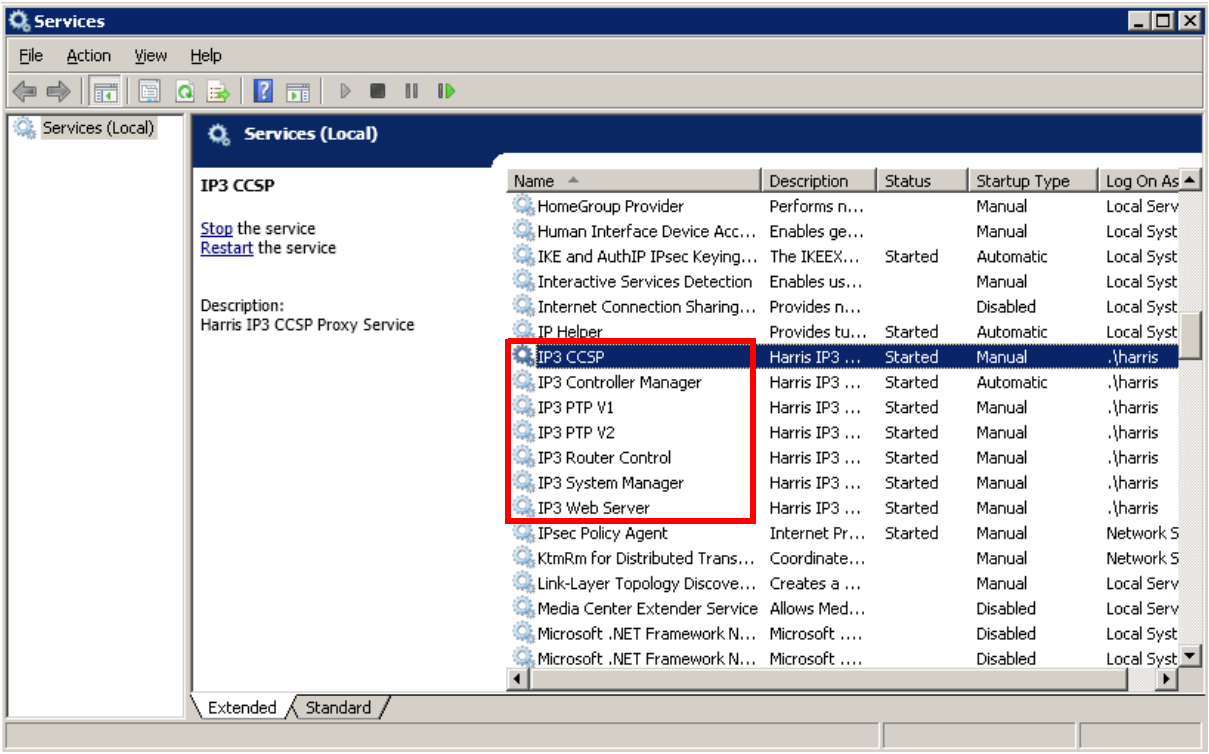


Figure 2-3 IP3 Controller Services via Windows Services

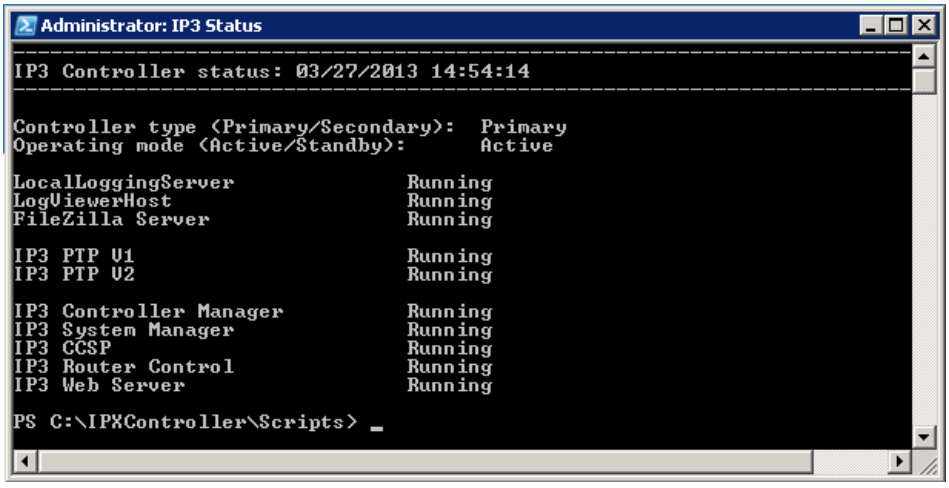


Figure 2-4 IP3 Controller Services via IP3 Status

Time Synchronization

Note: *There are two possible Controller configurations: Single IP3 Controller and a redundant configuration consisting of a Primary and Secondary Controller.*

The PTP Services (V1 and V2) perform time synchronization between the Primary Controller, the Secondary Controller, and the PX-RES (IP3 Frame). Both system level services automatically initiate on startup or restarting, and are deployed in the form of Windows Services.

- PTPV1 syncs time between the Primary and Secondary Controllers. It is bound to ENET 5.
- PTPV2 syncs time between the Primary Controller and the PX-RES (IP3 Frame). It is bound to ENET 5.

The Master clock (master time reference) is either the Primary or Secondary Controller, but never the PX-RES; the PX-RES is always a Slave. The Slave Controller (Primary or Secondary) that is not the Master syncs with the master every second or so. If at any time it finds there is no response from the Master, that Controller then takes over as the Master. The Master Clock arbitrates through self-administration and cannot be set/fixed manually.

Note: *The* **IP3 Time Sync Status** *shortcut provides time synchronization status and Controller states (client, server, unknown).*

The Grandmaster clock is elected through a Best Master Clock (BMC) algorithm that uses network latency and other measurement statistics to determine which clock is most suitable as a master. If either Primary or Secondary controller is physically removed, or disconnected from the network, then the remaining one (that is still connected to the PX-RES) will automatically take over as a Master. If another controller is re-connected, then it may or may not be elected as Master through BMC arbitration.

Controller Scripts

When the Controller is installed, shortcuts to some utility scripts (located in C:\IpxController\Scripts) are created directly on the Desktop.

Stop IP3

Stops the IP3 Services

Start IP3

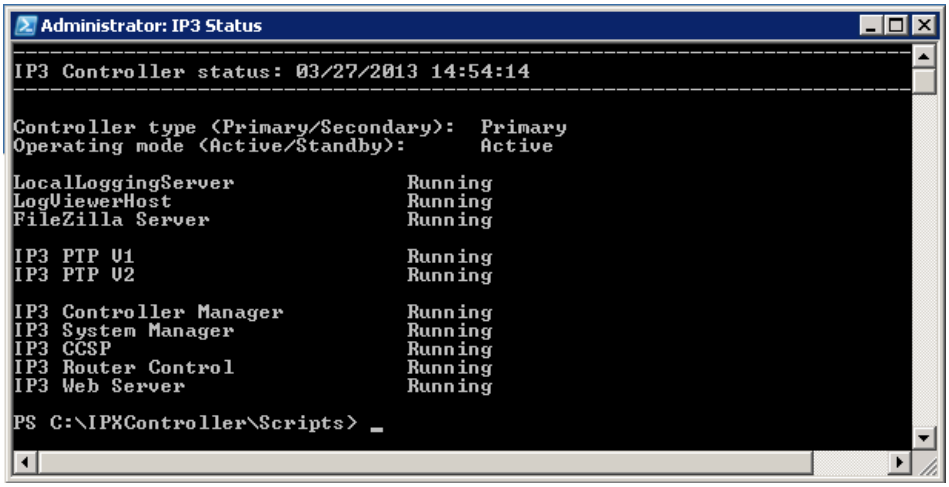
Starts the IP3 Services

IP3 Backup

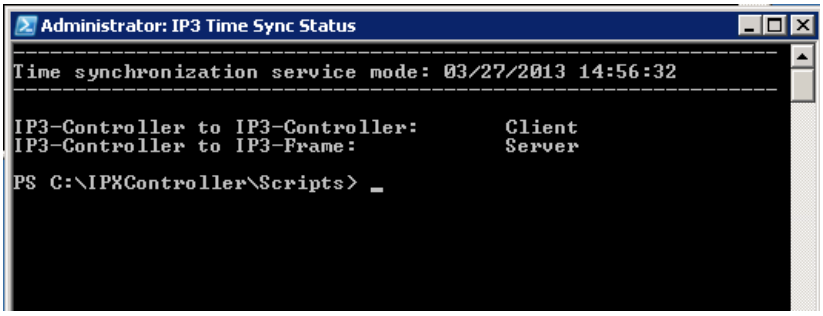
Backs up IP3 Data

IP3 Status

Provides status on all IP3 services, the Logging Server, and FileZilla and indicates if they are running. Also lists the currently active Controller (whether Primary or Secondary) and what operating mode it is in (Active or Standby).



IP3 Time Sync Status



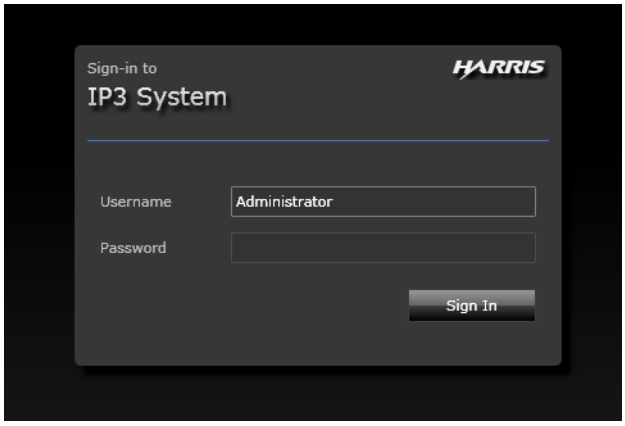
3 IP3 Controller - Initial Steps

Launching the Controller Interface

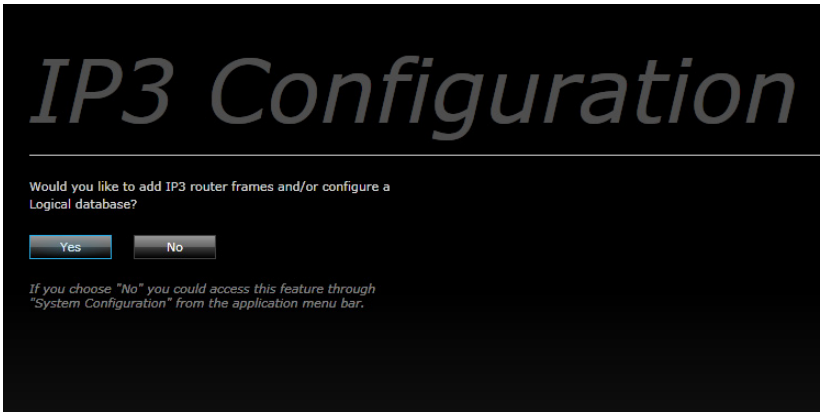
Note: *Connect a keyboard and monitor (console) to the IP3 Controller before performing the operations below.*

When starting out-of-the-box, connect directly to the IP3 Controller console. By default, there is no password for both *Administrator* and *Operator.* To log in as Operator, enter *Operator* as Username.

1 From the console of the IP3 Controller, launch a Web Browser and connect to the IP3 Controller at **127.0.0.1**

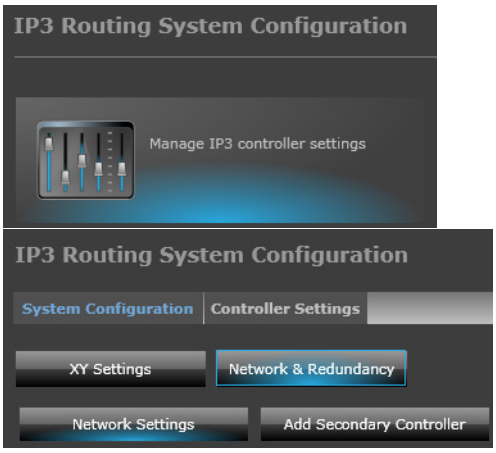


2 The first time you connect to the IP3 Controller, you will be prompted to **add Frames**. Click **No** for now.

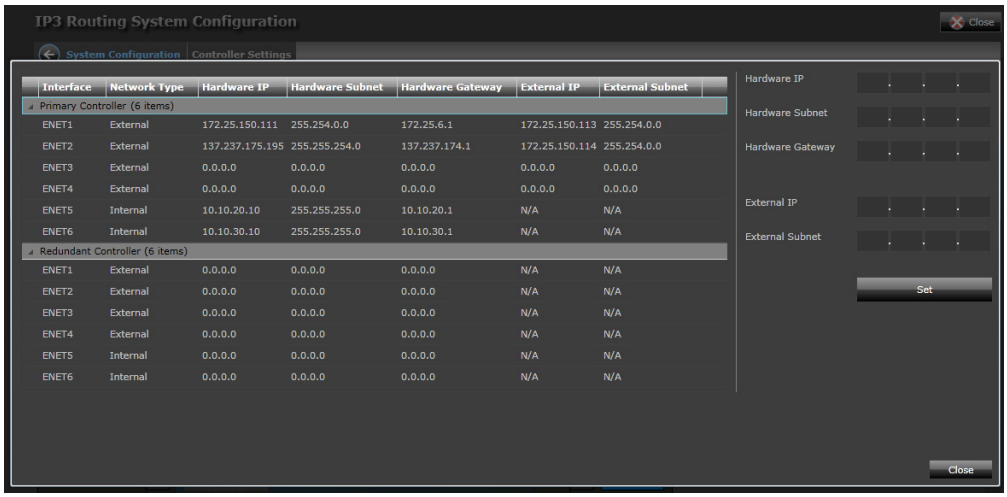


3 Click the **Configure System** Link in the toolbar at the top.

4 Go to **Manage IP3 Controller Settings**, click **Network & Redundancy**, then click **Network Settings**.



This dialog specifies the addresses and network parameters for each of the Ethernet ports. To edit, click on a port on the left and make edits in the section on the right. Click **Set** to confirm changes. Click **Close** when finished.

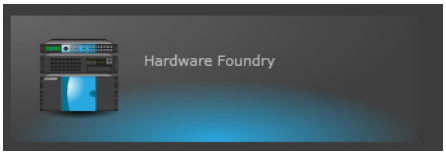


5 Click **System Configuration** in the toolbar at the top again to go back to the System Configuration root.

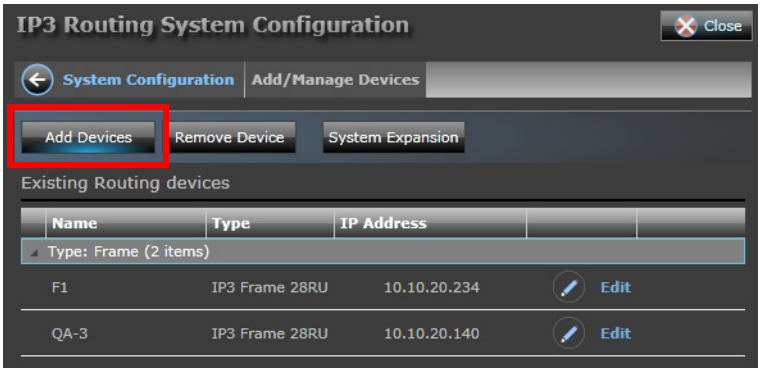
Adding your IP3 Frame to the Routing System

1 Set the IP addresses of the IP3 Frame's PX-RES controllers.

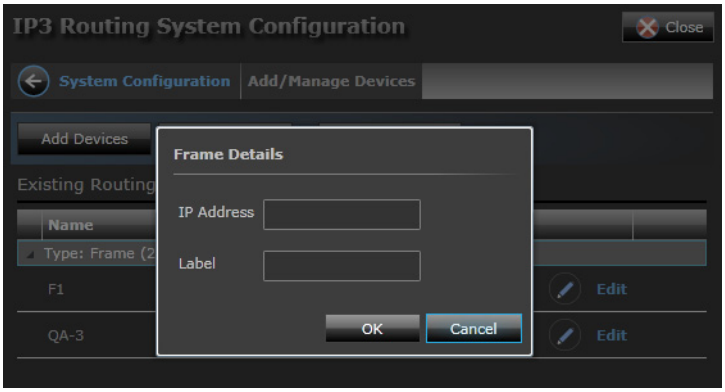
2 In the IP3 Controller, under the **Configure System** section, click the **Hardware Foundry** icon.



3 Click **Add Devices** to add your IP3 frame.



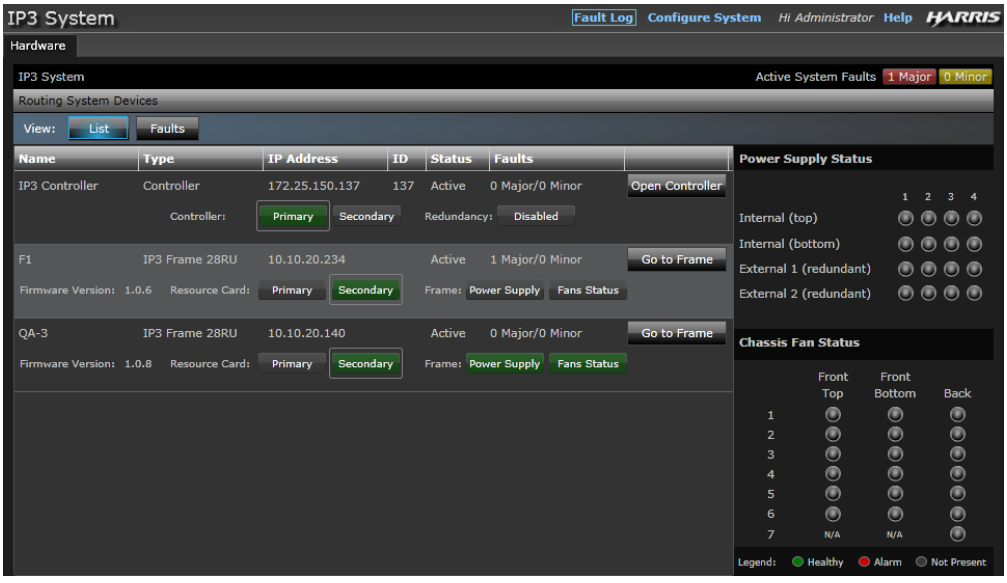
4 Enter the **IP Address** of the frame to add and provide a **Label** for the frame.



Note: *The label that you choose in this step will become part of the routing system database, and part of the physical location properties of every signal that terminates at this routing frame. Choose carefully a name that is meaningful in your facility, which differentiates the frames within a multi-frame router in a way that will be unambiguous to the maintenance and operations staff. It is also visually helpful in the tools if the name is relatively short.*

5 Once complete, you will see your frame and other details on the main page.

- It can take up to 90 seconds for the IP3 Controller to pull in all of the details of the frame and display them for the first time.
- Select the row containing the frame - if the power supply and fan indicators appear on the right in color, then you have successfully added the frame.
- Click **Go to Frame** to check that all of the modules appear as expected within the frame



Routing System Database

Routing in IP3

Routing in the IP3 router is not restricted to Levels and Partitions as with typical industry routers of the past. IP3 provides the flexibility to route across levels; components within a source and destination are described by their physical location properties, and matched up based on signal attributes that flow from the device type definitions. However, IP3 needs to interoperate with legacy systems that use the notion of Levels to accept routing requests and to describe what was routed (status).

The Names of Levels, and their grouping into Device Types, are tightly linked with attributes associated with the components of each source/destination in the Attribute-Based Routing Execution (ABRE) engine inside IP3. It is also tied into reporting of status back into legacy protocols (such as XY).

For best results and clarity in the database tools, Levels should be named appropriately; the organization of components within the signal types MUST be defined/described using the Device Types wizard to create device types for use in the IP3 database tools.

Valid Characters in Source, Destination, Level, and Frame Names

The following characters are allowed in source, destination, and frame names.

Table 3-1 Valid Characters in Source/Destination/Level/Frame Names

Character	Description
A-Z	Uppercase Alphabetic
a-z	Lowercase Alphabetic
0-9	Numeric
@ * - # ^ %	A few specific punctuation marks
/	Forward slash (but NOT "\" backslash)
( )	Regular parenthesis (but NOT {}, [], or <>)
" "	Blank Spaces ARE allowed in source and destination names, including leading and trailing blank spaces.

The following operations should be done on the PC provisioned as the Navigator Server.

- **STEP 0 - Setting up CCS-Navigator and Discovering the IP3 Controller**
- **STEP 1 - Delete the Default Sources and Destinations in DBEditor**
- **STEP 2- Define Levels in DBEditor**
- **STEP 3 - Define Device Types in DBEditor**
- **STEP 4 - Define IP3 Sources/Destinations (IP3 Database Editor)**

STEP 0 - Setting up CCS-Navigator and Discovering the IP3 Controller

The IP3 routing system introduces a new set of routing database tools based on Full Physical Flexibility (FPF) technology. In order to support compatibility and inter-operation with legacy routers, tielines, and control panels, the IP3 routing system database engine is designed to tightly coordinate with the CCS-Navigator database which supports all of these legacy system elements. For this reason, it is required to install CCS-Navigator, and to associate the IP3 routing system with it.

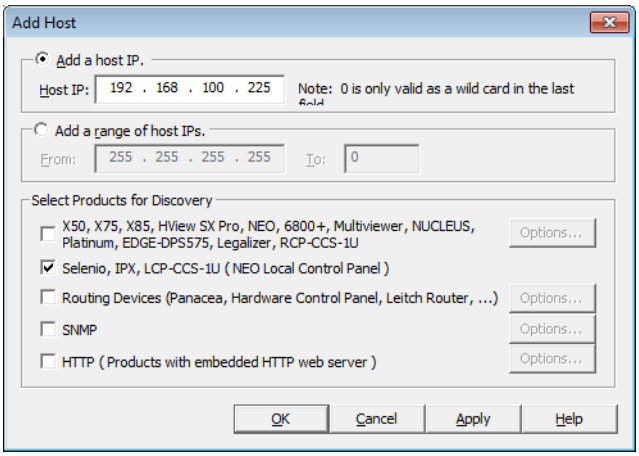
Identify a computer which will be used for the routing system database work. It is possible to move this to a different computer in the future; however CCS-Navigator Server typically runs on a single computer and keeps a master copy of the database on that computer. This computer must meet the minimum standards documented in the **Navigator User Manual**.

Install Navigator

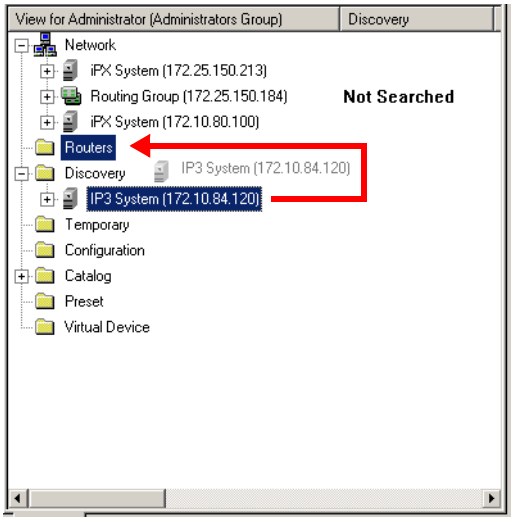
CCS-Navigator 5.1 or later is required for IP3 Controller 1.1
Refer to the **Navigator User Manual** for details.

Discover the IP3 Controller

1. Start **Navigator**. Ensure you are in **Build** Mode.
2. Discover the IP3 Controller using either the new IP address defined for it, or the default IP Address if it was not changed.
   - **a** Click the **Options** button to set Discovery Options.
   - **b** Click the **Add** button.
   - **c** Enter the IP Address of the Controller. Ensure the second option (checkbox) is selected in the **Select Products for Discovery** section.
   - **d** Click **Apply** and **OK**



3. Click **OK** again and then click **Start** to start the Discovery**.**
4. Once Discovery is complete, select the discovered IP3 Controller system from under the **Discovery** folder
   - Drag and drop discovered elements from the **Discovery** folder into the **Routers** Folder.
   - Click **Yes** to confirm the drag and drop operation.
   - Enter a name for the new Routing System.

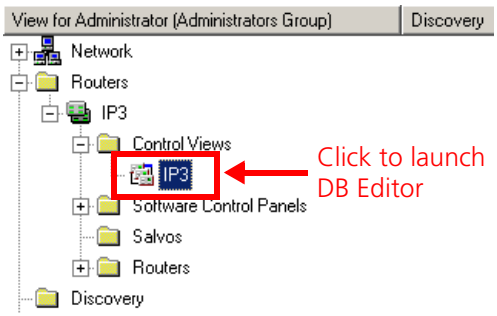


Next, create the IP3 Routing System Database.

STEP 1 - Delete the Default Sources and Destinations in DBEditor

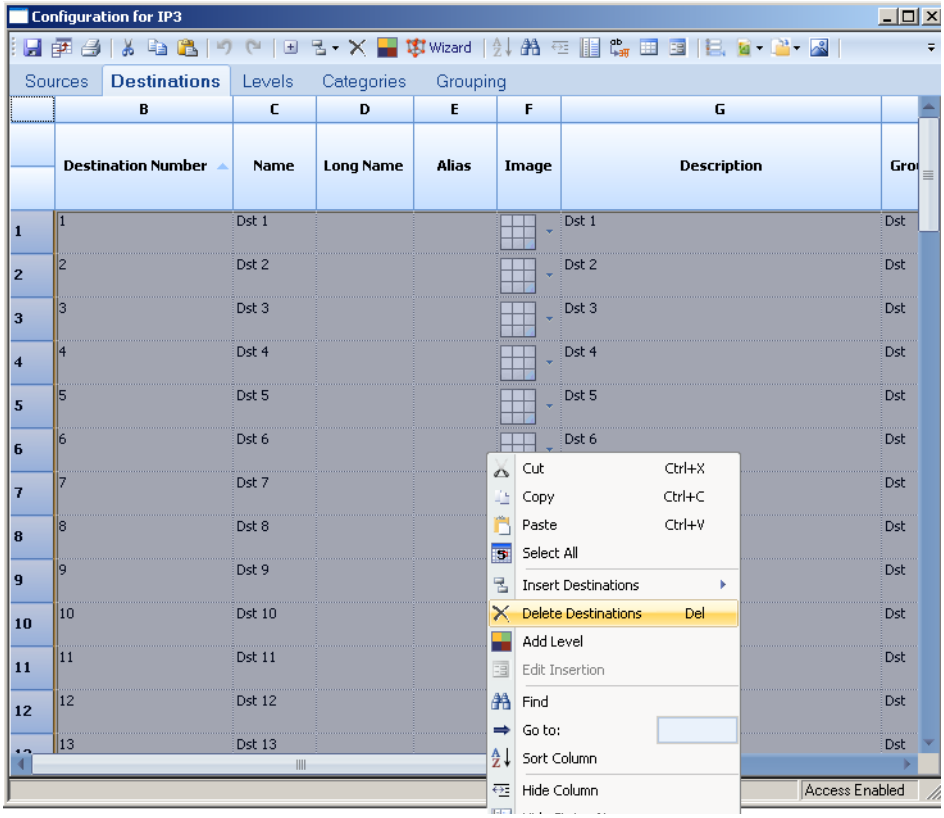
When CCS-Navigator creates a new routing system, it also pre-populates its routing system database with 64 sources and 64 destinations on one level (level 0). For legacy Platinum and Panacea routers, this is a good jump-start to creating the database for those routers; however in the case of IP3 standalone, all of the database entries will come from the IP3 database editor, and it is necessary to clean out these extraneous entries that Navigator created.

1 Launch Navigator **DBEditor** by double clicking the **System Name** (IP3) under **Control Views**.



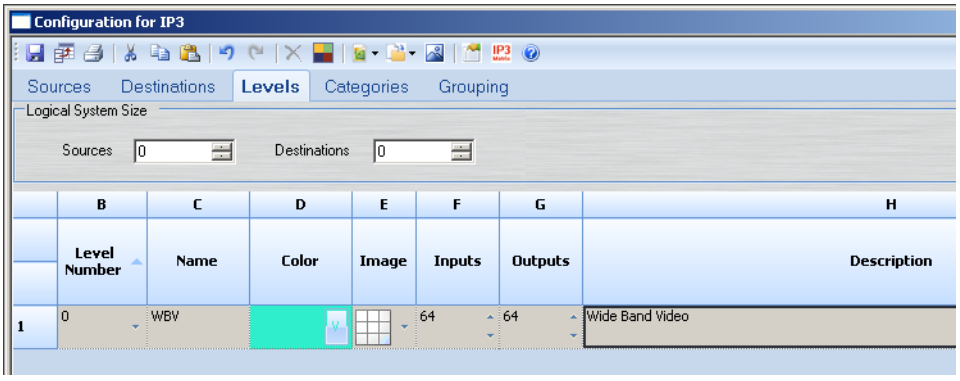
2 Delete all **Sources** and **Destinations** by going to each of these tabs, clicking in the top left hand corner of each of the tabs to select all rows, and then right clicking in the middle to delete them.

Note: *Much like in Excel, you can click in the upper-left corner, which will select all of the rows and columns in the view, and then hit delete. Do this for all of the sources in the Sources tab and all of the destinations in the Destinations tab.*



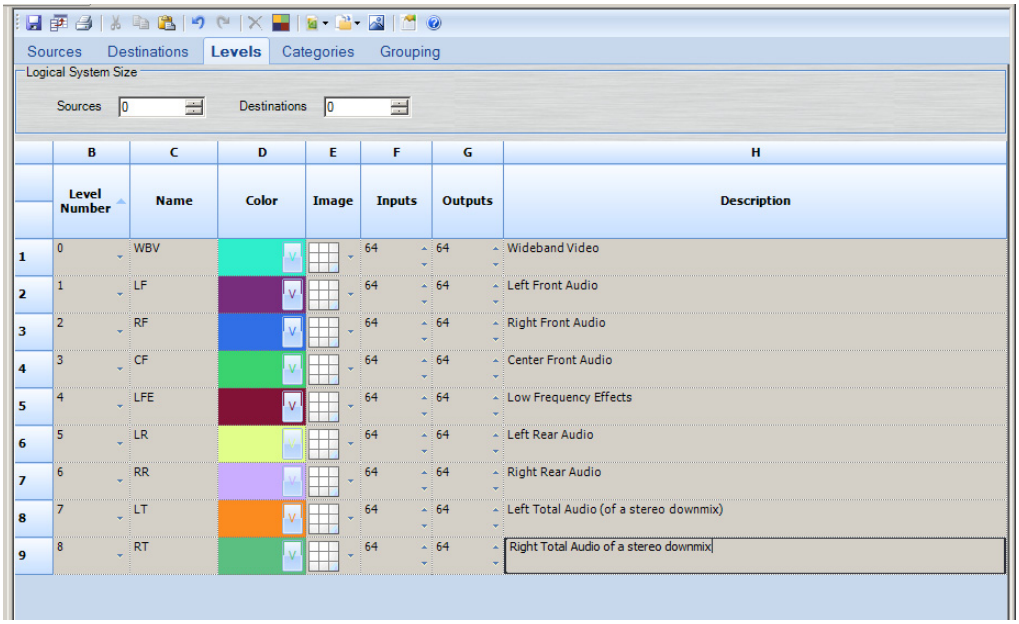
STEP 2- Define Levels in DBEditor

1. Click the **Levels** Tab.
2. Enter a proper **Name** and **Description**. For example, **WBV**, **Wideband Video**.



Note: *Ensure that video is always on level 0.*

3. Define as levels all of the signal types that you plan to switch separately and/or name in device type configurations that follow.



STEP 3 - Define Device Types in DBEditor

Note: *Device types are an extremely important part of the signal definition used in the IP3 routing engine. Take time to consider and plan these device types as part of the system design.*

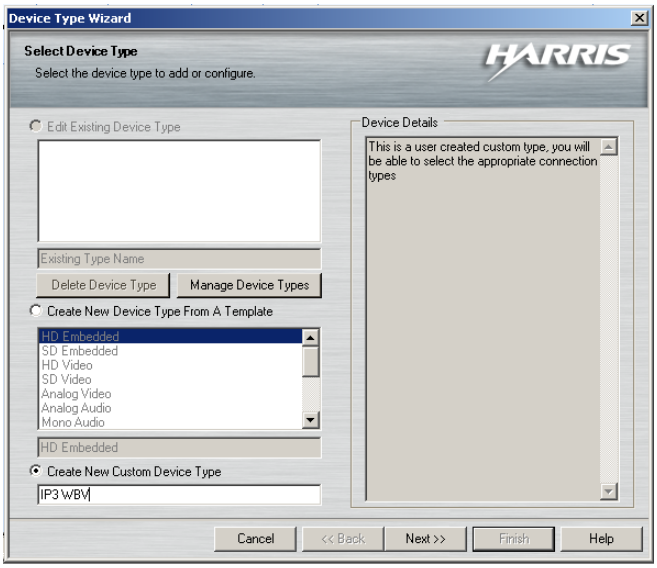
Why Device Types are Important

Device Types are used in Harris routing systems to identify and organize all of the separately routable parts of a signal. For example, a VTR feed with SDI and two separate AES audio signals. Or an SDI with an embedded 5.1 mix arriving through an FSDX Input Module.

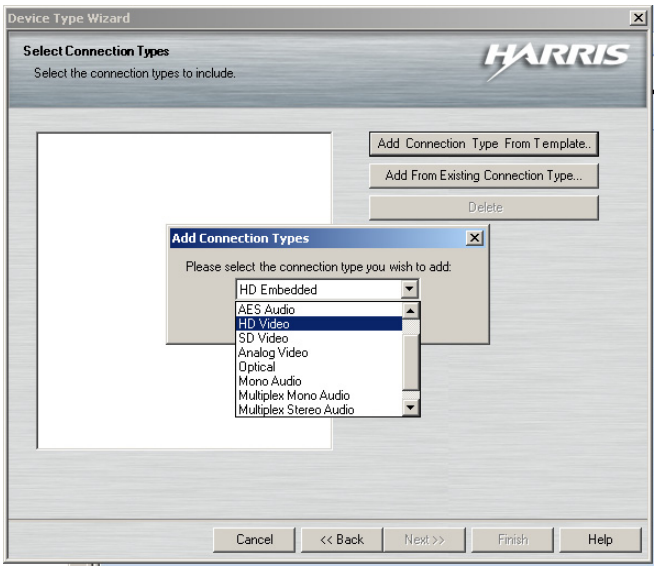
In past routers, it was required to make the distinction between the physical arrival pattern of these signal package -- embedded -vs- AES -- in defining the device types. In the IP3 with Full Physical Flexibility (FPF) technology, the Device Type serves mainly to identify the subcomponents that route together (regardless of how they physically appear in the router). Even in a router which routes only wideband video, it is required to define a device type for wideband video (as shown below). Even though device types are required in IP3, no device types are created by default.

Tip: Device Type definitions should correspond to the standard kinds of feeds (fed from devices) in your plant. Physical associations and how they map to specific physical inputs and outputs will be specified later to match the actual wiring. The wizard contains several templates. With IP3, because the actual physical associations of video/audio channels are very flexible, the template could say HD Embedded while the audio channels could be physically separate, or come from MADI, or even embedded on other video signals.

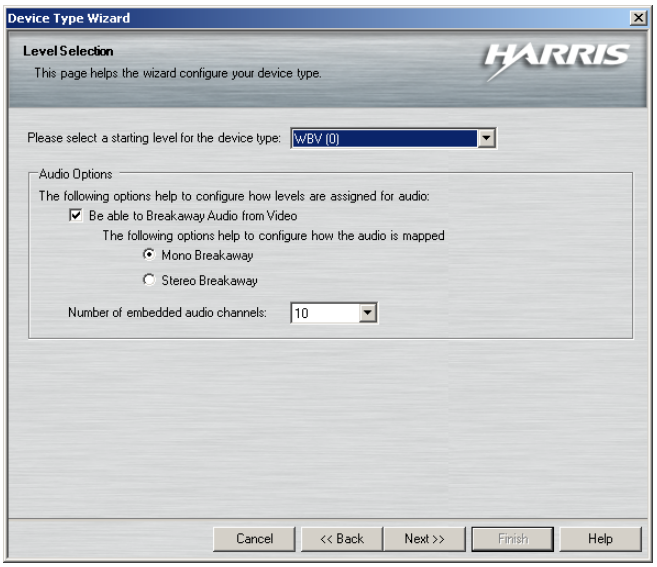
1. Click the **Wizard** button and set up the required device type(s) based on your modules.
2. Select **Create a New Custom Device Type**, provide a relevant name, for example **IP3 WBV**, and click **Next**.



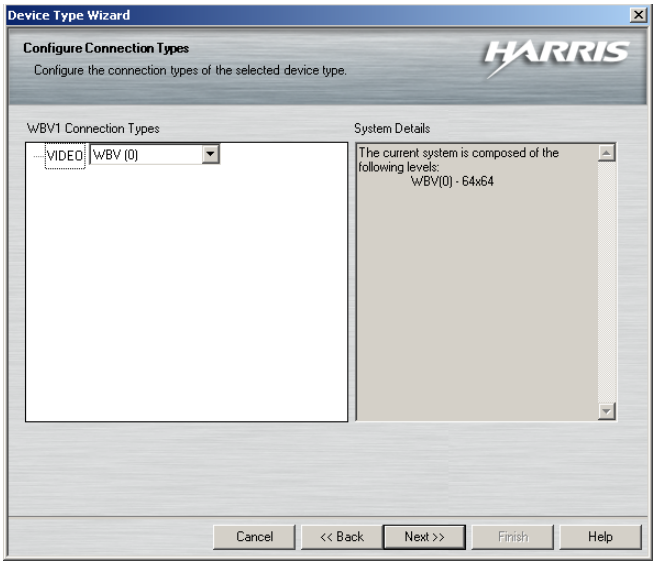
3 In the **Connection Types** dialog, select your connection type, for example **HD Video**, and click **Next**



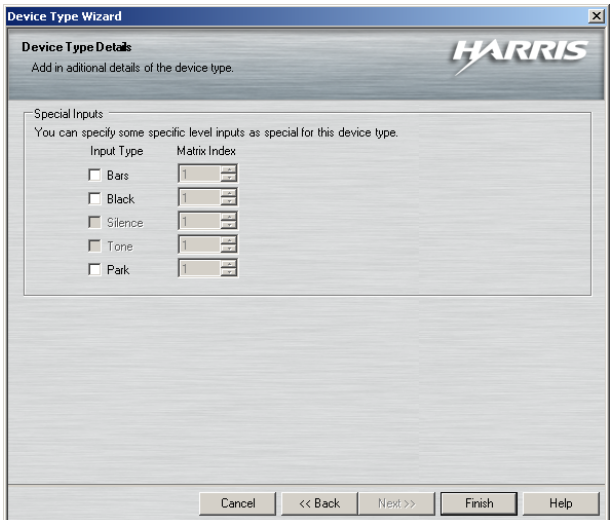
4 In the **Level Selection** dialog, ensure the starting level matches what you expect, and click **Next**



5 Click **Next** on the **Configure Connection Types** dialog after double-checking the mapping of the components to the levels.



6 Click **Finish** on the last dialog.



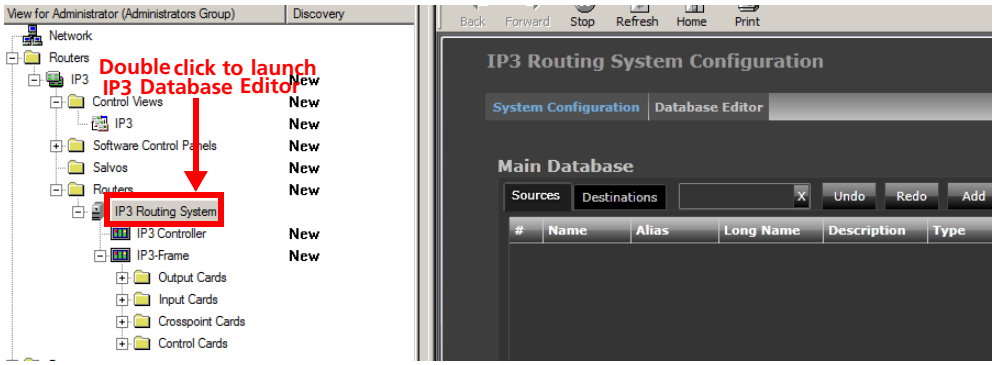
7 **Save** and **Publish**. Close DBEditor.

Tip: The Publish function facilitates easy distribution of logical information, and allows distribution of salvos and other database information in the names.txt file to all of the devices in the routing system. All existing device list components are preselected; however, you can uncheck any selection that you do not want to publish to.

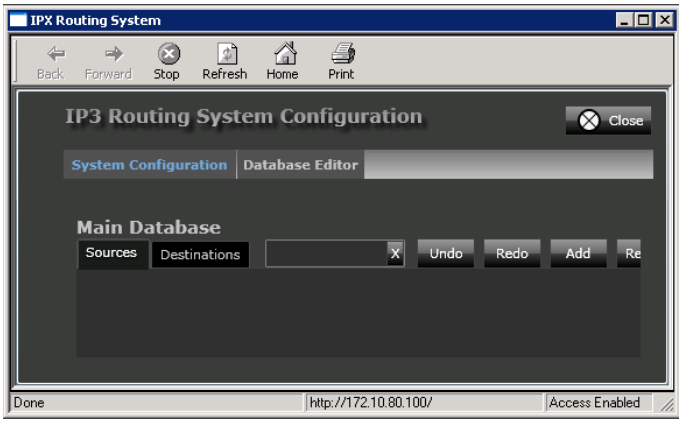
Clicking the Start Transfer button at the bottom left corner of the dialog box starts the file transfer process, during which, information messages are displayed in the Overall Status text box. After each device has the names.txt transferred to it, Navigator's Database Editor sends an X-Y command to the system to let the devices know to refresh their names.txt files. If some devices fail to transfer or the command fails to send, the Retry button is displayed. Clicking the Retry button enables Database Editor to repeat the process for the failed devices.

STEP 4 - Define IP3 Sources/Destinations (IP3 Database Editor)

1 Start the **IP3 Database Editor** by double clicking **IPX Routing System** under the **Routers** folder to launch the **IP3 Controller Database Editor interface** (within Navigator).



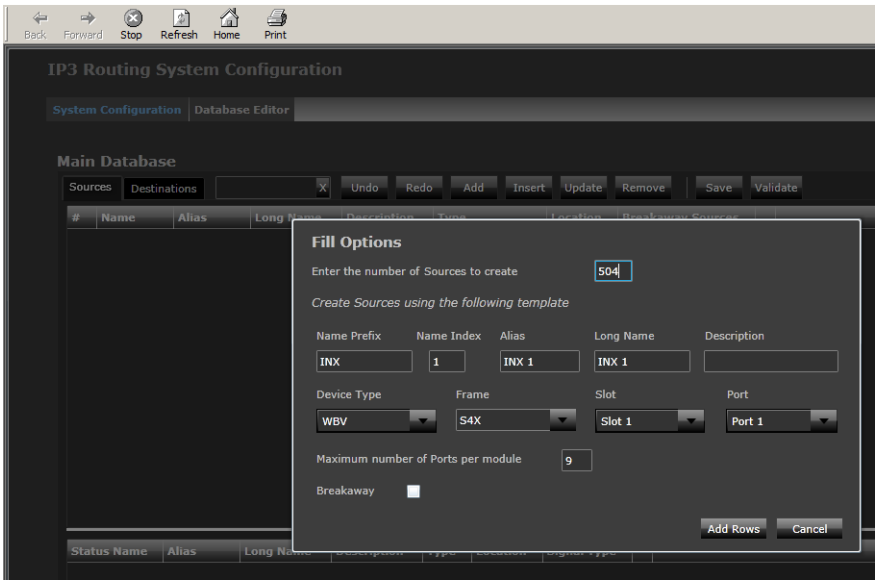
2 The **IP3 Database Editor** screen will be displayed.



See **Valid Characters in Source, Destination, Level, and Frame Names**.

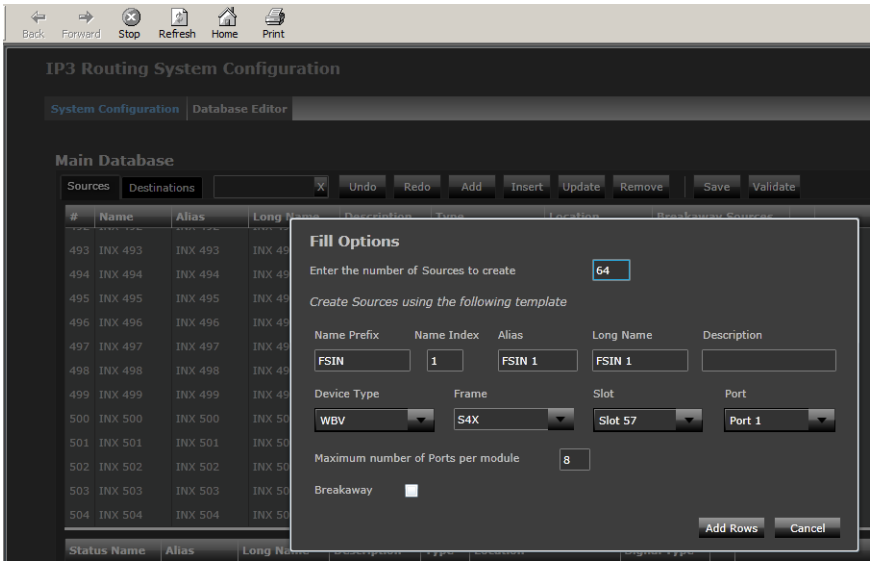
3 In this example, we have **9 Input Modules** installed in the first **56** input slots, and want to create a simple "wiring checkout" database.

- Click the **Add** button in the **Sources** tab to start adding your sources.
- Add **504** Sources (56 slots, 9 per slot) prefixed by INX, starting at Slot 1, with **Device Type** as **WBV** (previously defined in Navigator).
- Click **Add Rows**



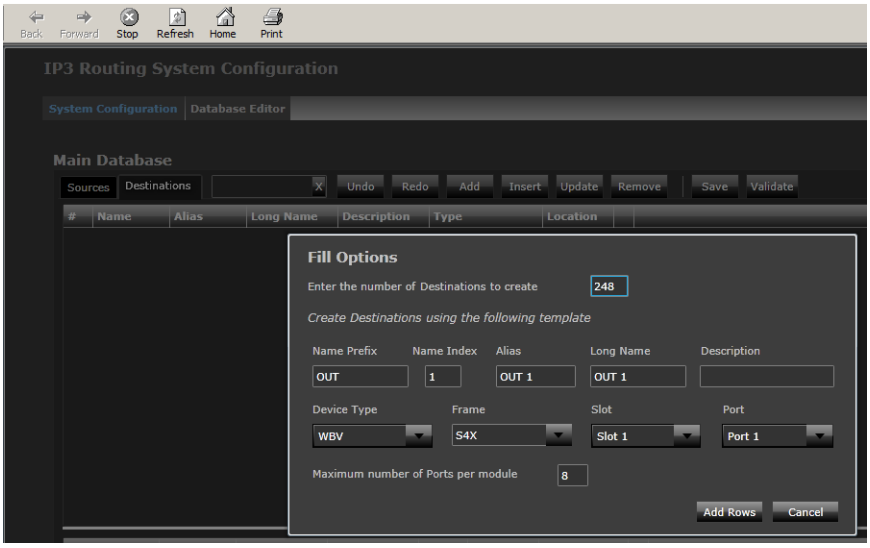
4 Click to add Inputs corresponding to other Input Modules you may have in your system.

- In this example, we add 8 **Input Frame Sync Input Modules** in slots **57-64**.



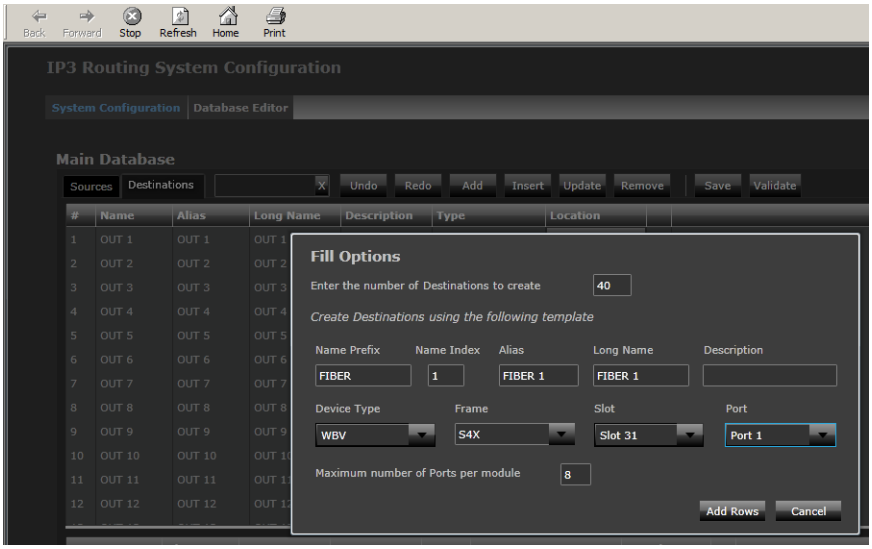
5 Next, go to the **Destinations** tab and click **Add** to start adding your Outputs (Destinations).

- In this example, we have **31 System Expansion Output Modules** with 8 outputs per slot, so we add **248** outputs.



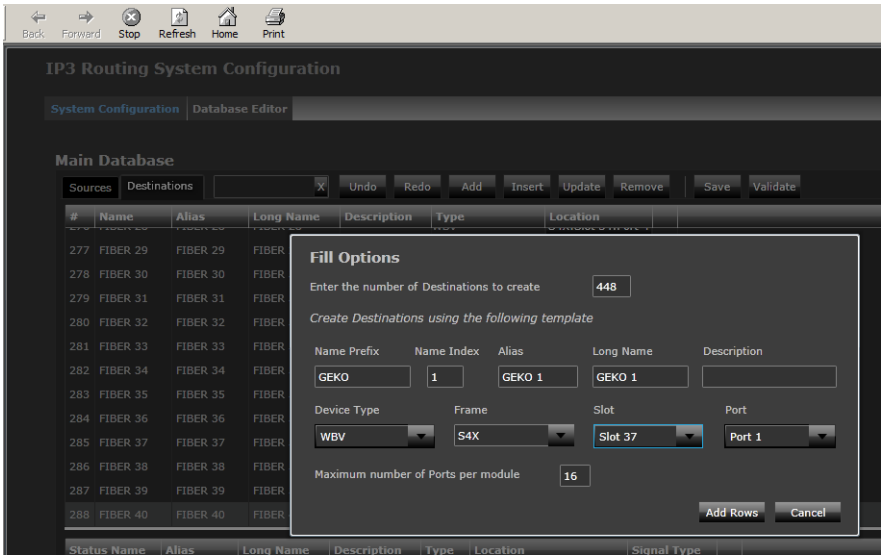
6 Add any other Output types that you require. For example, Fiber Outputs.

- In this example, we add **40 Outputs** starting at slot **31**, to correspond to 5 Fiber Output Modules with 8 outputs each.



7 If you have a Multiviewer in the system, define the **Multiviewer Outputs**.

- In this example, we have **HVIEW-SXPRO multiviewers** in slots **37** through **64**, **16** outputs per slot, so a total of **448** Destinations.



8 This completes adding of **Sources** and **Destinations**. It is vital to click **Save** in order to commit these changes into the database.

9 Close the Navigator sub-window that the IP3 Editor is running in by clicking the **X** in the corner to close the sub-window.

Note: *Do not click the* ***Close*** *button within the Navigator window; ensure you click the X in the corner.*

10 Re-Open **Navigator DBEditor** to **synchronize** and check that the synchronization has been successful.

11 Click **Publish** in the **DBEditor** window. This will create the files required by any legacy elements (including the Magellan control panels) and transfer those files out to those devices.

4 Configuring the System

Configuration Dashboard

Click the **Configure System** link in the toolbar at the top to start configuring your IP3 Controller system.

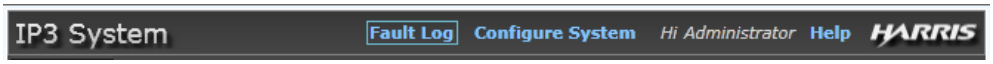


Figure 4-1 IP3 Toolbar

The Configuration Dashboard is then displayed. You can do the following:

Hardware Foundry	Add, Remove, or Modify Frames.
Manage IP3 Controller Settings	Manage IP3 Controller Controller Settings.
Firmware Foundry	Apply Firmware Upgrades to Devices and/or Manage Firmware Repository.
User Foundry	Manager User Accounts and Passwords.

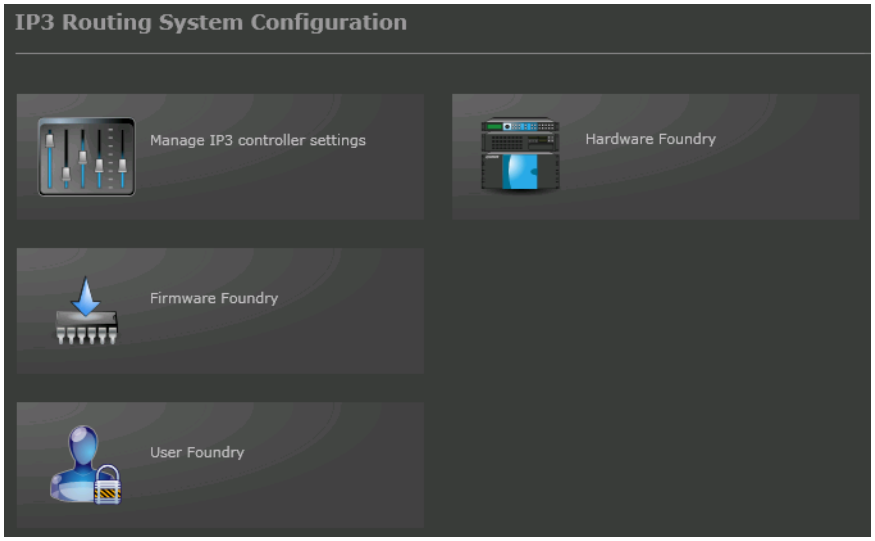


Figure 4-2 Configuration Dashboard

Hardware Foundry

Click the **Hardware Foundry** icon to define or modify your system hardware configuration.

Existing Router devices and Panels will be displayed with information on Frame **Name**, Frame **Type**, and **IP Address.**

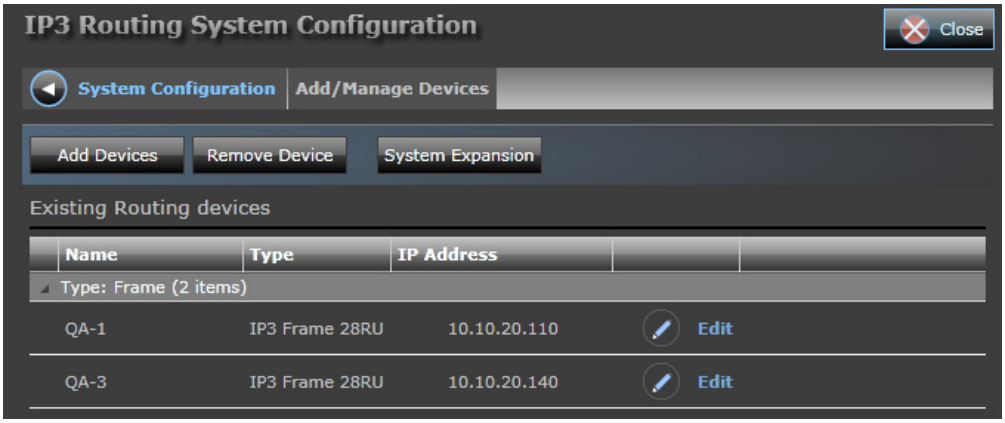


Figure 4-3 System Configuration - Frames and Panels

To return to the main System Configuration menu, click the System Configuration link or the back arrow icon next to it in the toolbar at the top.

See:

- **Adding a Device**
- **Modifying a Device**
- **Removing a Device**
- **System Expansion**

Adding a Device

Click the **Add Devices** button to add a new frame to the system. Provide the **IP Address** of the frame, enter a descriptive label, and click **OK**.

Note that the label provided here becomes part of the routing database, and is part of the physical location properties of every signal that terminates at this frame. Choose a label that is meaningful in your facility, unambiguous to the operations and maintenance staff, and yet relatively short in length.

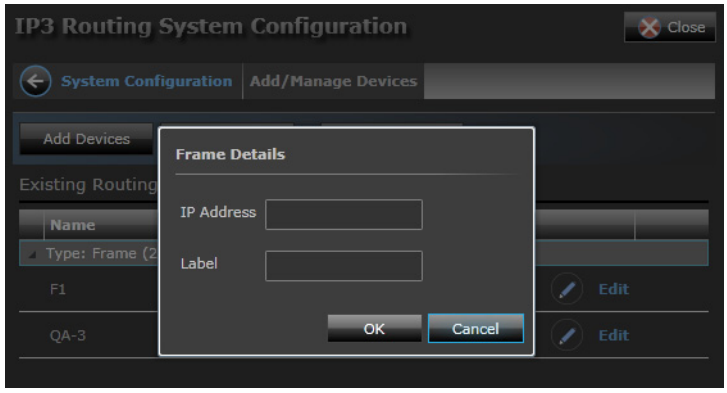


Figure 4-4 System Configuration - Adding a Device

Note: *Once you provide details of the frame to add, it can take up to 90 seconds for the Controller to evaluate the frame and build the parametric tree for every module in the frame.*

Modifying a Device

Once a device has been added to the system, you can edit details by clicking the **Edit** link against the Frame. The current Frame Label and IP Address is displayed. Note that you can only modify the label at this time. Click OK when finished.

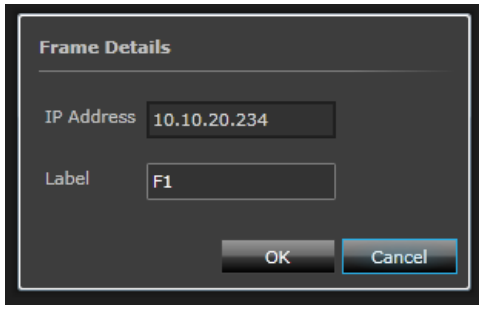


Figure 4-5 System Configuration - Editing a Device

Removing a Device

To remove a device that has been added to the system, select a frame or panel in the list and click the **Remove Device** button to delete that component.

System Expansion

System Expansion allows for multiple frames in your system to be ganged together to form a larger routing system. To do this:

1. Click the **System Expansion** button to get to the Expansion dialog.
2. Select the first frame from the **Frame** drop-down list
3. Select the frame to connect it to from the second **Frame** drop-down list
4. Click the **Add Connection** button

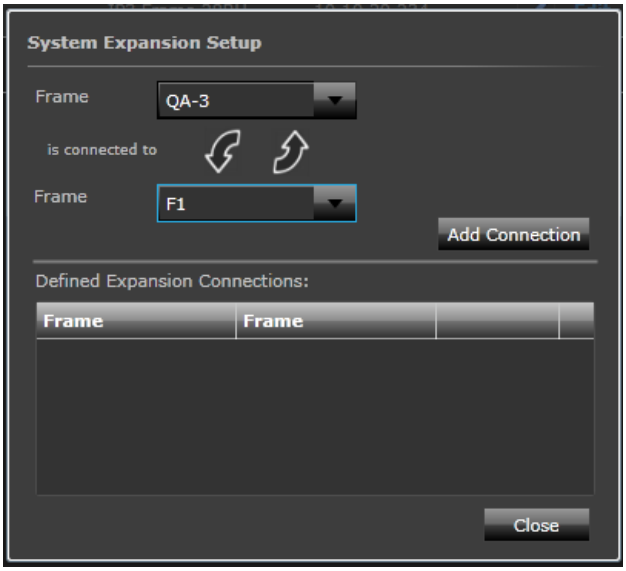
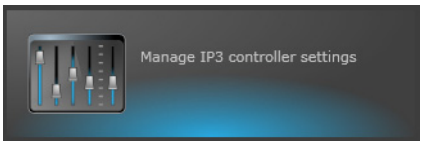


Figure 4-6 System Configuration - System Expansion

Once created, connections will be displayed in the **Defined Expansion Connections** section.

Manage IP3 Controller Settings

Click the **Manage IP3 Controller Settings** icon to define or modify your system hardware configuration



XY Settings

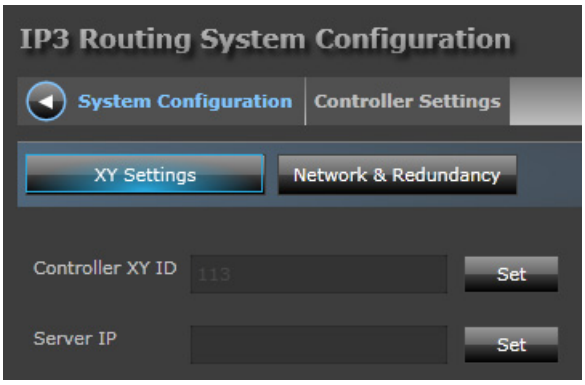
This is the dialog where the XY ID for the IP3 Controller is set.In the XY control protocol, every device including the router itself has a unique ID.

In systems with only one router, it is common (but not required) that the router have ID 0, and this is the default on the IP3 Controller.

In systems where there is more than one router (for example tieline systems with Platinum Routers), it may be desirable to set the IP3 XY ID to something other than zero.

In the XY control protocol, there is a tree structure of connections between devices such that XY messages get distributed from device to device. In many configurations, the IP3 controller is the ROOT of that tree, and the other XY devices will point to the IP3 Controller as their server. In this case, setting this Server IP field to 0.0.0.0 indicates that the IP3 controller should not connect to any higher server.

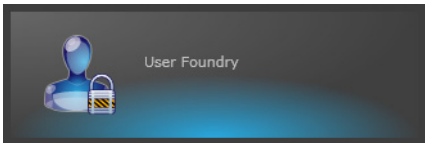
In some system configurations, it may be desirable to have the IP3 Controller make a client connection to another XY server; if that is the case, fill in the IP address of that remote server here. Be very careful to avoid creating loops of connectivity in the XY distribution - if you do this, messages can cycle endlessly and make the routing system unusable.



Redundancy Settings

See **Controller Redundancy**.

User Foundry



Click the **User Foundry** icon to manage user accounts and passwords.

User Accounts

The IP3 Controller Controller application ships with two access accounts:

Administrator Account

This account has full access rights. Some of the key Administrator privileges include:

- System Setup (Configuring Controller ID, IP, IP3 frames)
- Router Database Configuration
- Routing System Control and Monitoring
- Managing Operator and Administrator Passwords
- Software Upgrades

Operator Account

This account has the following privileges:

- Routing System Control and Monitoring
- Software Upgrades

Changing a Password

To change the existing password for either an **Administrator** or **Operator**:

1. Click the **User Foundry** link on the IP3 Routing System Configuration dashboard.
2. Then click **Change Password** against the **Administrator** or **Operator**.

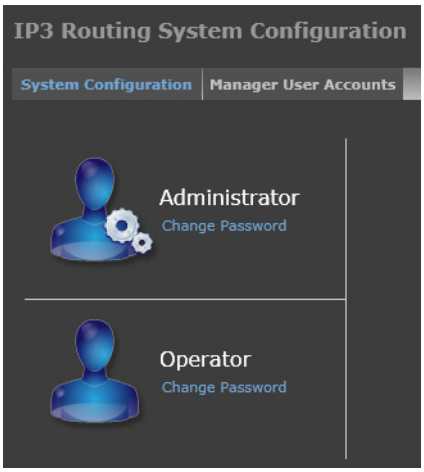


Figure 4-7 Change Password Selection Dialog

3. Enter the new password, then re-enter to confirm and click **Save**.

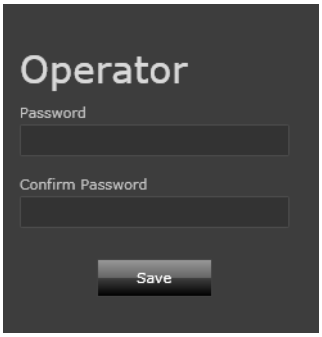


Figure 4-8 Password Change Dialog

Firmware Foundry

The **Firmware Foundry** enables you to manage and upgrade firmware on frame modules.

Note: *The Firmware Foundry allows you to manage/upgrade firmware on frame modules only. You cannot upgrade Controller firmware from here. Controller firmware is upgraded via a Windows desktop procedure - See .*

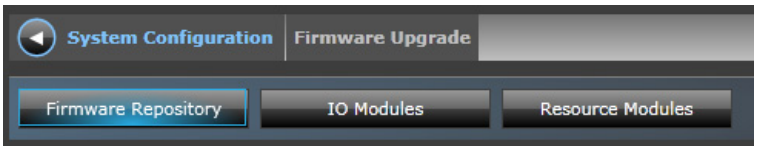
Click the **Firmware Foundry** link on the **IP3 Routing System Configuration** dashboard to apply a firmware upgrade on a module in a frame or manage the **Firmware Repository**.

The Firmware Foundry allows batch upgrading of similar modules within a zone of the IP3 frame -- downloading the new firmware to like modules in parallel. In addition, firmware upgrade requests are queued by the Firmware Foundry and then sequenced to the hardware.

Multiple versions of firmware for the same module and for different modules can be stored. Firmware to be upgraded on a module must first be transferred to the firmware repository, since modules can only be upgraded with firmware that is available in the repository.

This section is divided into several areas:

- **Firmware Repository**
- **IO Modules**
- **Resource Modules**



Firmware Repository

The **Firmware Repository** tab is active by default. It lists all previous firmware versions for various modules. The following details are displayed per package:

- Type
- Version
- Filename
- Description
- Build Date
- Size

The **Add Package** and **Remove Package** buttons at the top allow for adding new firmware packages or selecting and deleting existing ones. You can also choose to group the listed firmware versions in the repository by **Type** (which lists by module type) or **None**, (a flat list will be displayed).

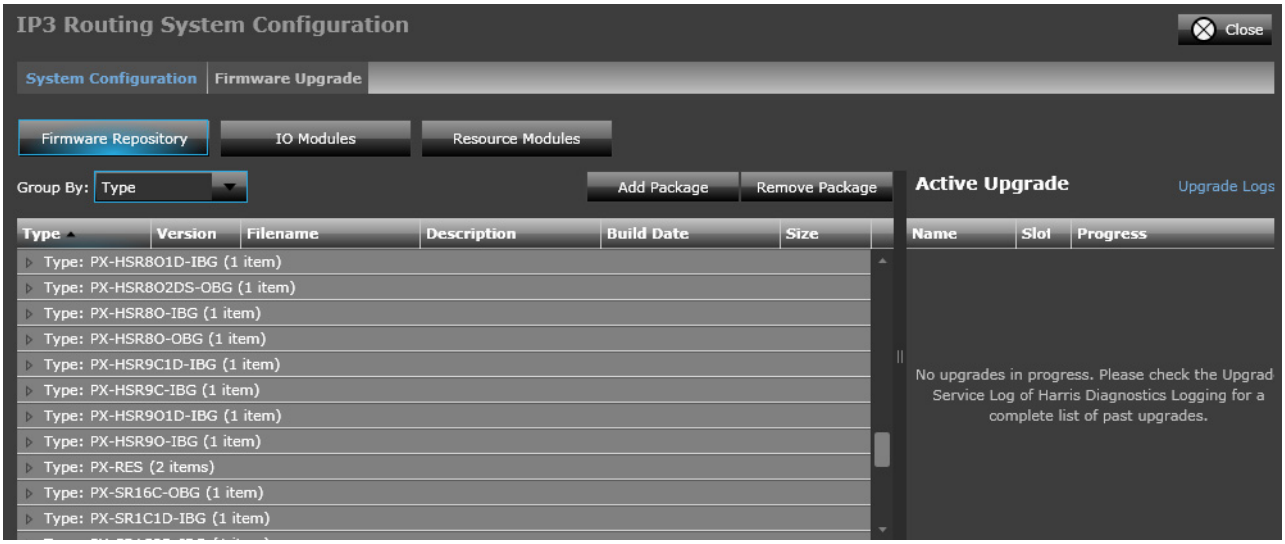


Figure 4-9 Firmware Repository

IO Modules

The **IO Modules** tab displays a list of individual Input, Output, and Crosspoint modules in the system. This list can be grouped by **Type** or **None**, in which case, a flat list will be displayed. The following information is displayed per module:

- Name
- Slot
- Firmware
- Repository Firmware
- Category
- Frame
- Bookmark
- Progress

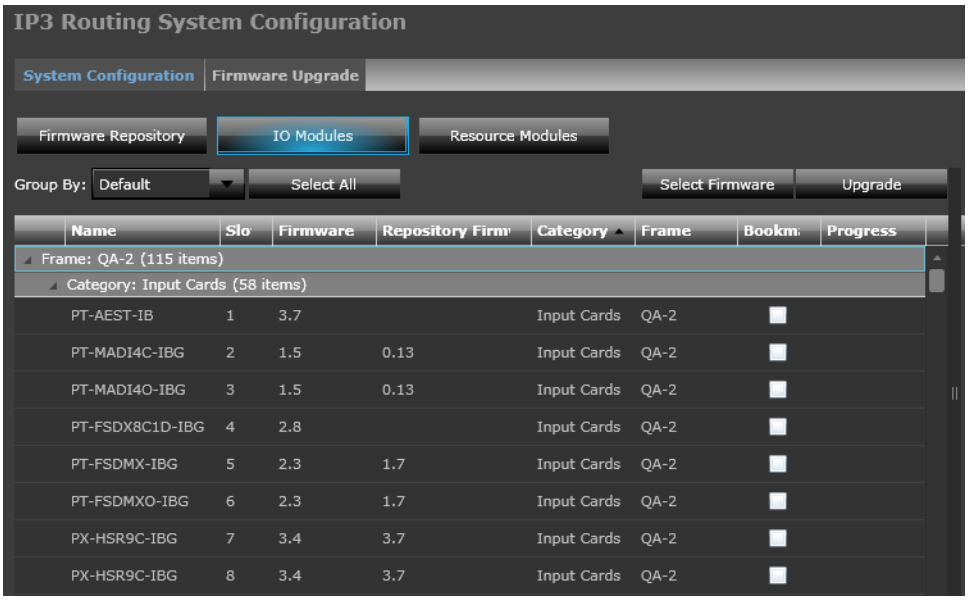


Figure 4-10 Firmware Foundry - IO Modules

To upgrade the firmware on a module, select the module, then click the **Select Firmware** button, and then click **Upgrade**. Upgrade progress will be displayed in the Progress column and in the **Active Upgrade** section.

Active Upgrade

The **Active Upgrade** section is displayed to the right of the screen. It provides details on in progress upgrades including the **Name** of the upgrade, the **Slot** the module being upgraded is in, and the **Progress**.

While upgrading module firmware, the ability to do parametric control of module parameters is impaired for modules in the same **zone** of the router where the upgrade is going on. It is advisable to pick a time of limited router usage in order to do module upgrades.

WARNING

Be aware of how long an upgrade may take before starting, in order to plan an adequate maintenance interval with the operations staff. Simple Input and Output modules upgrade in a few minutes per zone. Upgrades to the Input Frame Sync module may take more than an hour.

WARNING

While firmware upgrades of modules are being applied, parameter controls of modules in the same zone as the current upgrade will be impaired. Routing requests will still take effect and status will be returned as normal, but adjustments of the parametric controls of modules in the affected zone of the router will be impaired during firmware upgrade.

Clicking the **Upgrade Service Log** link takes you Magellan Diagnostic Logging.

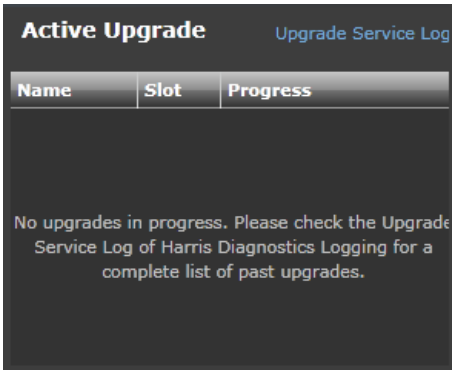


Figure 4-11 Active Upgrades

Resource Modules

The **Resource Modules** tab displays a list of Resource Modules (PX-RES) for upgrade.

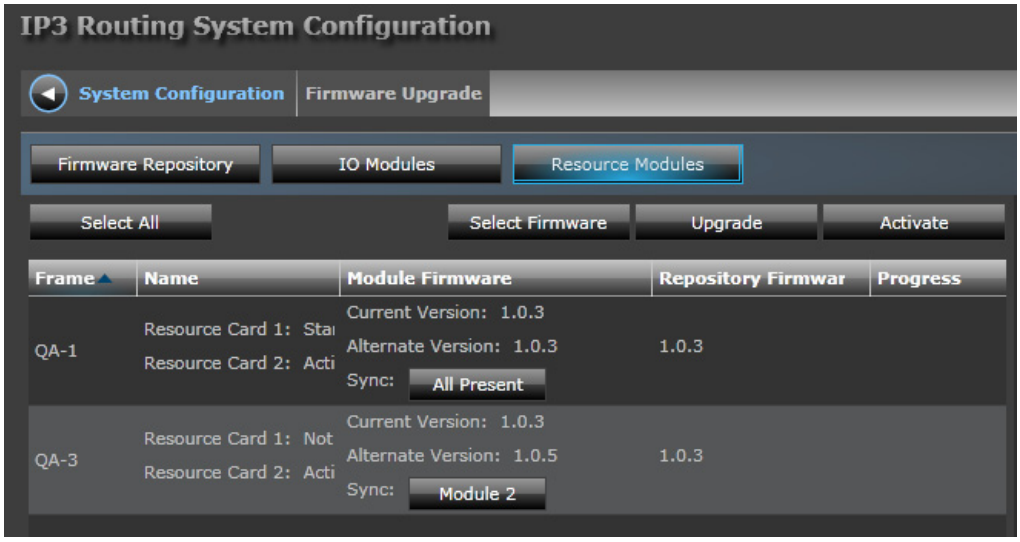


Figure 4-12 Firmware Upgrade on the RES Card

Resource Module upgrades are a two part process:

1. Transferring the firmware package from the IP3 Controller to the Resource Card and
2. Activation of the new firmware

Note: *Upgrades to Resource modules occur in the background and are non-invasive to system operations. Firmware activation can take up to 15 minutes, and all of the services of the router will be interrupted during the Activation of new firmware on the Resource Module(s).*

Primary and Secondary Resource Modules are always upgraded synchronously. The Secondary Resource Module cannot be upgraded explicitly.

You can store up to 2 firmware versions on Resource Module(s) - one active and one alternate. The alternate firmware is always upgraded onto the alternate partition. You have to switch to the alternate partition to Activate the alternate firmware.

Upgrading Firmware on a Module

To upgrade the firmware on a module:

1 Select the module, then click the **Select Firmware** button

2 Click **Upgrade**. Upgrade progress will be displayed in the **Progress** column and in the **Active Upgrade** section.

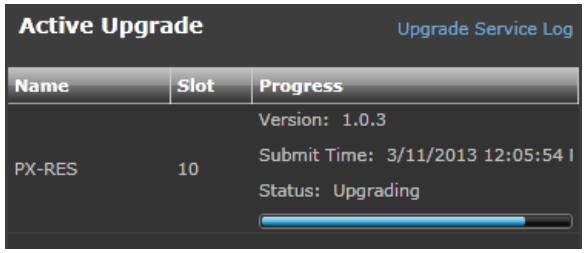


Figure 4-13 Information on Active Upgrades

3 Click **Activate** to make active once complete.

Upgrade Service Log

The **Upgrade Service Log** can be accessed in the Active Upgrade area to the right of the screen. Clicking the **Upgrade Service Log** link opens a new browser window that connects to **Magellan Diagnostic Logging** (which runs on *http://<Controller IP Address>:8002*), and provides information on past upgrades.

Select **UpgradeService** under **Harris_IP3_Controller** and then click the **History** button

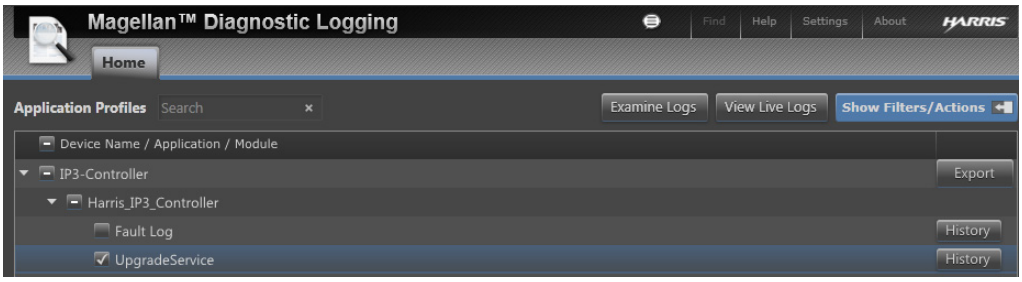


Figure 4-14 UpgradeService Log option

Then click the **Examine Logs** button.

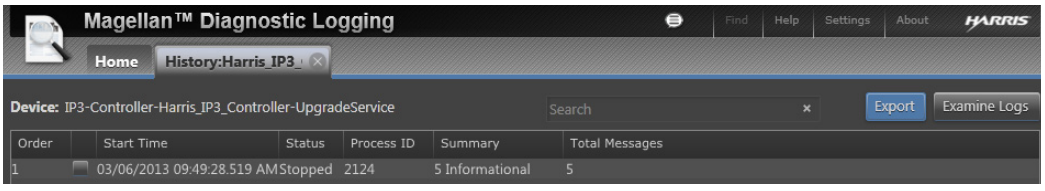


Figure 4-15 Examine Logs option in the History tab

Details on upgrade messages are then displayed. For example, messages indicating that firmware was updated for a specific module (along with the time). Or that new firmware for a specific module type was added to the firmware repository.

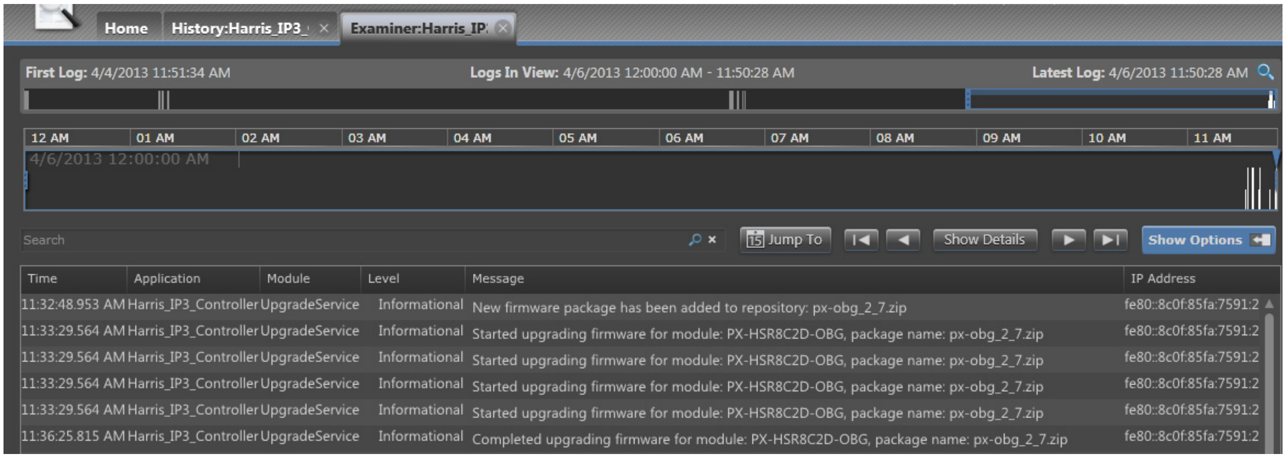


Figure 4-16 Upgrade information in the Examiner tab

5 Navigation

IP3 System Interface

Once you log into the IP3 system (by opening a web browser and entering the (external) IP Address of the IP3 Controller), the home page displays a dashboard from where you can configure, view, and monitor different elements of your system.

IP3 System List View

The List view is the default view of the system. A snapshot of all configured frames and Controllers are displayed.

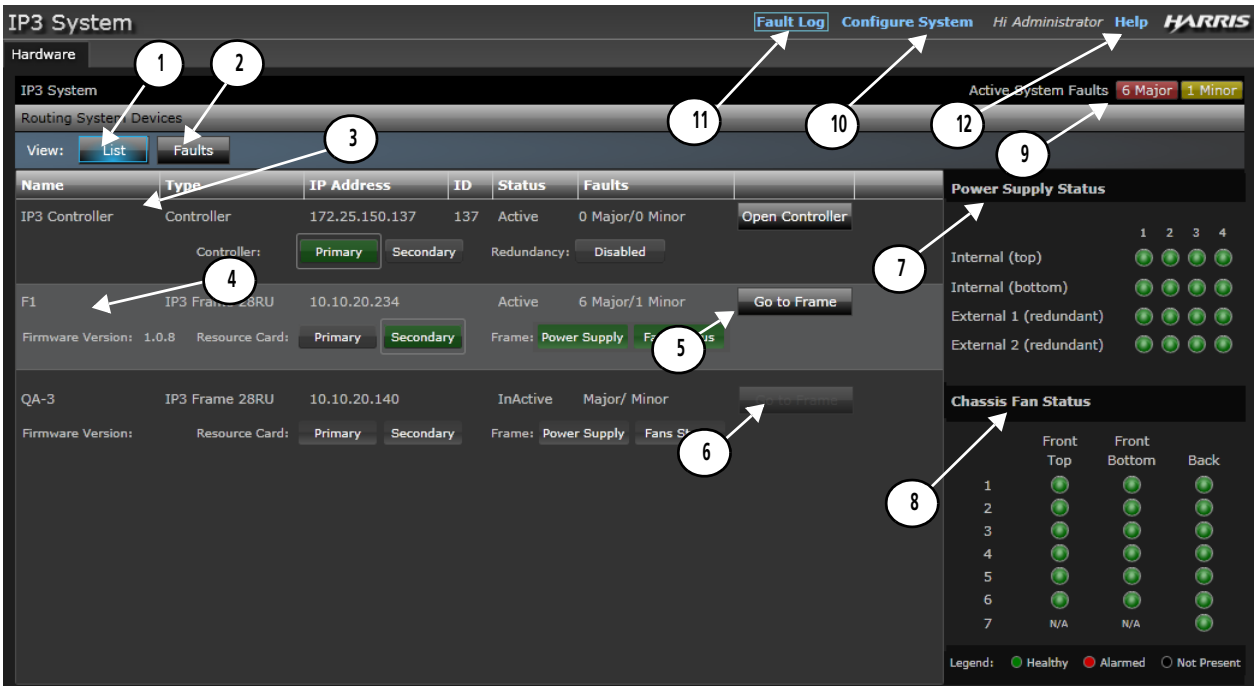


Figure 5-1 IP3 System Dashboard

Key	Label	Description
1	**IP3 System List View**	Physical view of the overall system (Default view)
2	**IP3 System Faults View**	An overview of components/modules with faults and links to open, disable, or acknowledge faults
3	**Controllers in the System**	A list of configured Controllers with snapshot information
4	**Frames in the System**	A list of configured Frames in the system along with IP addresses, firmware versions, resource card information, and fault information.
5	Go to Frame links	Buttons that link to devices. Available for each added Frame.
6	Inactive Frames	Frames that have been added, but are not currently available, still show in the list as disabled.
7	Power Supply Status section See **Power Supply and Chassis Fan Status**	Power Supply Status by Zones 1-4 for top, bottom, and external (redundant) power supplies. Visible on clicking a frame.
8	Fan Status section See **Power Supply and Chassis Fan Status**	Fan supply status categorized by location (front top, front bottom, rear).
9	System Faults	Overview information listing total number of major/minor system faults.
10	Configure System	Links to configure the system and perform functions related to Hardware and Firmware Management, Controller Settings, and User Accounts. See **Configuration Dashboard**.
11	Fault Log	Link to the Fault Log that opens in a new window. See **Logging Server**.
12	Help	Link to the User Manual

Frames in the System

Frames/Modules

In the snapshot of Controllers/Frames displayed on the main navigation page, frame component status is indicated by the button color:

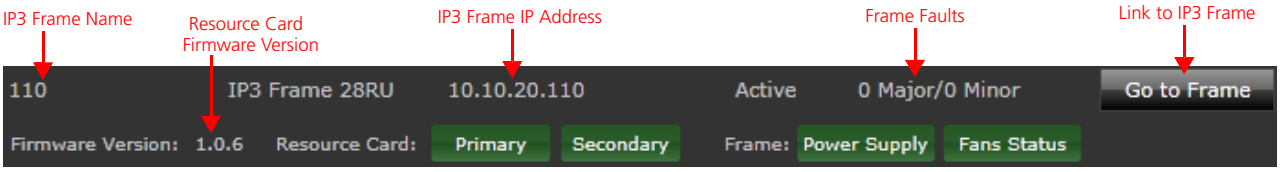


Figure 5-2 Frame in the IP3 System

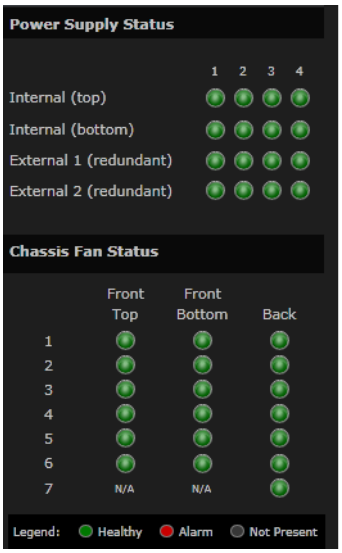
Button	Color Description
Primary/Secondary	Green indicates active; Gray indicates inactive; Red indicates Alarmed
Power Supply	Green indicates active; Gray indicates inactive; Red indicates Alarmed
Fan Status	Green indicates active; Gray indicates inactive; Red indicates Alarmed

Select a Frame in the **Frame** section by clicking it; then click **Go to Frame** to have its details and components displayed. See **Frame Components and Parameters**.

Power Supply and Chassis Fan Status

On clicking/selecting a Frame in the list, a Status panel is displayed on the right of the screen with information on **Power Supply Status** for top, bottom, and external power supplies and **Fan Status** for Front Top, Front Bottom, and Back.

Component status is indicated by the button color.

Status Panel	Icon	Button	Color Description
		Red	Alarm
		Green	Healthy
		Blank	Not Present

Frame Parameters

See **Frame Components and Parameters**.

Modules in a Frame

Modules are displayed grouped by Category - **Input**, **Output**, **Crosspoint**, or **Control**

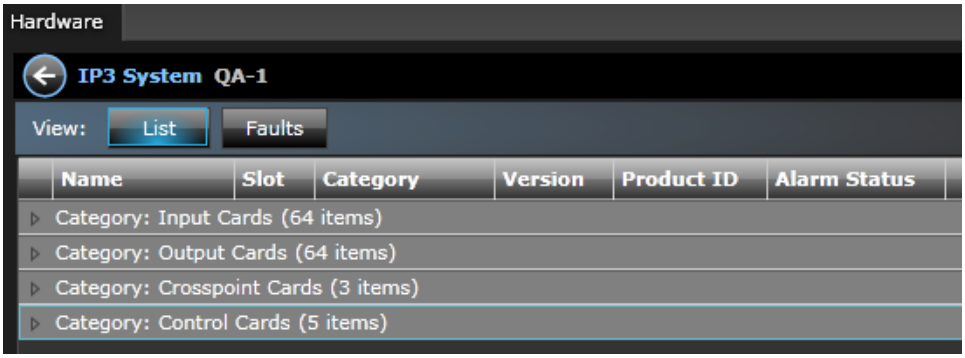


Figure 5-3 Modules Categories (collapsed) in the IP3 Frame View

Note: *Only modules that are physically present and responsive in the system are displayed; modules that become unavailable are automatically filtered out of the list. Modules that have been configured in the past but are not present or not currently responsive are also not displayed.*

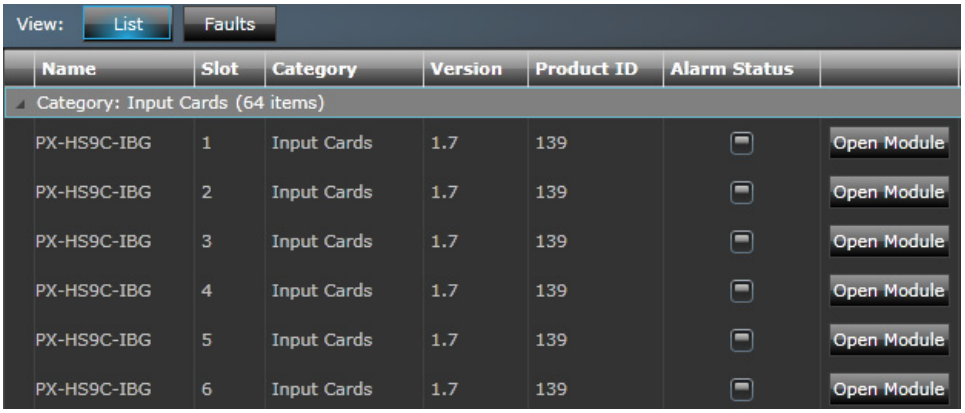


Figure 5-4 Expanded View of Modules

The following details are displayed per component:

- **Name**: The name of the card. For example, PX-HSR9C-IBG
- **Slot**: The slot the card resides in
- **Category:** The type of card - Input, Output, Crosspoint, Control
- **Version**: The firmware version running on the card
- **Product ID**: The ID for the module
- **Alarm Status:** Red (major), Yellow (minor), Blank (healthy)
- **Open Module:** Click to go to a specific card/module and view details.

Module Details

When you click the **Open Module** button against a module in the Frame View, Module details are displayed in a window superimposed over the previous frame window. The Module window displays ALL of the modules of the same type as the one that you selected. The following details are displayed:

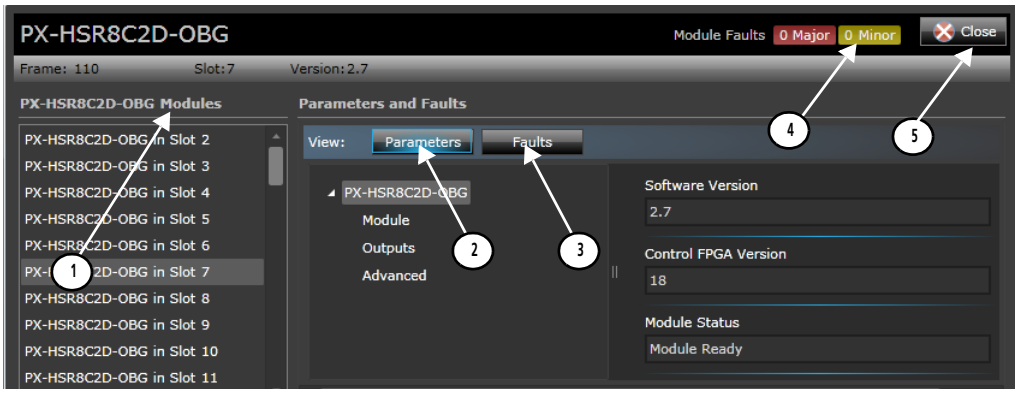


Figure 5-5 Module Details

1	Modules List	The first column displays the name of the selected module (and the slot it is in), and lists other modules of the same type in the frame, if present. You can access details of other similar modules by clicking on them in the list. When you select a module in this list, information on the frame it belongs to, the slot, version, and serial number is dynamically updated in the header at the top, and parameters are displayed on the right.
2	Module Parameters	Displays parameter categories/menus and individual parameters for the selected module. Parameter options can be changed using the GUI. See **Parametric Control**.
3	Module Faults	Displays any existing faults (and related details) for the selected module. See **Module Faults**
4	Faults Overview	The number of major and minor faults for the module are displayed at the top.
5	Close Button	You can close the Module window at any time by clicking the **Close** button at the top right hand corner of the screen.

Module Faults

Module faults can be viewed by doing the following:

1. Go to a frame by clicking the **Go to Frame** button on the main navigation page
2. Click the **Open Module** button against a Module
3. Click the **Faults** button to open the module specific Faults tab

Module faults are displayed with the following details:

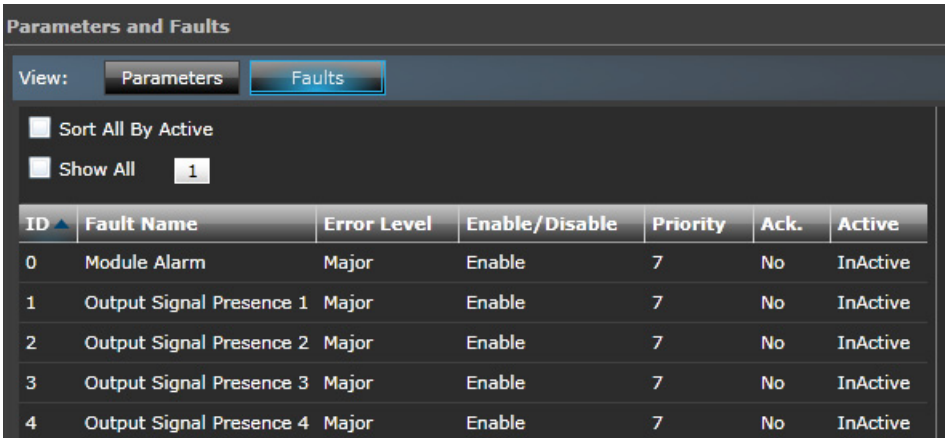


Figure 5-6 Module Faults

- **ID**: The Fault ID
- **Fault Name:** The Fault Name, for example, **Output Signal Presence**
- **Error Level:** Major or Minor
- **Enable/Disable:** Whether the fault is active or not
- **Priority:** The priority level of the fault (1-10)
- **Ack:** Whether the fault has been acknowledged
- **Active**: Whether the fault is active

Note: *Changes to Alarm Acknowledgments are not saved if the Resource Module is rebooted. For example, if you go to the faults for a specific Module (by clicking the Open Module button against a Module in the list of Modules, and then going the Faults tab for that module) change a setting, and select Acknowledge, if the Resource Card (PX-RES) is rebooted, the Alarm Acknowledgment state is not saved.*

Filtering Module Faults

Use the **Sort All by Active** or **Show All** options to filter the fault display.

Editing Module Fault Properties

Click on any of the faults to have editable details displayed to the right. You can choose to enable/disable the fault, change priority, trigger value, clear value, and acknowledge.

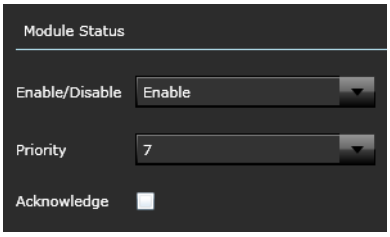


Figure 5-7 Fault Properties

Module Fault Descriptions

The following table lists possible module faults and descriptions:

Table 5-1 Module Faults

Data	Description
Signal Presence	Loss of Signal in an Input Module
Lock Detect	Loss of Signal in an Output Module
Failsafe Mode	Module is in Failsafe Mode
Power Failure	Module does not have proper power supply
Firmware Upgrade Required	Module firmware upgrade required
Back Module Missing	Cannot detect the back module
Incorrect Back Module	Mismatch with detected back module
Over Temperature Threshold	Module has a reached a critical temperature threshold
Unsupported Module	Module not supported with the current Resource Module (PX-RES) firmware. Perform Module upgrade.

Module Parameters

Refer to the ***IP3 Frame and Modules Installation and Operation Manual*** for individual modules supported in an IP3 Frame along with parameter details.

Controllers in the System

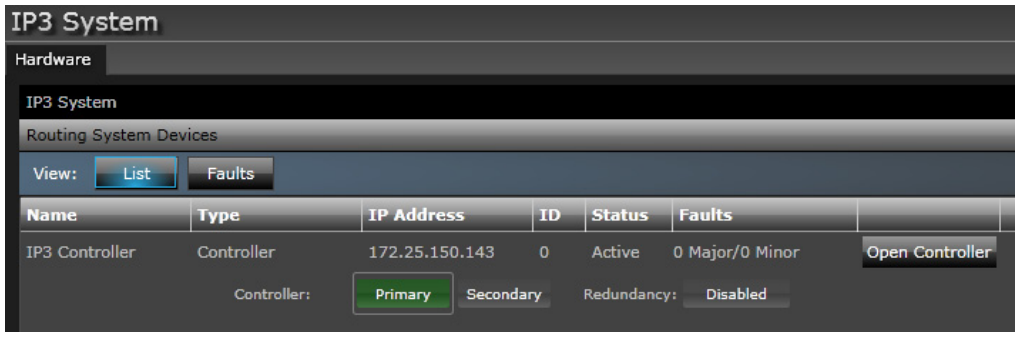


Figure 5-8 IP3 Controllers in the System

The following details are displayed for a Controller in the system:

- **Name**: The Controller Name, which shows as **IP3 Controller**
- **Type**: The Device Type, which shows as **Controller**
- **IP Address:** The Controller IP Address
- **ID:** The Controller ID
- **Status:** The status of the Controller
- **Faults:** The number of Major/Minor faults

- **Primary/Secondary:** A highlight around the Primary/Secondary buttons indicates whether the Primary or Secondary Controller is currently active
- **Redundancy:** Indicates if Redundancy has been enabled

Clicking the **Open Controller** link against a Controller in the system takes you to the IP3 Controller Settings page (**Configure System > Manage IP3 Controller Settings**), where you can define the Controller XY ID, the Server IP and Network and Redundancy Settings. See **Manage IP3 Controller Settings**.

IP3 System Faults View

Faults View is a filtered view of only those modules in the system that currently have faults.

This is a high level view of all modules in the Frame that currently have faults, as opposed to the Module specific fault view that is displayed when you choose to see faults for a specific module (**Module Faults**).

You can opt to view alarms in the following ways:

	■ **No Grouping**: A flat list of all active alarms (Major, minor, informational) ■ **Group by Device**: List of active alarms grouped by device (module)

Grouping by **Device** creates groups per module listing all faults for that module. The header of the group indicates the module name, slot number, and the total number of major/minor faults for that module.

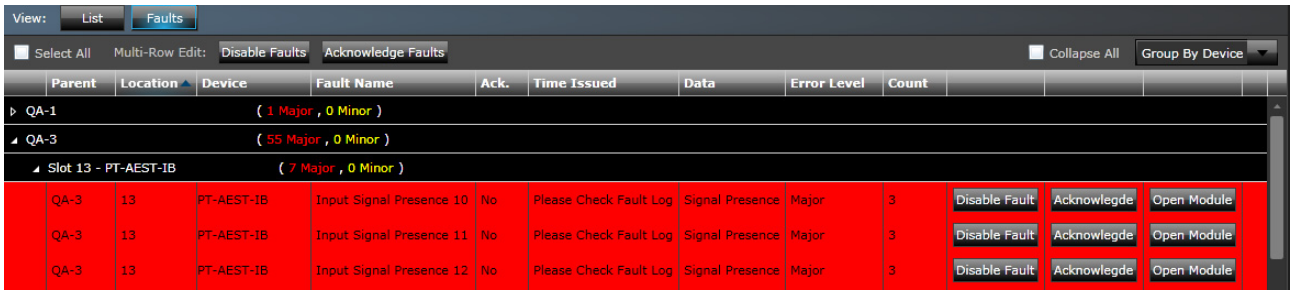


Figure 5-9 Faults Grouped by Device

Individual items are listed with details on:

- **Parent** - The Frame (name) that the Module is in
- **Device** - The name of the Module, for example, PX-HSR8C2D-OBG
- **Fault Name** - The type of Fault, for example, Input Signal Presence
- **Acknowledgment** - Whether the Fault has been acknowledged
- **Time Issued** - The Time the Fault occurred. See **Fault Time**.
- **Data -** Information on the fault, for example, Lock Detect
- **Error Level -** Whether major, minor, etc.
- **Count -** The Fault count

There are also links to:

- Disable the Fault
- Acknowledge the Fault
- Open the Module

Faults can be selected by clicking on them individually, or clicking the **Select All** button at the top to select all faults.

You can group Disable/Acknowledge Faults by either selecting all, or multiple selecting using the CRTL or SHIFT key and then clicking **Disable Faults** or **Acknowledge Faults** beside *Multi-Row Edit* at the top.

Note that once you disable a fault, to re-enable it, you will need to go to that Module's Faults view and enable the fault from there.

Fault Time

The time at which a fault occurred is not displayed in the Faults View but is available in the Fault Log of the **Logging Server**. Use the link to the **Fault Log** in the toolbar at the top to go directly to it.

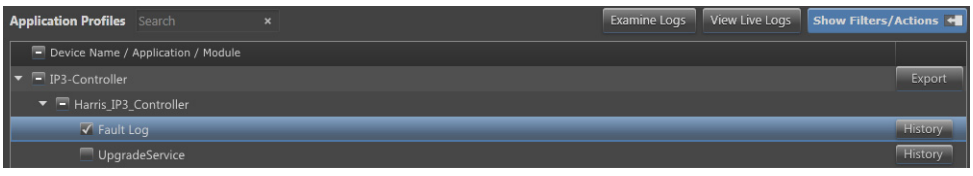
Note: *The Fault time is shown for faults triggered when the UI is open.*

To correlate a specific fault from the Faults View with the Logging Server:

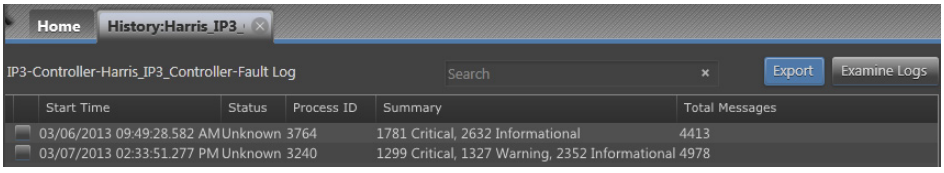
1 First, look at the details of the specific Fault in the Faults View and note the slot number and IP address of the frame that contains the module with the fault.

2 Go to the Logging component - **http://<Controller IP>:8002**

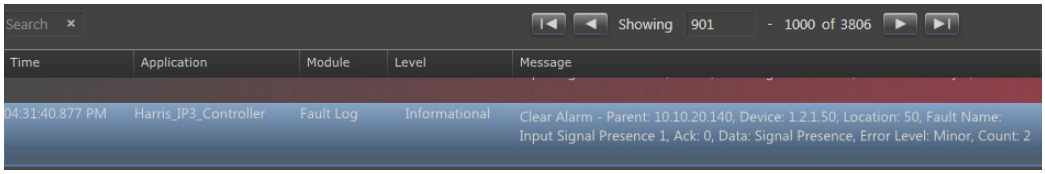
3 Expand Harris IP3 Controller, select **Fault Log**, and click the **History** button.



4 Click the **Examine Logs** button in the Examiner that is displayed.



5 In the list that is displayed, look for the Fault message.



To help co-relate with the specific fault you're looking for, look at the following details in the Message section of the Fault:

- **Parent<IP>** - The IP of the Frame that contains the module
- **Location** - The slot your module is in
- **Fault Name** - The fault name that was displayed

6 Parametric Control

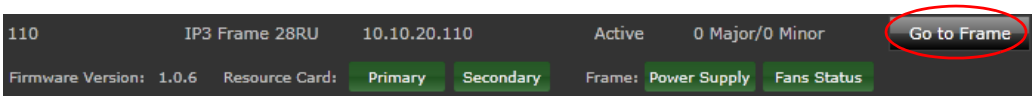
Parametric Control Overview

Through the web based UI, once you've set up your frames and modules, you can configure and control parameters for those modules.

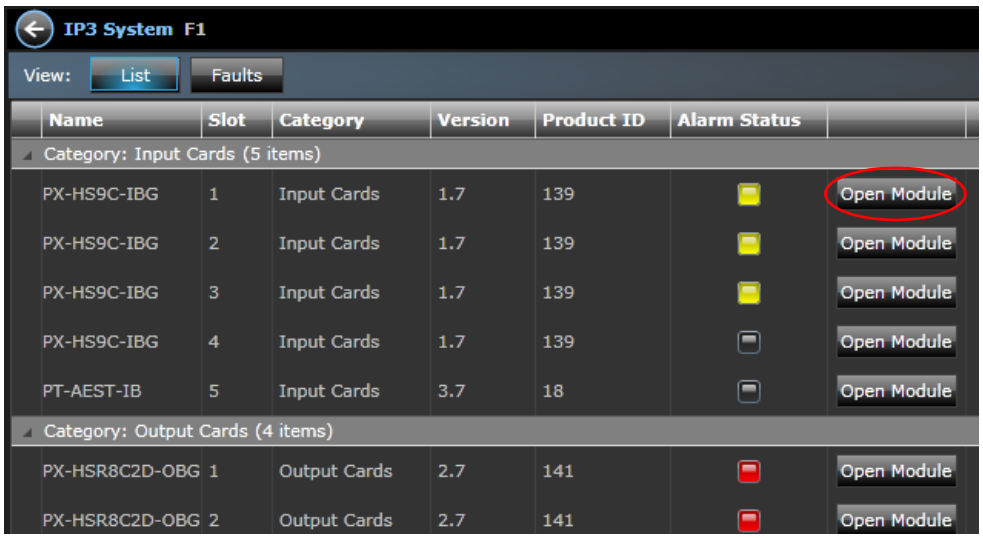
For a complete list of modules and parameters, refer to the **IP3 Frame and Modules User Manual**.

Frames and Modules in the Web Interface

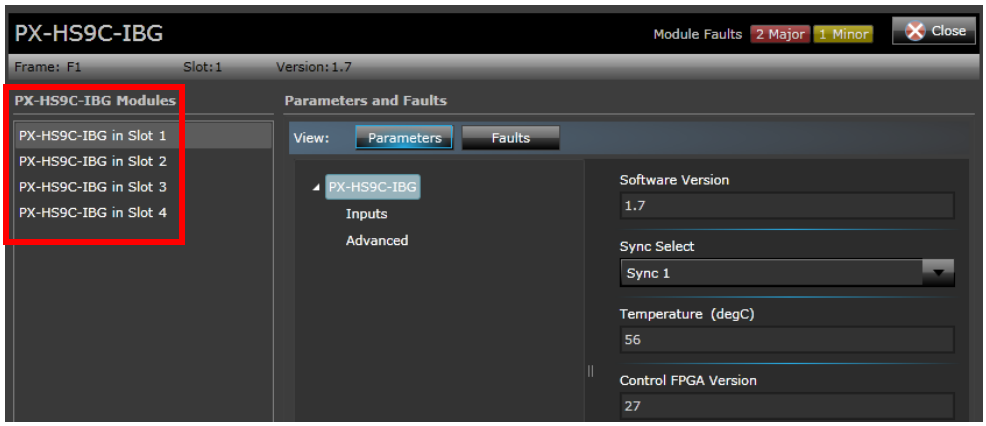
After an IP3 frame has been added to your system, you can see status and set editable parameters for both the frame and the modules in the frame. Click the **Go to Frame** button against the Frame for details.



A list of available modules and parameters are displayed, categorized by type. Click the **Open Module** button to the right to see details of a module.



The module is then displayed along with all of its parameters. Some of the parameters are status only (read-only) and some are editable.



Note: *The window that is displayed (superimposed) contains details for the module clicked on - however, if there are more than one of that type of module in the frame, all modules of that type will be displayed in the column on the left.*

Parameter/Status Menu Groups

Within each Input or Output module, per-input/output parameters/statuses are further organized into three groups:

Module

Parameters that affect the module as a whole (such as Sync Select), or status that reflects the module as a whole (such as Software Version), are usually organized under this category.

Inputs/Outputs

Parameters and status that are indexed for each Input/Output on the module are organized under **Inputs** (for Input modules) or **Outputs** for Output modules (See **Table Parameters**).

Advanced

Settings which most users would never need to see or modify.

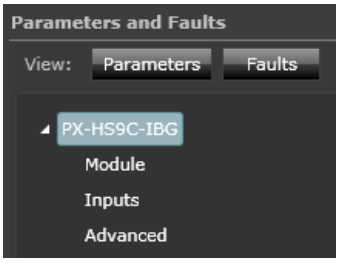


Figure 6-1 Input Parameter Groups

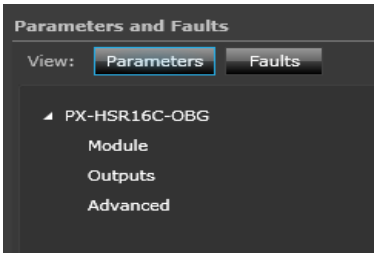


Figure 6-2 Output Parameter Groups

Parameter Types

Read-Only (Status) Parameters

Read-only or status parameters feed back the current state of a specific parameter.

Figure 6-3 Example of a Read-Only parameter

String Parameters

String parameters are items that can be renamed using text characters. String parameter changes do not take effect until the entire string has been modified. Use a keyboard, or copy and paste, to enter a value.

List Parameters

List parameters contain a series of possible values for a specific parameter. Enumeration and string-list parameter changes are always delayed. List parameters are identifiable by the arrow in the right corner of the button. When you roll the mouse over a list parameter, the button highlights, and when you click the arrow, available options are displayed. Select an item in the list to set the value for this parameter.

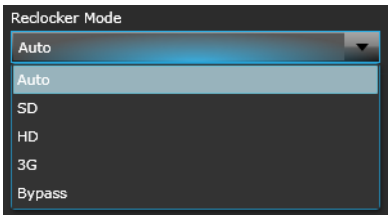


Figure 6-4 Example of a List Parameter

Range Parameters

A range parameter uses an incremented slider to choose a value from all available values. Numeric parameter values are represented by a sliding bar on the display screen. A progress bar indicates where the current value is within the entire range the parameter presents. The current value is shown at the right of the progress bar.

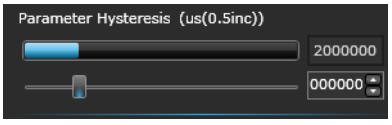


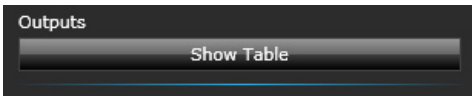
Figure 6-5 Example of a Range Parameter

You can control the editable parameters by entering values, selecting options from drop down lists, or in some cases by dragging a slider to the appropriate value.

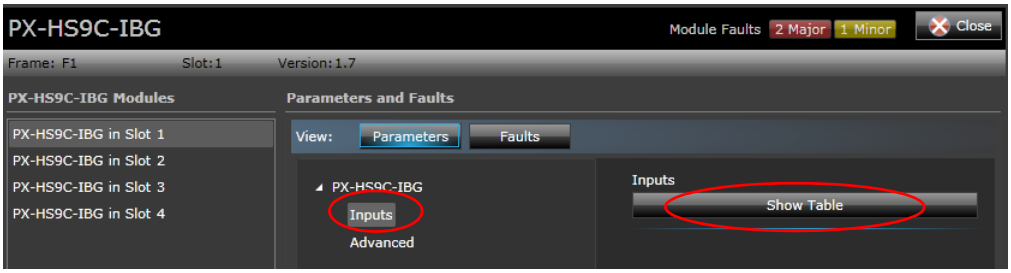
Table Parameters

Table parameters provide an interface to view a large number of settings in a single screen, linking multiple instances of the same parameter or series of parameters.

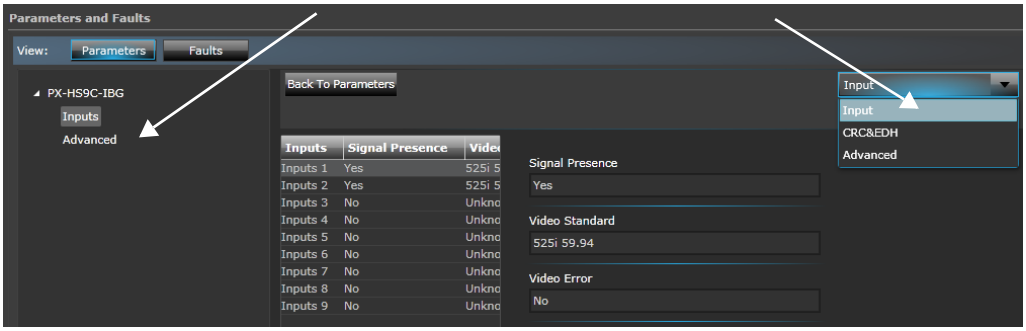
Note: *In cases where the same set of parameters apply for multiple channels (such as Inputs or Outputs), parameters are grouped under a single table, accessible through a* ***Show Table*** *Link listed against that option.*



This screenshot shows parameters for the PX-HS9C-IBG Input Module, which has two menu groups: **Inputs** and **Advanced**. Parameters for the **Inputs** menu group are grouped under a table. Click the **Inputs** menu item and then click **Show Table** to view/expand options.



The screen is divided into three panes - with the module on the left, instances in the middle, and the parameter fields to the right. You can drag the divider between these panes to expand and contract the view. You will see multiple rows corresponding to multiple channels. In this case, 9 rows are displayed for each of the inputs in the PX-HS9C-IBG.



Menu options can be accessed from menu links on the left and menu options in the drop down list in the top right hand corner.

To change a table parameter:

1. Select a row (input) from the middle section (in this case, a channel). The Parameter pane updates to display the options and current settings for that row. By default, the parameter pane displays parameters for the first row in the table. The top right corner of the screen updates to indicate the row the parameters are for.
2. Select the parameter you want to change.

   The individual parameter control types are the same as for regular parameters.

7 IP3 Database Editor

IP3 Database Editor

The **IP3 Database Editor** is a new Database Matrix Definition System for **IP3 only** or **IP3 hybrid** systems. A hybrid system is a routing system composed of IP3 and other routers.

Unlike traditional routing systems that may have different audio/video components on different levels corresponding to physical matrices, with the IP3 Database Editor, restrictions caused by physical level and physical matrix definitions are removed, and every part of every signal is accessible by name and easily routable.

Device Type definitions are used to group the parts (or components) of a signal together into a Source or Destination that can be routed as a whole. These device types are created in CCS-Navigator and exported into the IP3 Database Editor.

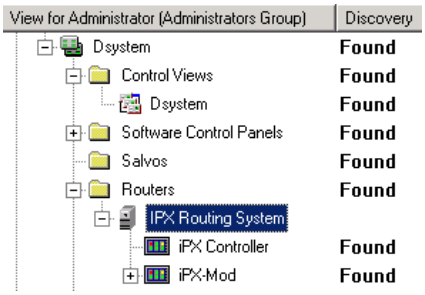
Launching the IP3 Database Editor

The IP3 Database Editor launches on the following conditions:

- The Navigator user must be an **Administrator**.
- Navigator must be running in **Build** Mode. The **IP3 Database Editor** is disabled/hidden in **Control** mode.
- The Controller node must be under the **Routers** folder in Navigator, not under **Discovery** or **Network**.
- Navigator's **DBEditor** cannot be open/running. This is to prevent simultaneous configuration changes that may result in unsynchronized data between Navigator and IP3 Controller.

To launch the IP3 Database Editor:

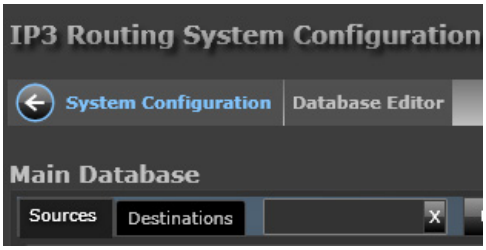
1. Start Navigator Server.
2. Double click **<IP3 System Name>** under the **Routers** folder to launch the IP3 Controller interface.



3 The Database Editor screen will be displayed.

The following functions can be performed here.

Adding Sources/Destinations



Click on the **Sources** or **Destinations** tab to define your sources/destinations. You can switch between these tabs at any time. The following functions can be performed here:

- **Undo**
- **Redo**
- **Add**
- **Insert**
- **Update**
- **Remove**
- **Save**
- **Validate**

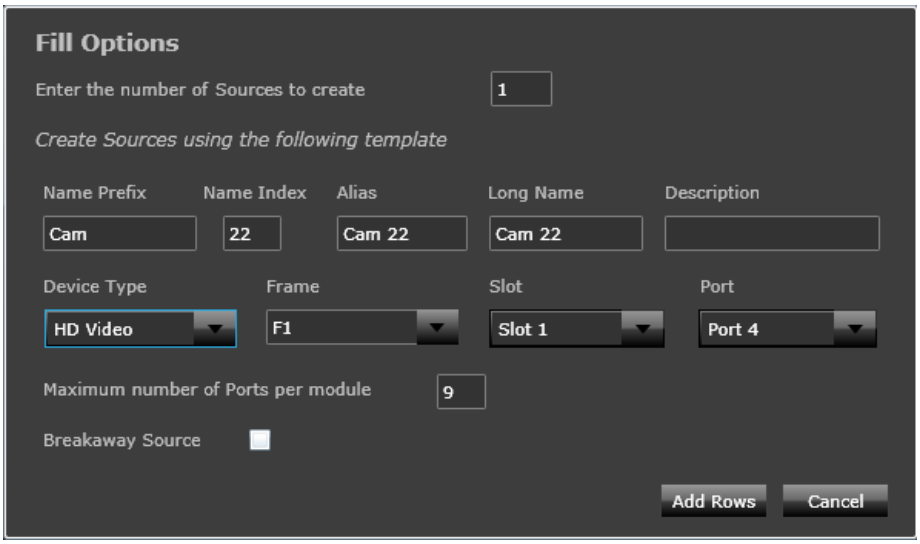
Undo

Click to **Undo** the last action.

Redo

Click to **Redo** the last action.

Add



Click the **Add** button to add a new source or destination.

- **Number of rows:** The *number* of Sources or Destinations to create. By default, a single Source/Destination will be created. If a greater number is entered here, for example 10, 10 sequential sources or destinations will be created, incrementally named (based on the Name Prefix) and with the same details.
- **Name Prefix**: Enter a name for the Source or Destination. By default, *Src* or *Dest*. Limited to 8 characters.
- **Name Index**: Index of the Source/Destination.
- **Alias**: Alias for the Source/Destination.
- **Long Name**: Long Name for the Source/Destination. Opt to provide a longer more descriptive name than the character limited *Name*.
- **Description**: Description of the Source/Destination.
- **Device Type**: Select the appropriate Device Type from the drop-down list. Previously defined device types are listed here.
- **Frame**: The Frame that the Source is in.
- **Slot**: The Slot in the Frame that the Source is in.
- **Port**: The Port for the Slot. Ports 1 to 16 available for selection.
- **Maximum number of Ports per module**: This affects how the sources/destinations are spread across the modules. Note that some Input modules have 8 inputs and some have 9; likewise Output modules can have 8 or 16 outputs.
- **Breakaway**: Select this check box to create a breakaway source or destination. This means the defined source/destination will be available on all levels, with the ability to route across levels.
- **Add Rows**: Click to Add rows or effectively, sources or destinations with the defined settings.
- **Cancel**: Click Cancel to exit without making or saving any changes.

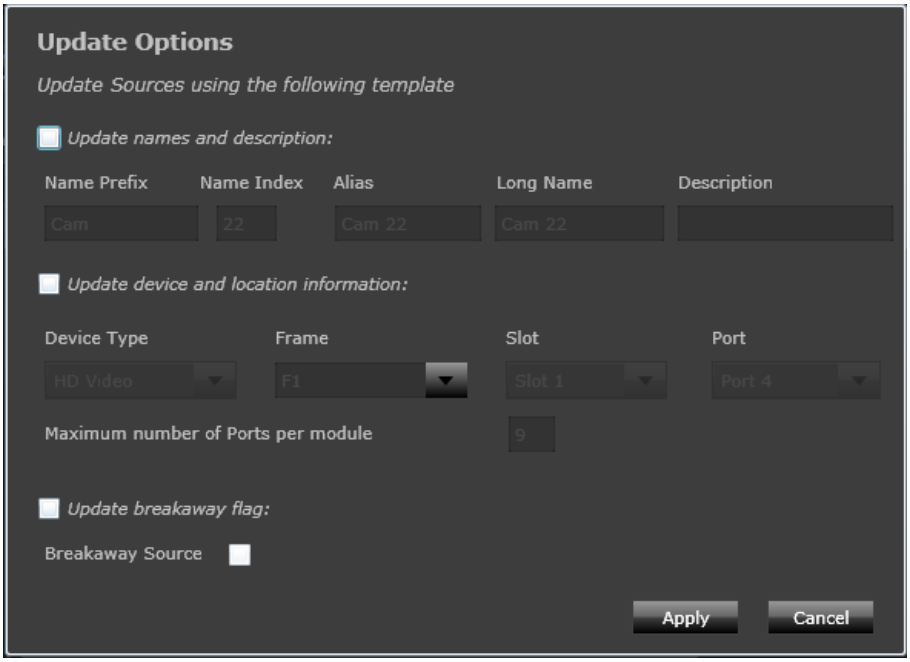
Note: *When you "Add" a Source/Destination, it gets positioned at the bottom of the list, after any existing sources/destinations. Use the "Insert" option to insert into a specific spot, rather than at the end.*

Insert

The **Insert** option is identical to **Add** - the only difference is with Insert, you can choose *where* to add sources/destinations.

For example, if you previously defined SRC1-SRC5, and you want to add a new source right after SRC1 (rather than after SRC5), use the Insert option to do so. If you use Add in this case, SRC6 will be placed after SRC5.

Update



Use the **Update** option to modify details for a previously created Source or Destination. Select the appropriate checkbox to modify that section.

Remove

Select one or more Sources/Destinations and click **Remove** to delete them.

Save

Click to **Save** changes.

Validate

Click to **Validate** sources/destinations added. If any of the sources/destinations do not validate properly, you will see an icon beside them that you can click on to see the validation details.

Refer to the Navigator help for additional steps in configuring your routing system such as:

- Integrating IP3 and non-IP3 sources and destinations into the Navigator DBEditor
- Adding Magellan remote control panels
- Configuring tielines between IP3 frames and other routers

Note: *The* ***Disconnect*** *and* ***Park*** *functions (to free tielines) are supported for IP3, but changes need to be made in Navigator, and not through IP3 DBEditor.*

You can use the ***Park*** *function to free a tieline used by a destination without disconnecting it; if you are unsure of a good local source available for switching, switch the destination to park, which will route the designated park source to the output.*

You can use the ***Disconnect*** *function to disconnect the destination using the tieline, with the result that the tieline is freed and the output is disconnected.*

8 Frame Components and Parameters

Frame Components

When you click the **Go to Frame** option for a specific frame on the main navigation page, it displays a complete snapshot of that frame including:

- Modules in a Frame
- Module Faults
- Frame Parameters
- Frame Faults
- Power Supply and Chassis Fan Status

Frame Parameters

Frame specific components and their parameters can be viewed by clicking the **Open Frame** link.

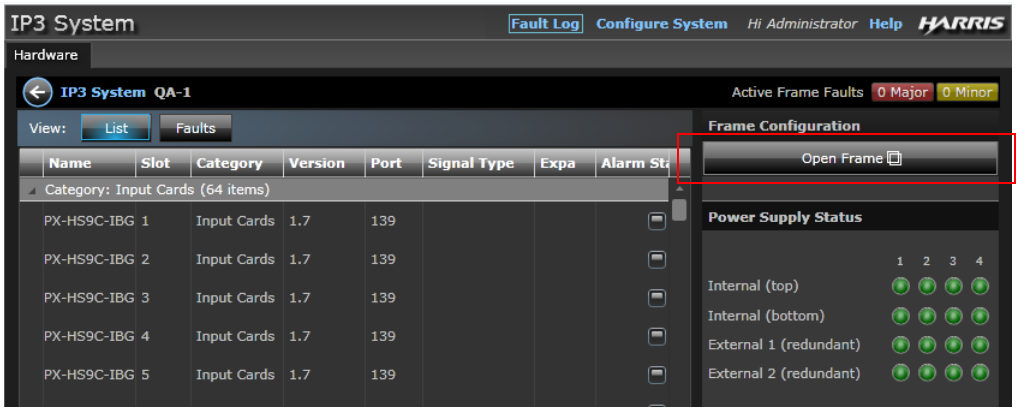
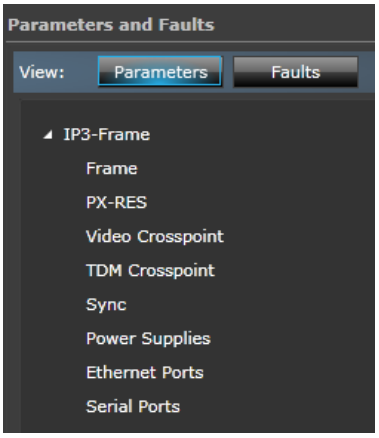


Figure 8-1 Open Frame option to access Frame parameters

The following parameters provide a control interface to the Platinum IP3 Controller frame. These parameters are divided into different menu groups, all listed below the main Frame:



- Frame Parameters
- PX-RES
- Video Crosspoint
- TDM Crosspoint
- Sync
- Power Supplies
- Ethernet Ports
- Serial Ports

Frame

The **Frame** section provides the following parameters:

Table 8-1 Frame parameters

Parameter	Type	Description/Options
Frame Type	RO	28 RU
Frame ID	RO	A unique 6-byte frame identifier
Ambient Temperature	RO	The Frame temperature in degrees centigrade

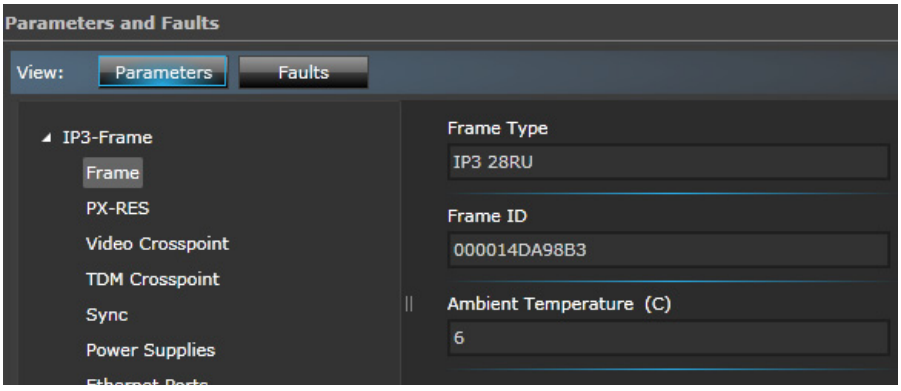


Figure 8-2 Frame Parameters

PX-RES

The **PX-RES** section provides the following parameters:

Table 8-2 PX-RES parameters

Parameter	Type	Description/Options
PX-RES 1 Serial #	RO	<String> Not Present
PX-RES 2 Serial #	RO	<String> Not Present
PX-RES 1	RO	Active Standby Not Present Failed
PX-RES 2	RO	Active Standby Not Present Failed
Select Active PX-RES	RW	PX-RES1 PX-RES2
PX-RES Firmware Version	RO	A string showing the current firmware version of the active PX-RES
PX-RES Alternate Version	RO	A string showing the firmware version on the alternate bank of the active PX-RES
Activate Alternate Version	RW	Yes No

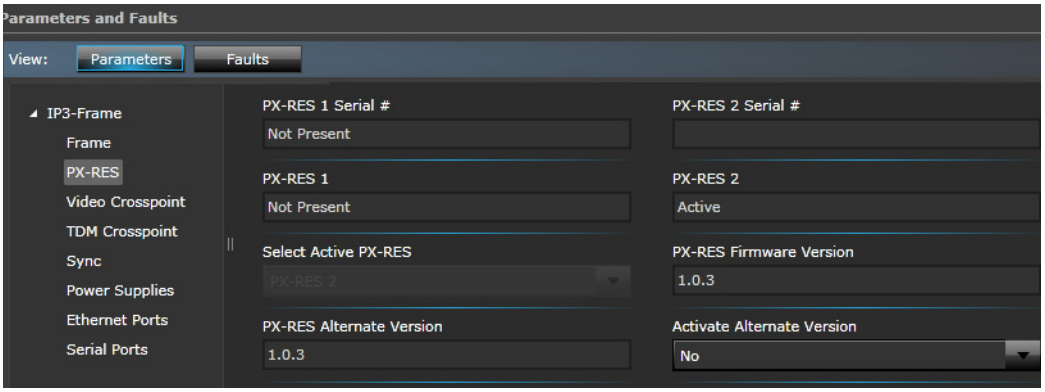


Figure 8-3 PX-RES Parameters

Video Crosspoint

The **Video Crosspoint** section provides the following parameters:

Table 8-3 Video Crosspoint parameters

Parameter	Type	Description/Options
Video Crosspoint 1	RO	Active Standby Not Present Failed
Video Crosspoint 2	RO	Active Standby Not Present Failed
Select Active Video Crosspoint	RW	Module1 Module2

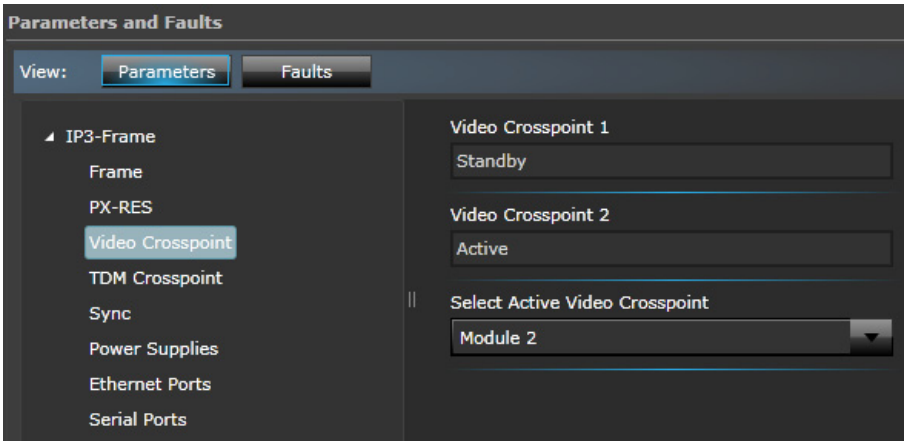


Figure 8-4 Video Crosspoint Parameters

TDM Crosspoint

The **TDM Crosspoint** section provides the following parameters:

Table 8-4 TDM Crosspoint parameters

Parameter	Type	Description/Options
TDM Crosspoint 1	RO	Active Standby Not Present Failed
TDM Crosspoint 2	RO	Active Standby Not Present Failed
Active TDM Crosspoint	RW	Module1 Module2

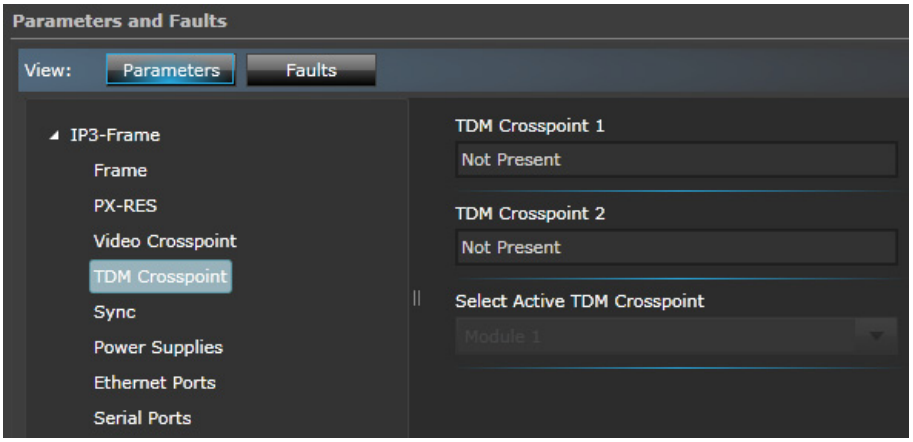


Figure 8-5 TDM Crosspoint Parameters

Sync

The **Sync** section provides the following parameters:

Table 8-5 Sync Parameters

Parameter	Type	Description/Options
Sync Enable *(Table Parameter)*	RW	Yes No
Sync Mode *(Table Parameter)*	RW	Auto, Standard, Advanced
Sync Reference (available only when **Sync Mode (Table Parameter)** is set to **Auto, Standard, Advanced**) *(Table Parameter)*	RW	None Analog 525/60 Analog 525/59.94 Analog 625/50 1920x1080/60I 1920x1080/59.94I 1920x1080/50I 1920x1080/30P 1920x1080/29.97P 1920x1080/25P 1920x1080/24P 1920x1080/24PsF 1920x1080/23.97P 1920x1080/23.97PsF 1280x720/60P 1280x720/59.94P 1280x720/50P Unknown AES Unknown AES Reserved AES 192KHz AES 96KHz, AES 88KHz AES 48KHz AES 44KHz AES 32KHz TDM Sync Pulse 1920x1080/60P 1920x1080/59.94P 1920x1080/50P
Sync Pulse Delay (available only when **Sync Mode (Table Parameter)** is set to **Auto, Standard, Advanced**) *(Table Parameter)*	RW	0 to 65535
Detected Sync *(Table Parameter)*	RO	Displays the current detected reference standard.
Sync Module 1	RO	Active, Standby, Not Present
Sync Module 2	RO	Active, Standby, Not Present
Select Active Sync Module	RW	Module1 Module2

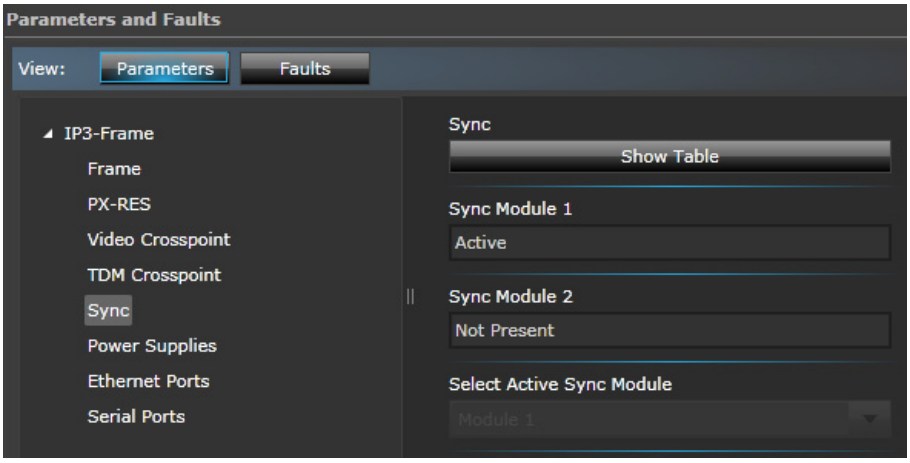


Figure 8-6 Sync Parameters

Sync Notes

- There are 4 available sync references that can each be turned on or off by **Sync Enable** parameters.
- The **Sync Mode** parameter (set to **Auto** by default) allows for configuration of switching point settings. In **Auto** mode, the output switches relative to the detected sync reference assigned to the module.
- If **Sync Mode** is set to **Standard**, the **Sync Reference** parameter can be used to specify the sync standard to use as the reference signal. The output switches relative to the specified reference.
- If **Sync Mode** is set to **Advanced**, the **Sync Pulse Dela** parameter can be used to specify where the output switching point is relative to the reference signal. The delay is in units of microseconds.
- By default, **Sync Enable** is set to **On**. When a firmware upgrade is performed in this mode, the new firmware is programmed into the alternate banks of both the active and the standby PX-RES.
- If **Sync Enable** is set to **Off**, only the alternate bank of the active PX-RES is written

Power Supplies

The **Power Supplies** section provides the following parameters:

Table 8-6 Power Supplies parameters

Parameter	Type	Description/Options
Top Shelf 5V Power	RO	Present Failed
Bottom Shelf 5V Power	RO	Present Failed
Zone 1 24V Power	RO	Present Failed

Table 8-6 Power Supplies parameters

Parameter	Type	Description/Options
Zone 2 24V Power	RO	Present Failed
Zone 3 24V Power	RO	Present Failed
Zone 4 24V Power	RO	Present Failed

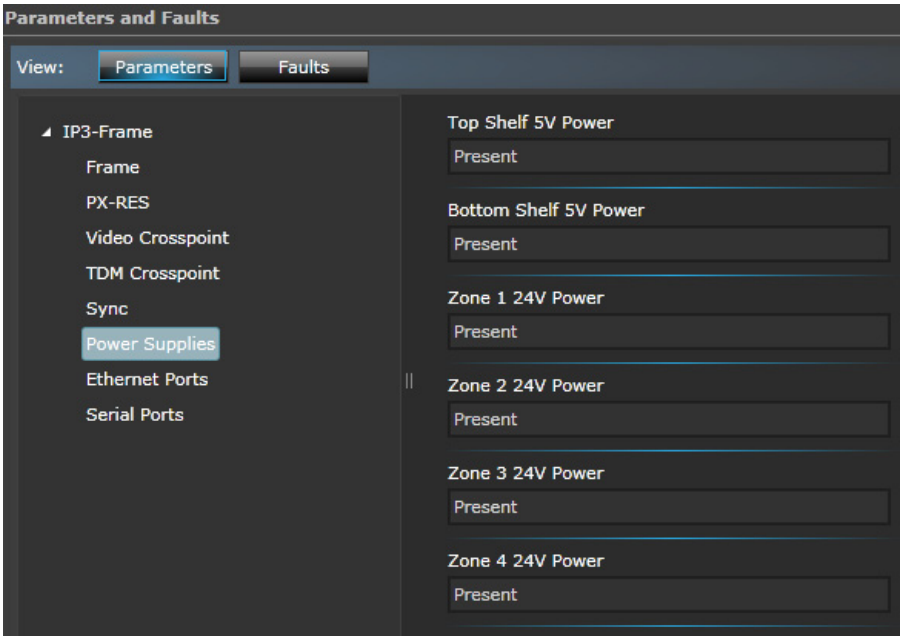


Figure 8-7 Power Supplies Parameters

Ethernet Ports

The **Ethernet Ports** section provides the following parameters:

Table 8-7 Ethernet Ports Parameters

Parameter	Type	Description/Options
MAC Address 1	RO	MAC Address of the 1st Ethernet Port on the active PX-RES ■ Port 1 if PX-RES on the top slot is active ■ Port 3 if PX-RES on the bottom slot is active
IP Address 1	RW	IP address string for the back panel Ethernet connectors 1 and 3
IP Mask 1	RW	IP mask string for the back panel Ethernet connectors 1 and 3
Gateway Address 1	RW	Gateway Address string

Table 8-7 Ethernet Ports Parameters

Parameter	Type	Description/Options
Save Ethernet 1	RW	No Yes
MAC Address 2	RO	MAC Address of the 2nd Ethernet Port on the active PX-RES ■ Port 2 if PX-RES on the top slot is active ■ Port 4 if PX-RES on the bottom slot is active
IP Address 2	RW	IP address string for the back panel Ethernet connectors 2 and 4
IP Mask 2	RW	IP mask string for the back panel Ethernet connectors 2 and 4
Gateway Address 2	RW	Gateway Address string
Save Ethernet 2	RW	No Yes

Serial Ports

The **Serial Ports** section provides the following parameters:

Table 8-8 Serial Ports parameters

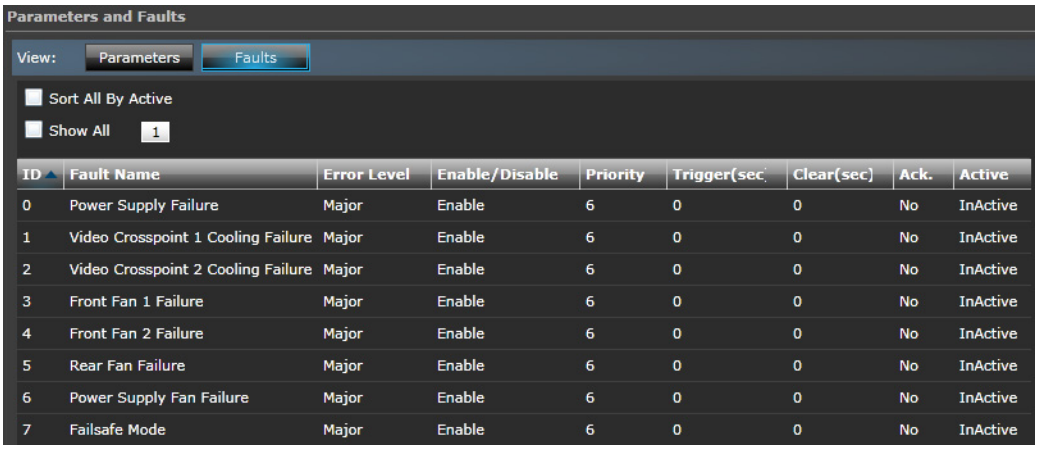
Parameter	Type	Description/Options
Port (1-2) Mode	RW	RS 232 RS 422
Port (1-2) Baud Rate	RW	300 600 1200 2400 4800 9600 14400 19200 38400 57600 115200
Port (1-2) Stop Bit	RW	1 2
Port (1-2) Parity	RW	None Odd Even
Save Serial (1-2)	RW	No Yes

Frame Faults

To see Frame specific faults:

1. On the main navigation page, click the **Go to Frame** button against a frame
2. Click the **Open Frame** button under Frame Configuration on the right
3. In the Frame view that is displayed, click the **Faults** button

For information on the cause of the fault, look at the **Fault Name** column.



ID	Fault Name	Error Level	Enable/Disable	Priority	Trigger(sec	Clear(sec)	Ack.	Active
0	Power Supply Failure	Major	Enable	6	0	0	No	InActive
1	Video Crosspoint 1 Cooling Failure	Major	Enable	6	0	0	No	InActive
2	Video Crosspoint 2 Cooling Failure	Major	Enable	6	0	0	No	InActive
3	Front Fan 1 Failure	Major	Enable	6	0	0	No	InActive
4	Front Fan 2 Failure	Major	Enable	6	0	0	No	InActive
5	Rear Fan Failure	Major	Enable	6	0	0	No	InActive
6	Power Supply Fan Failure	Major	Enable	6	0	0	No	InActive
7	Failsafe Mode	Major	Enable	6	0	0	No	InActive

The following table lists possible Frame faults and descriptions.

Table 8-9 Frame Faults

Fault Name	Description
Power Supply Failure	One of the power supplies has failed
Video Crosspoint 1 Cooling Failure	Video Crosspoint 1 has reached a critical temperature threshold
Video Crosspoint 2 Cooling Failure	Video Crosspoint 2 has reached a critical temperature threshold
Front Fan 1 Failure	At least one of the fans in the fan module 1 has failed
Front Fan 2 Failure	At least one of the fans in the fan module 2 has failed
Rear Fan Failure	At least one of the rear fans has failed
Power Supply Fan Failure	At least one of the power supply fans has failed
Failsafe Mode	The PX-RES is in failsafe mode (this is a warning, not an alarm)

9 Resource Module (PX-RES)

PX-RES Overview

The **PX-RES** Resource card serves as the central control point for the Platinum IP3 frame and all modules that reside in the frame. The PX-RES is a control module with software and hardware components that control communications between the different processing modules (input, output, crosspoint) in an Platinum IP3 Controller frame. It also enables communication with external devices (configuration, control, monitoring, and routing).

The PX-RES module also provides the sync processing necessary to determine the switch timing for the frame. The control system reports the presence and type of sync signal detected on each of the four inputs. The PX-RES module distributes the synchronization signals to all the crosspoint, streaming, and output monitoring modules in the frame. It also automatically generates and distributes an internal synchronization signal when no external sync input is present.

PX-RES Parameters and Upgrades

The PX-RES provides access to frame and module parameters via the CCS protocol, and routes video and audio signals within a deterministic time frame.

It also provides a consistent mechanism to upgrade module firmware. See Upgrade information for **Resource Modules**.

PX-RES Redundancy

Each Platinum IP3 frame can have up to two PX-RES modules operating redundantly. If one module detects failure of the other, it switches over control and continues router operation.

The resource module and optional redundant resource module are located in the middle of the frame. Resource modules are visible when the front panel door is opened.

Resource Card Synchronization

In normal operating mode, all parameter and route changes are synchronized from the active/master PX-RES to the standby PX-RES.

When upgrading PX-RES firmware, images are also synchronized. If the alternate firmware image is activated on the active PX-RES, the alternate image on the standby PX-RES also becomes active.

Active and Standby Determination

- Active and Standby states are non-volatile.
- An active PX-RES remains active after a power cycle.
- The standby PX-RES only becomes active if the active PX-RES is removed or in case of manual failover.
- If two PX-RES modules are inserted into a frame and powered up at the same time, the PX-RES in the top slot will have higher priority.

Alarms

All alarms are off by default, except for critical temperature alarms. Individual alarms can be turned on or off. The following error conditions can trigger an alarm:

- Loss of input or output signal
- Power supply failure
- Fan failure or missing front fan modules
- Video crosspoint reaching critical temperature
- PX-RES synchronization failure

10 Controller Redundancy

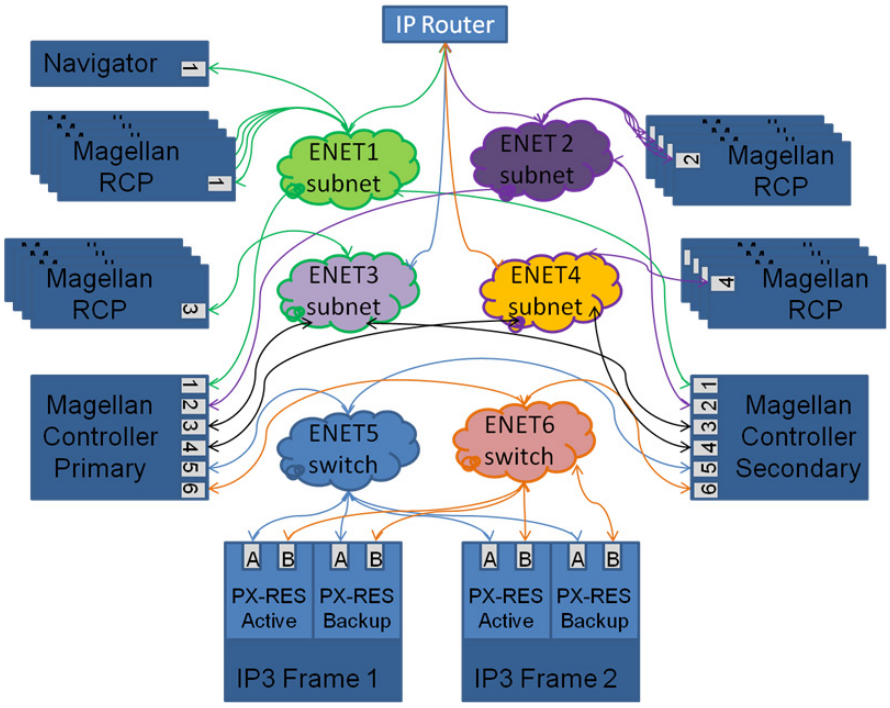
Overview

The IP3 supports redundant operation in order to ensure system availability in the event of a failure of the IP3 Controller OR to allow maintenance of the IP3 Controller during normal operation of the routing system.

Redundancy of the IP3 Controller is configured in a 1:1 Primary/Secondary configuration. The switching is non-reverting - if control is passed to the Secondary IP3 Controller, human intervention is required in order to push control back to the primary unit.

This section provides information on configuration of Redundancy settings on the Controller, and operational guidance on how to enable redundancy, how to detect a failover has occurred, how to force failover from Primary to Secondary (for testing or maintenance), and how to force fail-back to the Primary controller.

This section also provides guidance on the sequence of events for upgrading the software on a redundant controller system during operation.



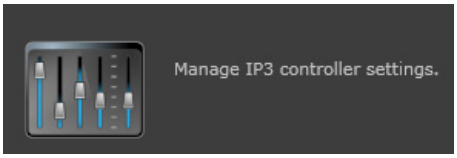
Configuring IP3 Controller Redundancy

Defining a Secondary IP3 Controller

Note: *Before adding a Secondary Controller, it is recommended you go to the Secondary Controller itself, launch a web browser and connect to 127.0.0.1, and define all 6 Ethernet Interfaces as was done with the Primary Controller. Ethernet Interfaces can be set by going to* ***Manage IP3 Controller Settings*** > ***Network & Redundancy*** > ***Network Settings.***

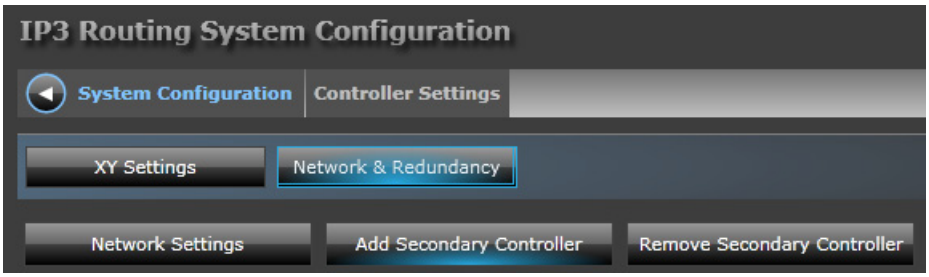
1 In the Controller GUI, click the **Configure System** link in the toolbar at the top.

2 In the IP3 Routing System Configuration that is displayed, click the **Manage IP3 Controller Settings** icon.



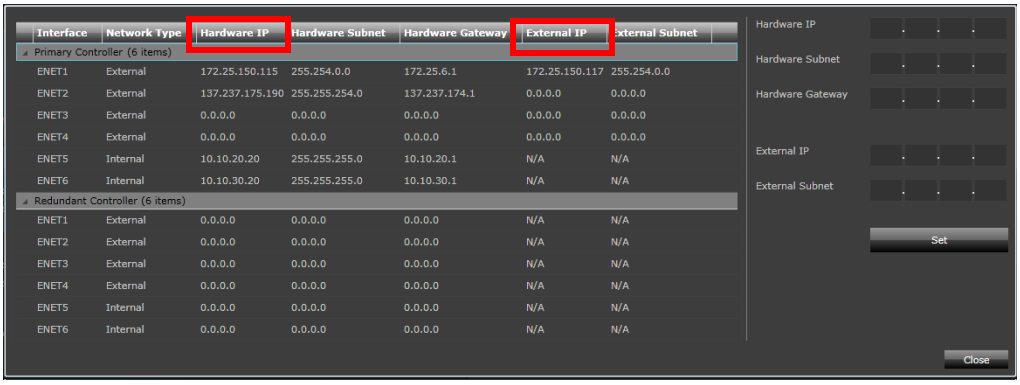
3 Click the **Network & Redundancy** button.

4 Click the **Add Secondary Controller** button.



5 Enter the **IP Address** of the Secondary Controller and click **Apply**.

6 Ensure you have all 6 Ethernet Interfaces defined on both Controllers. This includes details on the Primary and Secondary IP, Subnet, Gateway for each ENET port.



All communication between the Primary and Secondary Controller is via Ethernet port 5, as this port is used for Internal communication.

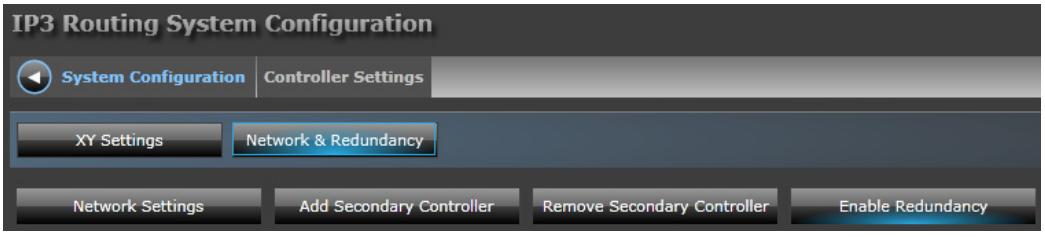
IP Addresses

For the Primary Controller, ensure that you set the **Hardware IP** address before the **External IP** Address. You cannot choose to provide only an **External IP** address without providing a **Hardware IP** address.

Clients (Controller/Magellan/Platinum) connecting to the IP3 System should use the **External IP** address. Even though the Hardware IP address will work, it is best practice to use External IPs, because in case of failover, external IP addresses are seamlessly transferred over to the Controller that takes over. Whereas, if Hardware IPs are used, in case of failover, clients will still be attempting to connect to the unavailable IP.

Enabling Redundancy

Once your Secondary Controller has been set up, click the **Enable Redundancy** button to make redundancy active.



The current Redundancy setup can be viewed at any time by going to **System Configuration** > **Manage IP3 Controller Settings** > **Network and Redundancy**.

The diagram displayed will show currently configured details of the Primary Controller and the Secondary (if applicable).

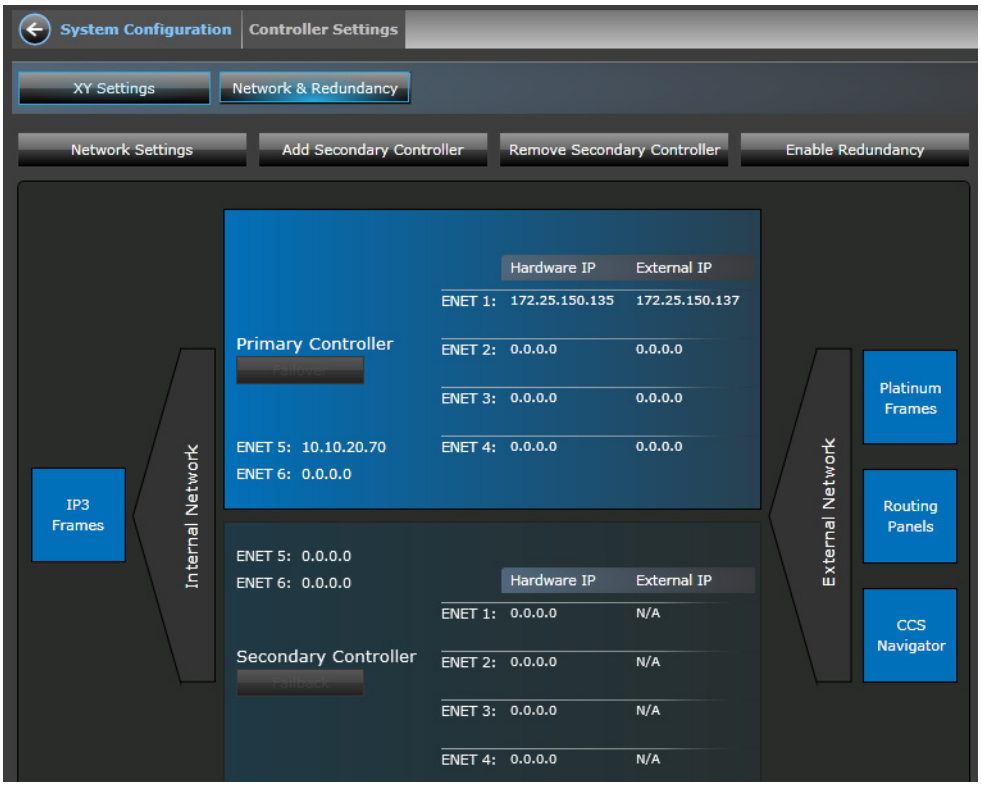


Figure 10-1 Redundancy Setup

Redundancy in Depth

Data Synchronization

- Synchronization is automatic and one-way from Primary to Secondary Controller.
- Synchronization from Secondary to Primary Controller can be done manually, using the backup/restore utility.
- Data Synchronization is done using Microsoft's RoboCopy utility.
- The Manager Service on the Primary Controller monitors for folder changes. When changes are detected, synchronization is performed to the Secondary Controller.
- Magellan Diagnostic Logging (See **Logging Server**) can be used to track and follow RoboCopy activities. On the Primary Controller, log entries are made when data is copied from the Primary/Master to temporary and from temporary to Secondary/ Remote copy. See **Testing Redundancy**.
- If the Copy operation fails, the Server retries until it succeeds. The Copy operation is logged in red in case of failures.

Secondary Controller Access and Functionality

Once a Controller has been set as Secondary to a Primary Controller and redundancy enabled, the Secondary (Redundant) Controller will no longer be accessible using its IP Address via a web browser - this is because the Secondary goes into Standby mode.

Note: *However, you can access the logging diagnostics on the Secondary Controller via a web browser by going to* ***http://<Secondary_IP>:8002/***

In Standby mode, the Secondary/Redundant controller runs only service - the Controller Manager service - that monitors the Primary Controller and syncs data when required. If the Primary Server becomes unavailable, the Secondary detects it, and the single Controller Manager service that is running then starts up all other services, and it becomes a full-fledged Primary Controller.

Redundancy based on Primary/Secondary Controller Power Status

The following table explains how failover works in different cases:

Table 10-1 Primary/Secondary Failover Cases

Primary	Secondary	Redundancy Behavior
Rebooted	Rebooted	If both Primary and Secondary Controllers are rebooted, the last known state is maintained.
Rebooted	Running	If the active Primary is rebooted, and a Secondary is available and configured, it fails over to the Secondary.
Running	Rebooted	If the Primary is active, and the Secondary is rebooted, the Primary continues to be active.
OFF	Rebooted	If the Primary is OFF and the Secondary is rebooted, the last known state is maintained. ■ If the Secondary's state was *Active* before rebooting, then it boots as the Active Controller. ■ If the Secondary's state was *Standby* before rebooting, the Secondary continues in Standby, there is no automatic failover.

How Redundancy Works

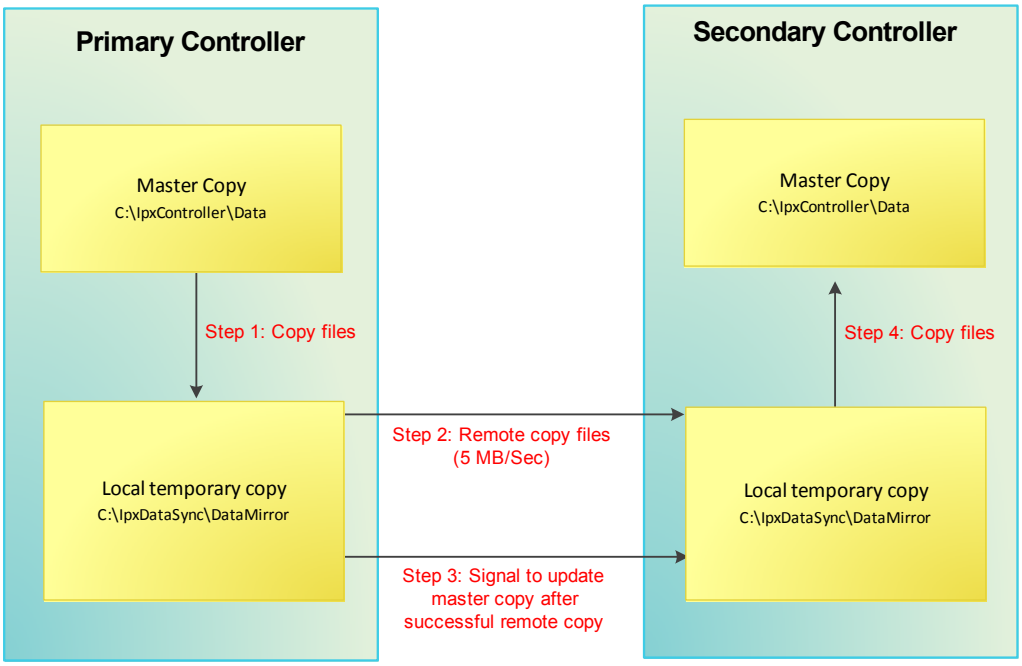


Figure 10-2 Primary to Secondary Redundancy

Both Primary and Redundant IP3 Controllers store their data in **IPxController\Data** folders.

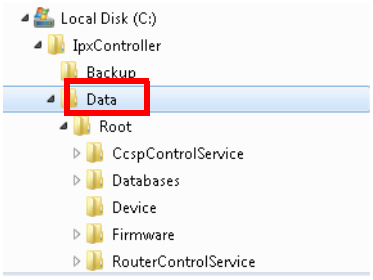
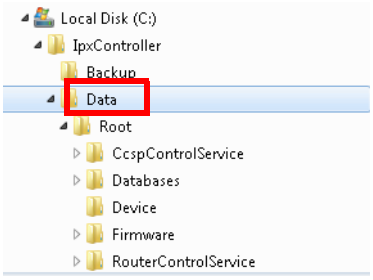
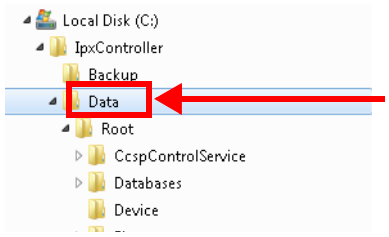
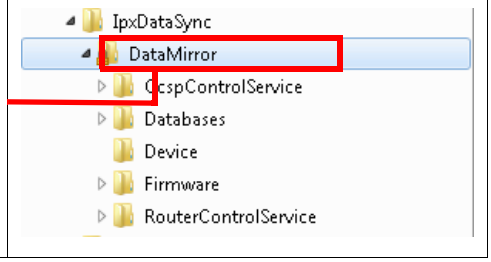
Primary Controller	Redundant Controller
	

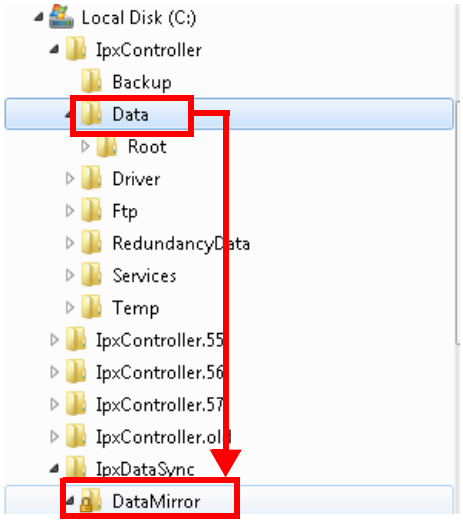
Figure 10-3 Controller Data Folder Structure on Primary and Secondary

The **IPxDataSync\DataMirror** folder on the **Redundant** Controller is a shared folder, made available to the **Primary** Controller.

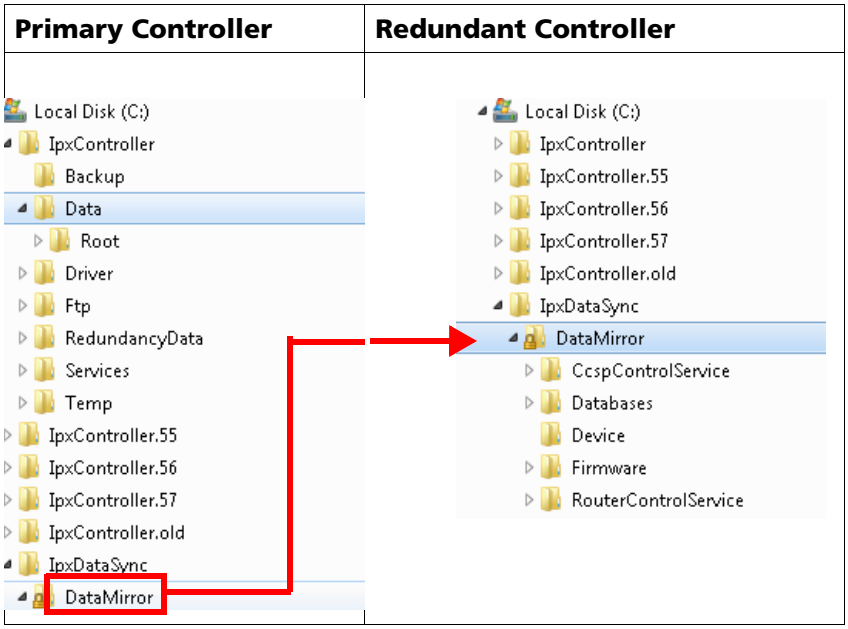
Primary Controller	**Redundant Controller**
	

When Redundancy is set up, the Primary Controller syncs data to the Secondary Controller by doing the following:

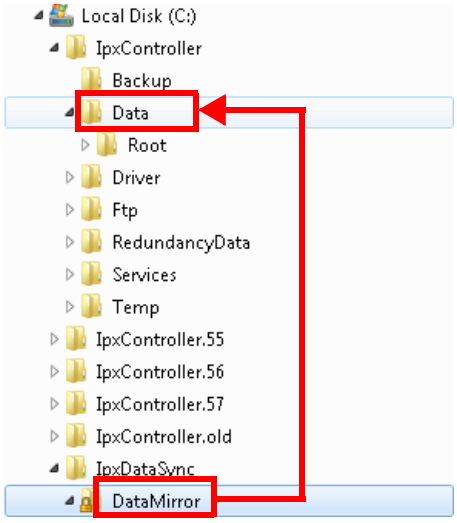
1 The Primary Controller first copies the contents of its **IPxController\Data** folder to its **IPxDataSync\DataMirror** folder.



2 From its **DataMirror** folder, the Primary copies contents over to the **IPxDataSync\DataMirror** folder on the **Secondary** Controller (shared drive).



3 The Secondary Controller then copies the data from its **IpxDataSync\DataMirror** folder to its **IPxController\Data** folder.



This process repeats to sync data to the Redundant Controller which is then ready to take over from the Primary if required.

Switching back to Primary Controller

If the Secondary Controller takes over as a result of the Primary becoming unavailable, and if the Primary comes back up, it is not switched to automatically. If required, this process needs to be done manually. To switch from Secondary back to Primary:

1 On the Secondary Controller, copy the entire contents of the **IPxController\Data** folder.
2 Go to the Primary Controller, and replace the content of the **IPxController\Data** folder.

Testing Redundancy

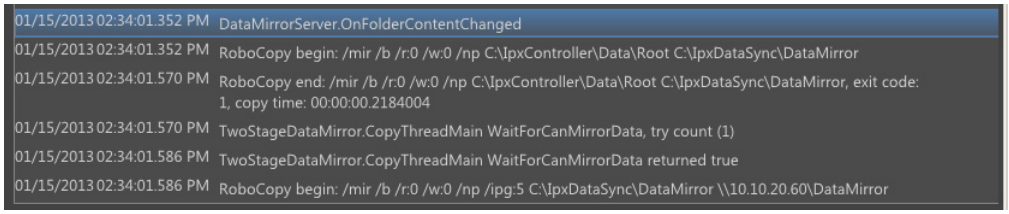
Once you define your primary and secondary Controller and enable Redundancy, you can test the Redundancy based on activity messages in the Magellan Logging Server.

The Live Logs on the Magellan Diagnostic Log Viewer provides real time status of functions and operations performed, and reports on results.

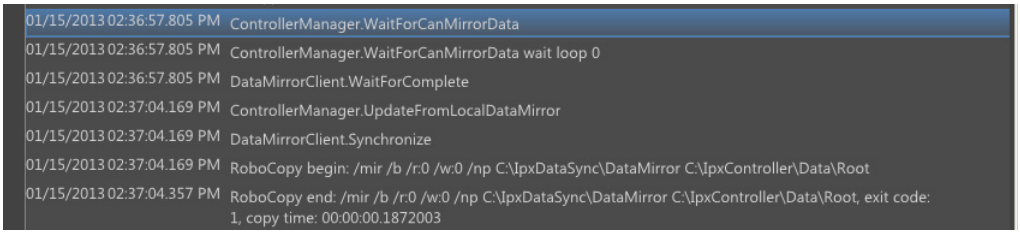
Example

In this simple example (that presumes a secondary controller has already been defined and enabled from the Primary Controller), we load new PX-RES firmware in the Firmware Foundry on the Primary Controller, and verify if that is replicated on the Secondary Controller.

1. Open 4 Browser windows and connect to:
   - **Primary Controller** at http://<Primary_IP>
   - **Secondary Controller** at http://<Secondary_IP>
   - **Logging Server on Primary Controller** at http://<Primary_IP>:8002/
   - **Logging Server on Secondary Controller** at http://<Secondary_IP>:8002/
2. In both Logging Server windows, go to **Live Logs**
3. On the Primary Controller, go the Firmware Foundry and upload a new PX-RES package (Configure System > Firmware Foundry > Add Package)
4. Watch the **Live Logs** on the Logging Server for the Primary Controller. You should see log entries that show:
   - Data was copied from **C:\IpxController\Data\Root** to **C:\IpxDataSync\DataMirror**
   - The exit code and copy time for the copy operation
   - The attempt to mirror data
   - The data mirrored from the Primary's Data Mirror folder (**C:\IpxDataSync\DataMirror**) to the Secondary's Data mirror folder (**<SecondaryIP>\DataMirror**)



5. Watch the **Live Logs** on the Logging Server for the Secondary Controller. You should see log entries that show:
   - The wait for mirrored data on the Secondary
   - The start of the synchronization process
   - Data copied from the Secondary's mirror folder (**C:\IpxDataSync\DataMirror)** to it's data folder (**C:\IpxController\Data\Root)**
   - The exit code and copy time for the copy operation


01/15/2013 02:36:57.805 PM ControllerManager.WaitForCanMirrorData
01/15/2013 02:36:57.805 PM ControllerManager.WaitForCanMirrorData wait loop 0
01/15/2013 02:36:57.805 PM DataMirrorClient.WaitForComplete
01/15/2013 02:37:04.169 PM ControllerManager.UpdateFromLocalDataMirror
01/15/2013 02:37:04.169 PM DataMirrorClient.Synchronize
01/15/2013 02:37:04.169 PM RoboCopy begin: /mir /b /r:0 /w:0 /np C:\IpxDataSync\DataMirror C:\IpxController\Data\Root
01/15/2013 02:37:04.357 PM RoboCopy end: /mir /b /r:0 /w:0 /np C:\IpxDataSync\DataMirror C:\IpxController\Data\Root, exit code:
1, copy time: 00:00:00.1872003

11 Logging Server

Overview

The Harris Magellan Logging Server provides logging information on IP3 Controller and Routing functions. The Logging Server is pre-installed on the Controller and can be accessed on port 8002 on the same IP address as the Controller.

To launch the Harris Magellan Logging Server:
In the URL field of your browser, type **http://<Controller IP Address>:8002/**

The following is explained here:

Logging Server Interface

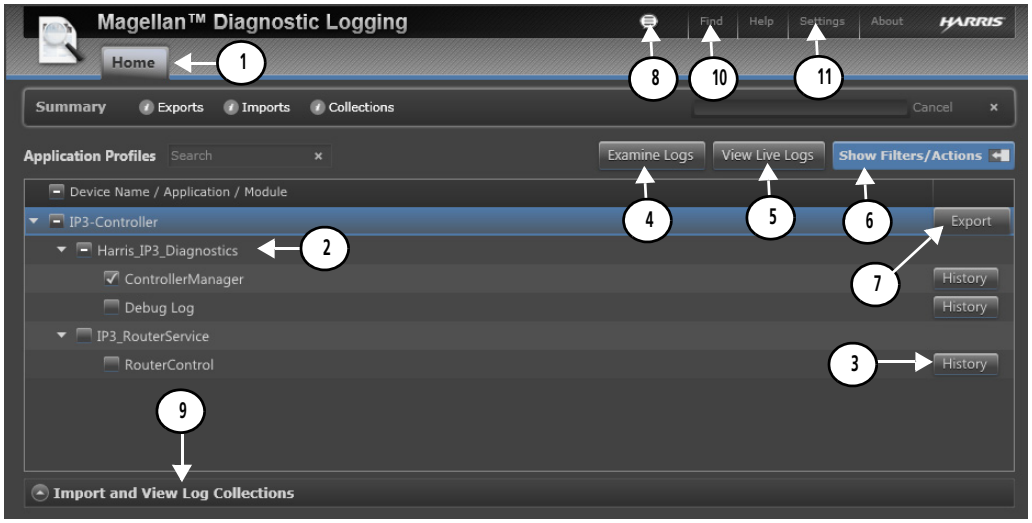


Figure 11-1 Logging Server Home tab

Table 11-1 Logging Server Interface Options

	Item	Description
1	Home Tab	The Logging Server Home Tab.
2	Router/Controller Elements	The available elements to view logs for
3	History	Select an element and click the **History** button to view History for the selected element
4	Examine Logs	Select an element and click the **Examine Logs** button to review logs for the selected element
5	View Live Logs	Select an element and click the **View Live Logs** button to view real time logs for the selected element
6	Filters and Actions	Click to filter display and content preferences for logs
7	Export	Select an element and click the **Export** button to export log information. Logs can be exported by day, week, or all.
8	Summary	Click the **Summary** icon to display a Summary toolbar at the top of the page that contains shortcut links to Exports, Imports, and Collections. See **Using Summaries**.
9	Import and View Log Collections	Click to view/access **Log collections** based on name/ date/comments - these can then be **examined** or **exported**. You can also **import** logs.
10	Settings	Click to view/define **System-wide settings**, **Log Viewer Settings**, and **Logging Server Settings**.
11	Find	Searches for the entered text on the page

Working with Logs

Examining Logs

On the **Home** tab, select devices (if no devices are selected, it's the same as if all of them are) and click **Examine Logs** to view logs in detail.

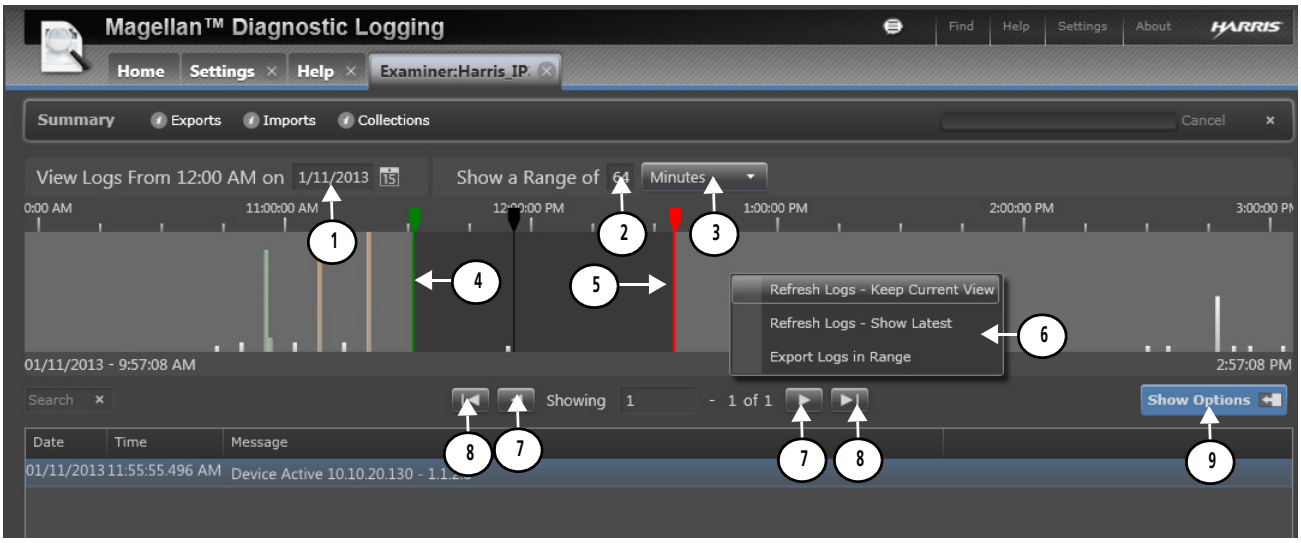


Figure 11-2 Examiner Tab

Table 11-2 Examiner Tab

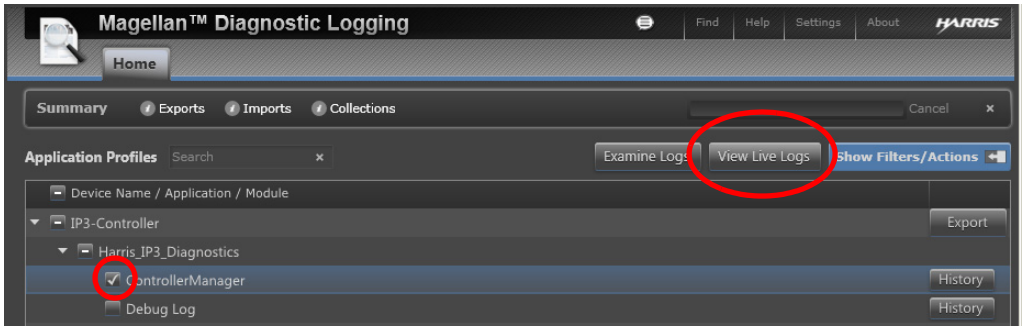
	Item	Description
1	Log Date	Date to view logs from. Type in a date or click the calendar icon and go to a date.
2	Units in View	Number of defined units for the log (hours, minutes, etc)
3	Display Units	Units to view log information in (Days, Hours, Minutes, Seconds, Milliseconds)
4	Log Start Range	The Start Point of the Log Range. Click and drag to define.
5	Log End Range	The End Point of the Log Range
6	Log Range Options	Right click to view options for the selected log range. You can choose to refresh logs or export the selected range.
7	Next Page	Click to go to the next or previous page.
8	Last Page	Click to go to the last or first page.
9	Options	Click to view/define Log Options and to filter logs.

The top portion of the **Examiner** tab shows a timeline. A **green** marker indicates the beginning of the viewing area, and a **red** marker indicates the end. To View a specific time, click the timeline with the mouse. The log examiner updates to show logs surrounding that time. A black line appears in the timeline, indicating the current time in the Examiner.

Above the timeline, you can adjust the content that is displayed by changing the date and duration. To view a different part of the log, drag the green and red sliders. Below the timeline, messages are displayed in a static format. You can sort the log entries by clicking on column headers.

Live Logs

To view a live (real time) log, place a check beside the device on the Home page, and then click **View Live Logs**.



If no logs are selected or all logs are selected, click **View Live Logs** and the log that opens will contain entries for all connected devices.

If no device has activity when you select View Live Logs, the viewer tab is empty. The viewer updates dynamically as events occur.

Log History

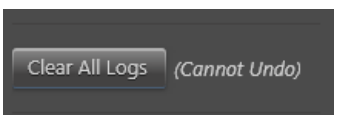
Click the **History** button against a module to view Module Log History.

Figure 11-3 Logging Server History Tab

Clearing Logs

When you clear logs from the logging server, all devices are also removed. Be sure to save logs that you need prior to clearing.

1 If the **Filters** palette is not open at the right side of the screen, click **Show Filters/Actions**. Click **Clear All Logs** and then click **OK**. All logs and all information in the logs are removed.



When a device has activity, it will reappear on the **Home** page of the logging server.

Configuring Harris Logging Server

Click **Settings** in the top right corner of the screen to open the **Settings** pane.

Settings are divided into three sections: **System Wide Settings**, **Log Viewer Settings**, and **Log Server Settings**.

For the most part, don't change port numbers and other settings except on the advice of Customer Service.

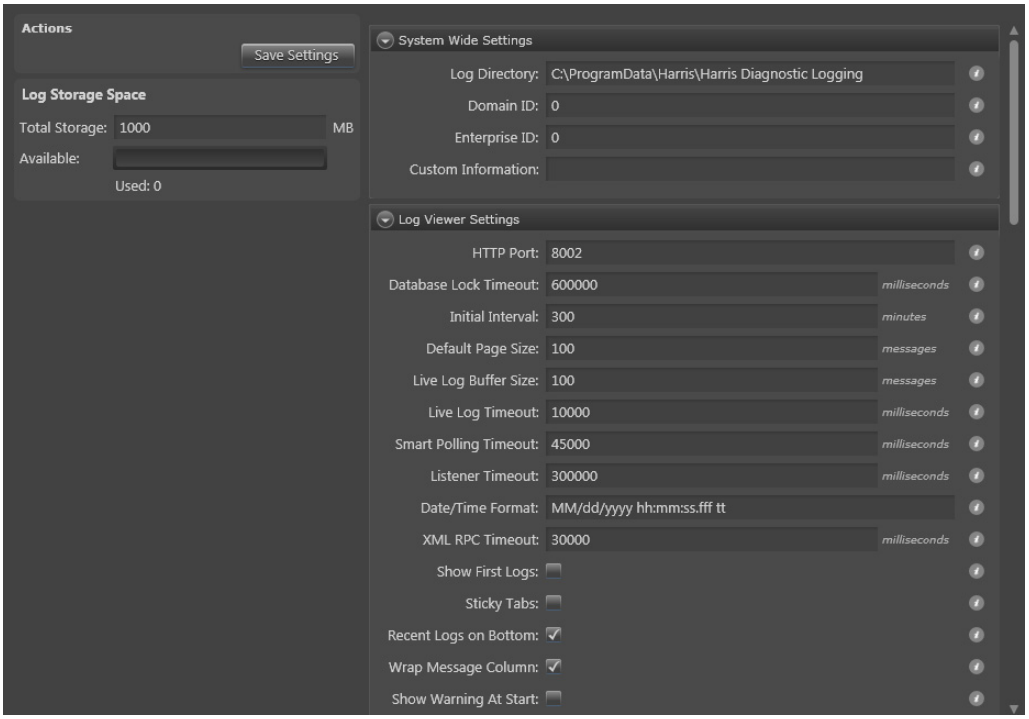
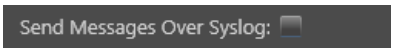


Figure 11-4 Log Server Settings

When you make any changes to the Logging Server's settings, click Save to commit the changes.

If your logging server is not receiving any messages, despite having devices configured, check the **Send Messages over SysLog** option under Logging Server Settings. If this item is not checked, no messages will be received.



Changing Columns That Appear in Harris Logging Server

1 On the Settings panel, scroll down to **Column Preferences**.

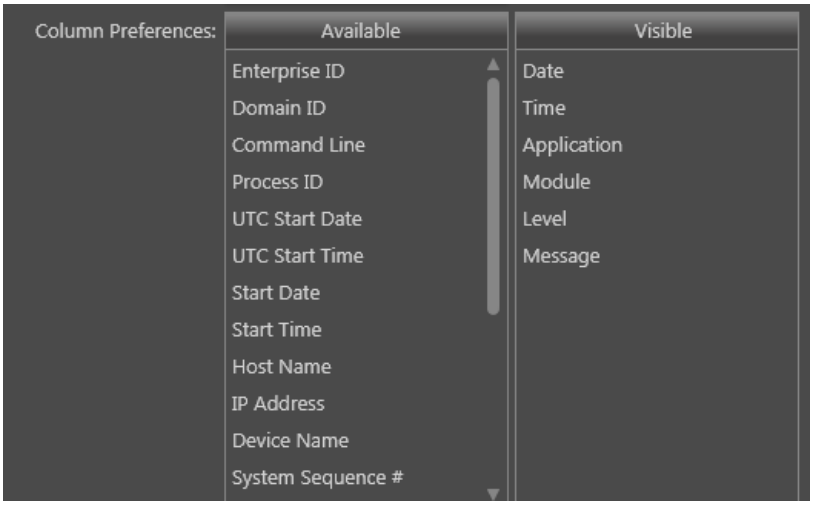


Figure 11-5 Column References Selector in Harris Logging Server

The items in the **Available** list on the left are not currently used in the Log display. Items in the **Visible** list on the right are column headers in the Log display.

To move items from one column to the other, click on the item and hold the mouse down while dragging from one column to the other. When you see a shadow of the item in the column you're dragging to, release the mouse button. The item appears at the point in the list where you dropped it.

You can change column order by dragging items within a column.

Note: *You can also drag column headers on the table interfaces themselves.*

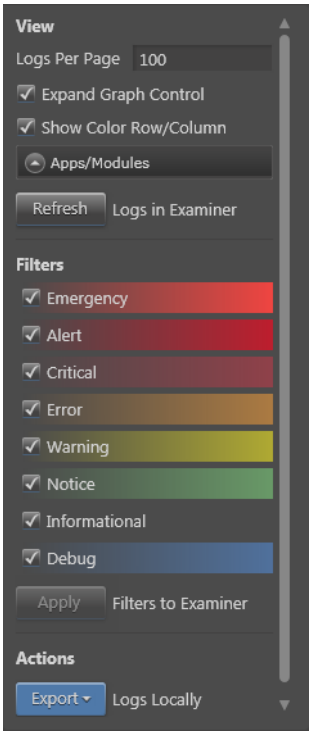
2 Click **Save** to commit the changes.
Changes to columns are universal and apply to all examiner pages.

Changing (Filtering) the Content Displayed in the Examiner

In addition to sorting a log file by the display columns, you can choose to view only certain types of logs. Follow these steps:

1 Click **Show Options**.

The **View Options** palette appears at the right side of the screen.



2 At the top of the palette, select how many logs to view, and how they will be displayed.

3 Place checks beside types of information you would like to see in the Examiner.

You can only filter out information.

4 Click **Apply**. The table refreshes to display the selected information.

Interpreting Messages in the Logging Server

Information such as Date, Time, Level, etc., in the logging server is defined by the logging server itself; see the Logging Server's documentation for more information on those items.

The Message field in the logging server is specific to the particular device. A single device action, such as a Take, can trigger numerous messages in the log, as the repercussions of that action are executed.

The message field of a typical log entry is separated by commas, and contains the following information:

- The source of the change, for example: Operation, meaning an operator performed an action)
- The device where the action took place, for example RCP: IP address, meaning a specific remote control panel triggered an action
- The item that was triggered
- The action that happened as a result of the triggered item

Message Types

- **Error:** This level is reserved for problems that directly affect output, such as loss of signal and loss of reference. High-priority CCSP alarms with a level of **Critical** generate this message when asserted.
- **Warning**: This level notifies about potential problems. Medium-priority CCSP alarms with a level of **Warning** generate this message when asserted.
- **Notice**: These messages apply to all alarm de-assertions and RCP connection messages.
- **Informational**: This level indicates routine device operation.
- **Debug**: This level is disabled by default and only intended for use in specific trouble-shooting guided by Harris tech support.

Informational messages will be generated for all operational changes from control sources enabled in the logging server setup. Control by RCP will list the IP of the device to identify which one performed the operation. Other sources have a sole source available - all Automation message are assumed to come from the same source, but EAS is considered another source. All messages control from the parametric system are identified as CCSP.

Import and Exporting Logs

Exporting Logs

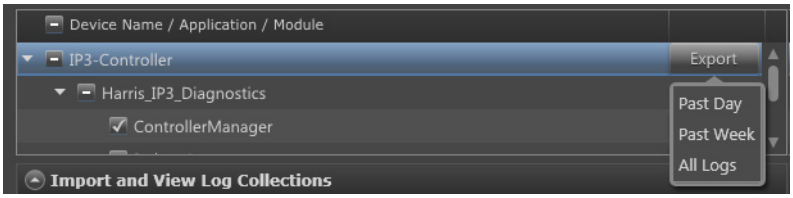
When you export a log, it is saved as a zip file that contains an XML file.

1 Do one of the following:

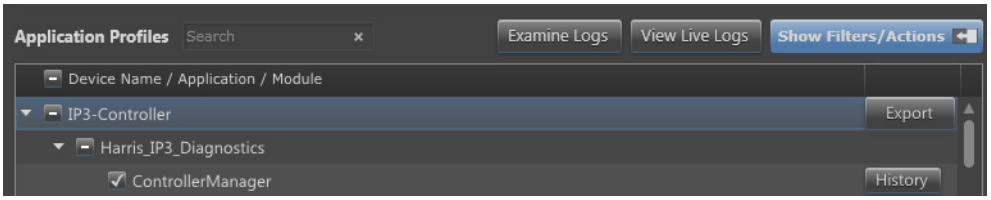
Logging Server Home Page

From the Logging Server's **Home** page, do either of the following:

- At the right end of the header line, click **Export**, and then choose **Past Day**, **Past Week**, or **All Logs**.



- Place checks beside items in the Devices and Application Profiles list, and then click **Show Filters/Actions**, and click **Export** under **Actions**. Choose **Past Day**, **Past Week**, or **All Logs**.



All selected logs (any log with a check beside it) are exported.

Examiner Tab

From the Examiner, click **Show** options, and then, under **Actions**, click **Export**. Choose **Logs in View**, **Past Day**, **Past Week**, or **All Logs**.

History Tab

From the History tab, place a check beside the logs you want to export, and then click **Export**.

When the log is collated and ready to be saved locally, a dialog may appear, asking what to do with the file.

2 Click **Save** to save the file to the local computer. You can choose a different location for the file. If this dialog does not appear, but a progress bar appears instead, the file is being transferred to the local computer.

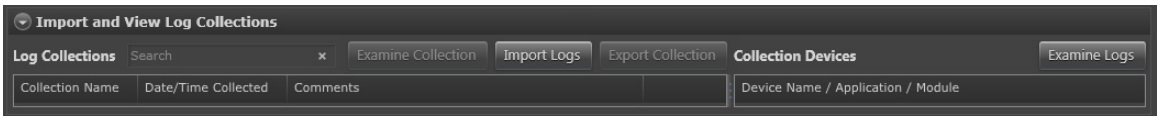
3 When the export has finished, a message appears on the top left corner of the Logging Server interface.

Importing Logs

The Harris Logging Server can import logs that it or another Harris Logging Server has saved. To import a log, follow these steps:

1 Click **Import and View Log Collections** at the bottom of the **Home** page. This enables you to see past log collections or to import logs.

The lower section of the screen expands to display details.



2 Click **Import Logs** and then browse to a .zip file and click **Open**.

A progress bar appears, and when the import is finished, an **Import Complete** message appears in the top right corner of the screen.

3 Click an item in the **Log Collections** column on the left.

The **Collection Devices** column updates to display all devices contained in that collection.

4 Place a check beside each device log you would like to load in the examiner, and then click Examine Logs.

5 The logs open in the Examiner.

Using Summaries

If you have recently imported or exported a log, the **Summary** bar appears below the button bar at the top of your Logging Server screen. If the Summary bar is not open, click **Summary** to open it. Click the X at the end of the toolbar to close it.

Figure 11-6 Summary Toolbar

The Summary bar has three options: **Exports**, **Imports**, and **Collections**.

Click one of these options to open the **Summary Details** dialog box.
The three options correspond to three tabs on the **Summary Details** dialog box.
Each tab details recent activity for that area of the interface.

Index