Web iSite User Guide

iDirect® e150 and X1, X7, and X7-ER Satellite Routers

iDX Release 3.3

September 21, 2015

iDIRECT

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Document Name: UG_Web_iSite_User_Guide iDX 3.3_Rev_C.pdf

Document Part Number: T0000607

Revision History

The following table shows all revisions for this document. To determine if this is the latest revision, check the TAC Web. Refer to for *Getting Help* on page xiv TAC access information.

Revision	Date	Updates
A	07/31/2014	First release of document for iDX Release 3.3
B, C	09/21/2015	Added X7-ER support for iDX Release 3.3.3.1

Contents

Figures

Tables

About

Purpose

The *Web iSite User Guide* provides instructions for using the Web Interface to the e150 Satellite Router Board (e150), the X1, X7, and X7-ER Remote Satellite Routers.

For information on configuring the e150, X1, X7, and X7-ER Satellite Routers, see the *iBuilder User Guide*. For information on installing and commissioning the e150, X1, X7, and X7-ER Satellite Routers, see the *iDirect Satellite Router Installation and Commissioning Guide*.

Intended Audience

The *Web iSite User Guide* is for iDirect network operators or installers who need to connect directly to an X7-ER, X7, X1 or e150 Satellite Router. This may include installers responsible for remote commissioning; network operators connecting remotely; customers who want to lock their remotes to a network; or on-site personnel working with iDirect to troubleshoot network problems.

Contents of This Guide

This document contains the following major sections:

Document Conventions

This section illustrates and describes the conventions used throughout this document.

Convention	Description	Example
`Command`	Used when the user is required to type a command at a command line prompt or in a console.	Type the command: `cd /etc/snmp/`

`Terminal Output`	Used when showing resulting output from a command that was entered at a command line or on a console.	`crc report all`
		`8350.3235 : DATA CRC [   1]`
		`8350.3502 : DATA CRC [5818]`
		`8350.4382 : DATA CRC [  20]`

Screen Reference	Used when referring to text that appears on the screen on a Graphical User Interface (GUI). Used when specifying names of commands, menus, folders, tabs, dialogs, list boxes, and options.	1. To add a remote to an inroute group, right-click the Inroute Group and select **Add Remote**. The **Remote** dialog box has a number of user-selectable tabs across the top. The **Information** tab is visible when the dialog box opens.
Hyperlink	Used to show all hyperlinked text within a document or external links such as web page URLs.	For instructions on adding a line card to the network tree, see *Adding a Line Card* on page 108.

WARNING: A warning highlights an essential operating or maintenance procedure, practice, condition, or statement which, if not strictly observed, could result in injury, death, or long term health hazards.

CAUTION: A caution highlights an essential operating or maintenance procedure, practice, condition, or statement which, if not strictly observed, could result in damage to, or destruction of, equipment or a condition that adversely affects system operation.

NOTE: A note is a statement or other notification that adds, emphasizes, or clarifies essential information of special importance or interest.

Getting Help

The iDirect Technical Assistance Center (TAC) is available to provide assistance 24 hours a day, 365 days a year. Software user guides, installation procedures, FAQs, and other documents that support iDirect products are available on the TAC Web site. Access the TAC Web site at http://tac.idirect.net.

The TAC may also be contacted by telephone or e-mail.

- Telephone: (703) 648-8151
- E-mail: tac@idirect.net

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- iDirect produces documentation that is technically accurate, easy to use, and helpful to our customers. Please assist us in improving this document by providing feedback. Send comments to techpubs@idirect.net.

Related Documents

The following iDirect documents are available at http://tac.idirect.net and may also contain information relevant to this release. Please consult these documents for information about installing and using iDirect's satellite network software and equipment.

- *iBuilder User Guide*
- *iDX Release Notes*
- *iDX Software Installation Guide or Network Upgrade Procedure Guide*
- *iDX iMonitor User Guide*
- *iDX Technical Reference Guide*
- *iDX Installation and Commissioning Guide for Remote Satellite Routers*
- *iDX Features and Chassis Licensing Guide*
- *iDX Software Installation Checklist/Software Upgrade Survey*
- *iDX Link Budget Analysis Guide*
- *X7 Satellite Router Installation, Support, and Maintenance Guide*
- *X1 Satellite Router Installation, Support, and Maintenance Guide*
- *X7-ER Satellite Router Installation, Support, and Maintenance Guide*
- *Evolution® e8350 Satellite Router Installation, Support, and Maintenance Guide*
- *e150 Satellite Router Integration Guide*

1 Web iSite Overview

This chapter provides an introduction of the Web iSite tool for working with iDirect e150, X1, X7, and X7-ER Satellite Routers. It contains the following sections:

1.1 Web iSite Overview

The Web iSite interface provides users with the means to commission new sites and to monitor TDMA satellite routers from the local area network (LAN) side.

Web iSite also provides configuration and real-time status and statistical information about the e150, X1, X7, or X7-ER Satellite Router units. Web iSite provides interaction with the satellite router, enabling configuration, commissioning, and monitoring without a direct connection with the iDirect NMS. The level of functionality available to the user is determined by the login access (admin or user). iVantage clients and NMS access are required in order to view satellite router historical data. See the *Satellite Router Installation and Commissioning Guide* for specific instructions on commissioning satellite routers.

1.1.1 Web iSite Features

Web iSite provides the following features:

- Real-time satellite router light emitting diode (LED) status indicators
- A dashboard view of high-level satellite router information (for example, if a satellite router is in network or locked to the satellite)
- Status and monitoring views of real-time modem information and events, Ethernet receive and transmit connections, and Internet Protocol (IP) configuration and information
- Satellite router commissioning tools, including tools for lookup angle calculation, antenna pointing, and cross polarization
- Administration tools for loading software packages and options files
- Remote locking for X1 and e150 Satellite Routers
- Downstream configuration for e150, X1, X7, and X7-ER Satellite Routers

1.1.2 Before Accessing the Router

Web iSite may be used at any time to access the e150, X1, X7, or X7-ER Satellite Routers. All that is necessary is the IP address assigned to the satellite router and a physical Ethernet connection to the LAN port.

The default IP address for an e150, X1, X7, or X7-ER Satellite Router is set to 192.168.0.1 when shipped from the factory or when booted into Factory Default Mode; otherwise, the IP address is based on the iBuilder generated options file that was last uploaded to the device. Connection to the e150, X1, X7, or X7-ER Satellite Routers is not possible using the iVantage iSite client.

NOTE: For the X1 and e150, when booting into Factory Default Mode, neither the user software package nor the options files are deleted; however, they are ignored temporarily. When booting back into normal operational mode, the user software package will run and use the setting in the options files. However, for the X7 and X7-ER it is necessary to re-install the software package and the options file.

Default factory settings for the e150, X1, X7, or X7-ER Satellite Routers are shown below:

- LAN IP address: 192.168.0.1
- Subnet mask: 255.255.255.0
- DHCP server: Enabled
- Two configured user accounts: **admin** and **user** (*iDirect* is the password)

NOTE: After an options file has been loaded on the router, the **admin** and **user** passwords, and DHCP configuration change to the values in the options file.

When shipped, the X1, X7, X7-ER, and e150 DHCP servers are enabled to provide a single DHCP address to a computer without modifying the IP address on the local PC. If DHCP is disabled on the satellite router, or if the local PC uses static IP addressing, follow the steps below to reconfigure the local PC's IP settings.

1.1.2.1 Local Area Connection

To connect using the LAN port, the local PC must be in the same subnet as the satellite router. This is done by modifying the TCP properties of the Local Area Connection on the local PC. The following section uses the Windows 7 operating system to illustrate the procedure.

To modify the Local Area Connection:

1. In **Control Panel**, click on **Network Sharing Center**.
2. Double-click **Local Area Connection** to display the **Status** dialog box.

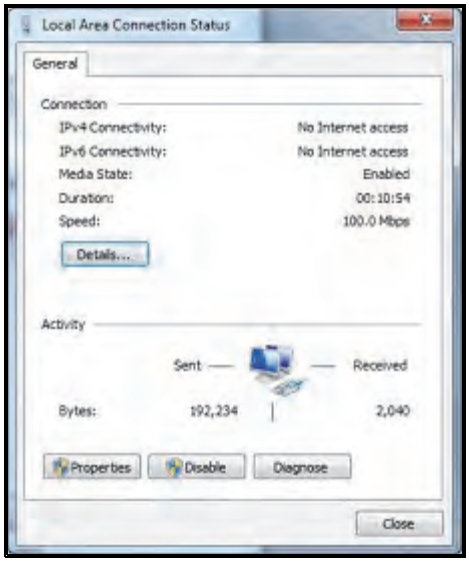

Figure 1-1. Local Area Connection Status Dialog Box

3. Click on **Properties** to display the **Properties** dialog box.

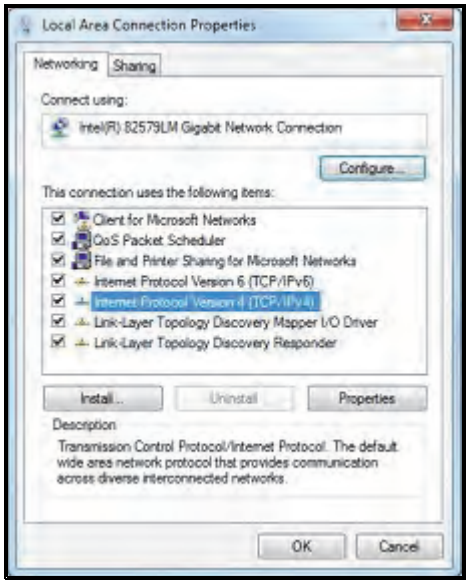

Figure 1-2. Local Area Connection Properties Dialog Box

4. Highlight **Internet Protocol Version 4 (TCP/IPv4)** as shown in Figure 1-2, and click **Properties**. The properties dialog will appear.

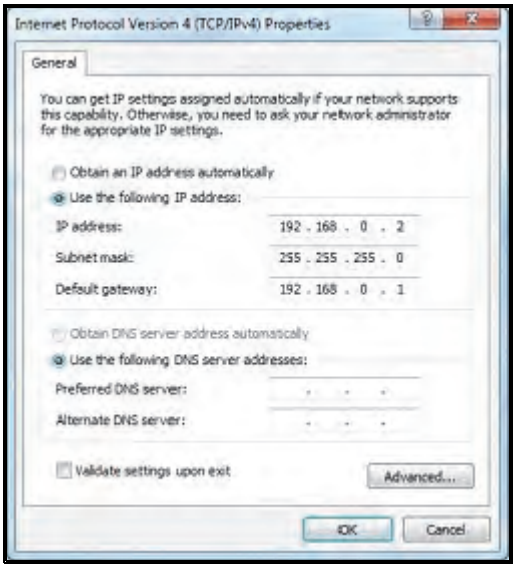

Figure 1-3. Internet Protocol (TCP/IP) Dialog Box

5. Select **Use the following IP address**. Type an IP address that is inside the range specified by the satellite router's IP address and subnet mask. See Figure 1-3.
6. Click in the **Subnet mask** data entry field. The Windows 7 default value will appear automatically. If the satellite router subnet mask is known to be different, type in the correct values.
7. Type the satellite router IP address in the **Default Gateway** field.
8. For a local connection, DNS server addresses are not required. Leave the fields blank.
9. Click **OK** to save the changes.

The local connection is now configured to connect to the satellite router using iSite.

To confirm connectivity:

1. Confirm that power is applied to the satellite router.
2. Connect a LAN cable between the **LAN A** port of the satellite router and the LAN port of the local PC.
3. Open the command prompt on the local PC.
4. Ping the satellite router by entering the following command:

   `ping <ip address>`

5. Verify that packets are returned without error.

The local PC is now configured to use iSite for communication over the LAN port.

1.2 Starting a Web iSite Session

Web iSite supports the following browsers:

- Internet Explorer (Version 7 and later)
- Mozilla Firefox (Version 8 and later)
- Google Chrome (Version 16 and later)

Initially, Web iSite has two default user accounts:

- **admin**: Provides full access to Web iSite functionality
- **user**: Provides restricted access to Web iSite functionality

By default, the **admin** and **user** accounts both have the same password: *iDirect*. A user can change account names and passwords using the NMS iBuilder application. For information on configuring satellite routers, see the *iBuilder User Guide*.

To launch Web iSite, perform the following:

1. Connect the personal computer (PC) LAN port to the satellite router local area network (LAN) port using an Ethernet cable.
2. Launch the Web browser of choice.
3. Enter the IP address of the e150, X1, X7, or X7-ER satellite routers into the address field, as shown in the following example:

   `https://196.168.0.1` (the default factory LAN IP address is shown here)

NOTE: If a connection is not established using the default IP address then the IP address from the options file must be used. If a connection is not established using the options file, it may be necessary to reset the satellite router. See the appropriate *Satellite Router Installation and Commissioning Guide* or *Integration Guide* for reset information.

4. Enter a **User** name and **Password** at the **Login** dialog box.

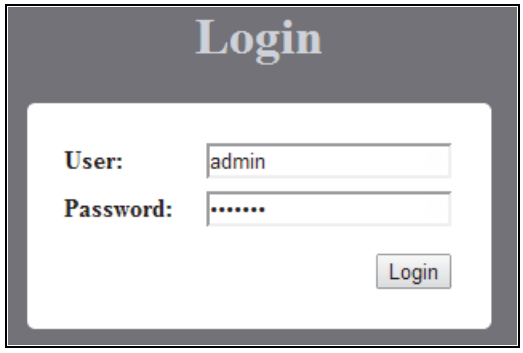

Figure 1-4. Web iSite Login Dialog

5. Click **Login** to complete the login process.

   The Web iSite Dashboard appears.

1.3 Web iSite User Interface

Figure 1-5 shows the Dashboard page for the X1; this is the default page for Web iSite. The page elements shown are typical of the other pages that comprise Web iSite, including those for the e150, X7, and X7-ER. The sections that follow describe these elements.

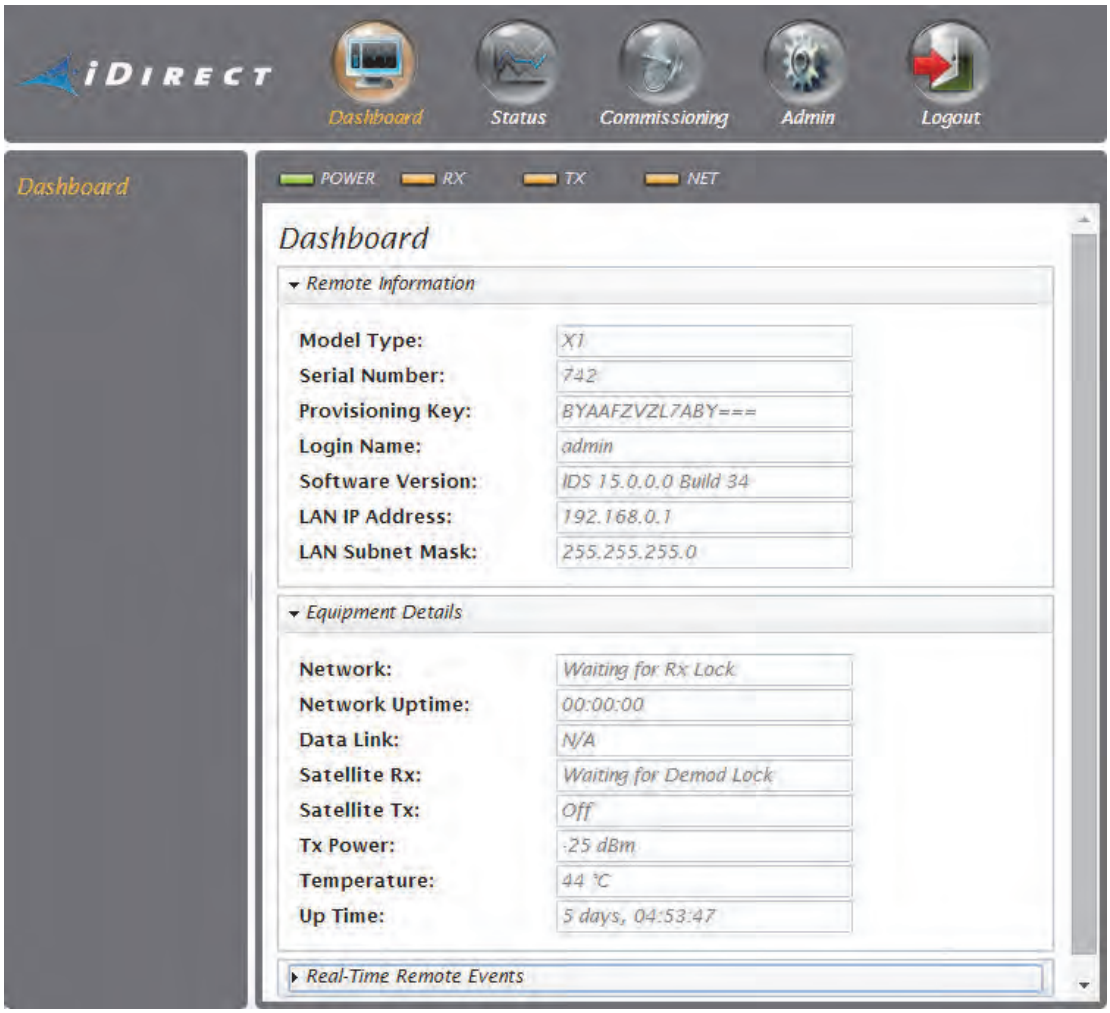

Figure 1-5. Web iSite Default Page

1.3.1 Web iSite Browser Window

After connecting to the e150, X1, X7, or X7-ER Satellite Router, the browser window appears at the top of the default page. In Figure 1-6, the IP address of the satellite router with an established connection appears in the Address bar. The browser window may appear slightly different, based on the Internet browser.

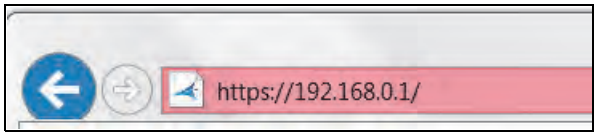

Figure 1-6. Web iSite Browser Tab

1.3.2 Navigation Bar

Figure 1-7 shows the navigation bar that spans the top of each Web iSite page. The navigation bar provides the four main console buttons that appear on each Web iSite page.

Figure 1-7. Main Console Buttons

Clicking on a button opens the default page for the associated page group. For example, clicking the **Status** opens the **Modem Status** page in the **Status** page group. See Figure 1-8. This is the default page for the **Status** page group.

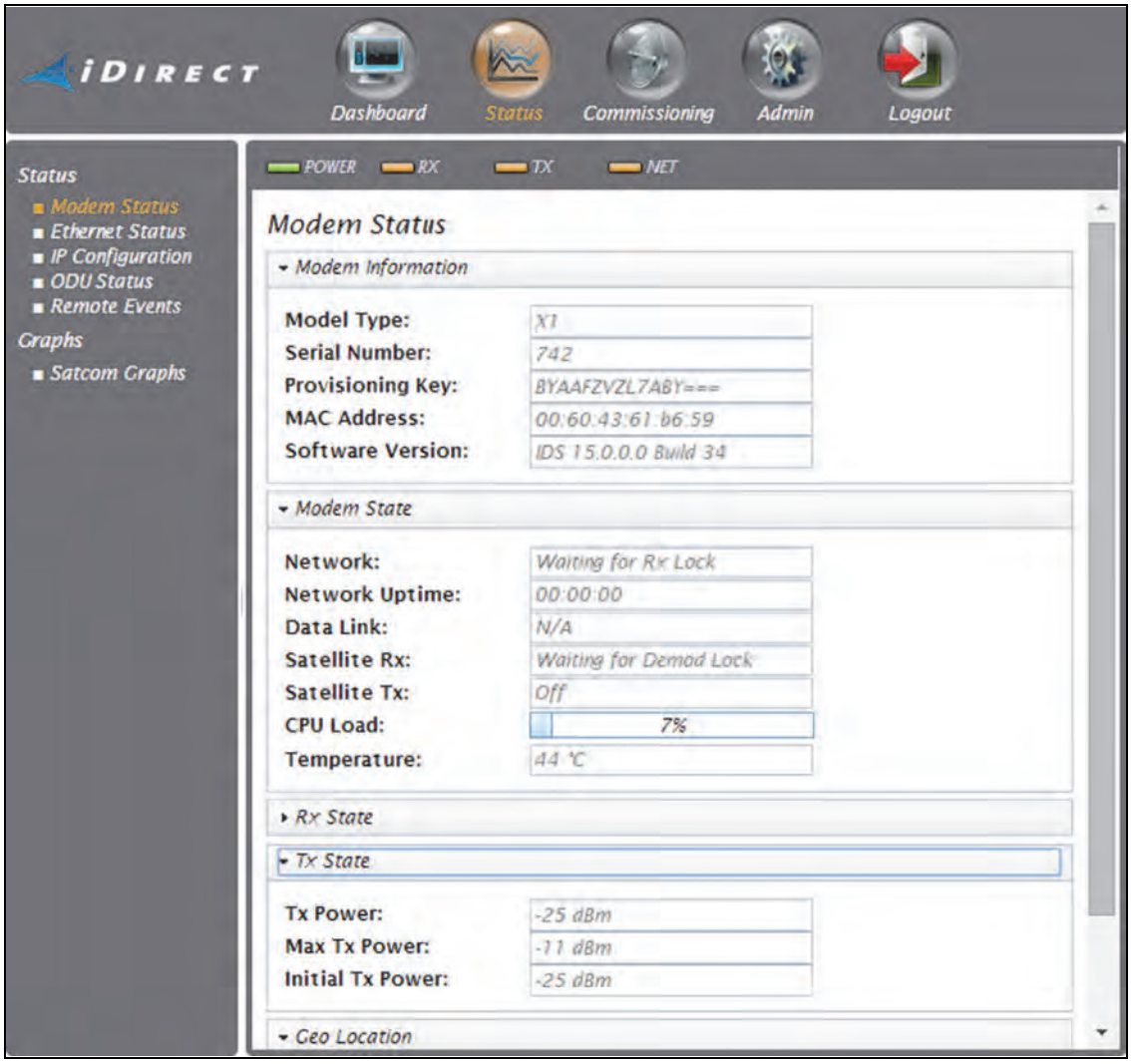

Figure 1-8. Typical Web iSite Page

1.3.3 Left Navigation Bar

The left side of a Web iSite page contains the left navigation bar. See Figure 1-8. This panel contains links to additional Web iSite pages in the current page group. Click the page link to navigate to the selected page.

1.3.4 Page

A screen in Web iSite is referred to as a page. The entire application comprises several pages that either present satellite router information, or support interaction with the satellite router. The contents of a page may provide static or real-time information about the satellite router. A page may also provide interactive tools that support a Web iSite operation.

1.3.4.1 Main Default Pages

To work with one of the main Web iSite page groups, select and click one of the main page buttons. This opens the default page for the selected page group.

For example, as previously described, clicking on the **Status** button on the main console bar opens the default page for the **Status** group, that is, the **Modem Status** page shown in Figure 1-8.

1.3.4.2 Sub-Pages

In addition to the main default page, each Web iSite page group contains a number of sub-pages that show different content. Users can access the pages of the group from the default page as well as from the other pages within the group. The **Ethernet Status** page, for example, is a sub-page of the **Status** page group shown in Figure 1-8.

1.3.4.3 Sections

Each Web iSite page normally comprises two or more sections. A section contains a grouping of information fields (or elements) for performing an operation (for example, file uploading). A section title identifies the specific information grouping. For example, in Figure 1-8, the **Modem Status** page contains the following sections:

- Modem Information
- Modem State
- Rx State
- Tx State
- Geo Location

1.3.4.4 Information Fields

Sections contain static or dynamic information fields with labels that indicate the field content. Some data fields are for viewing or monitoring purposes only; other data fields allow users to modify the data. In Figure 1-8, the **Modem Information** section contains the following information fields:

- Model Type
- Serial Number
- MAC Address
- Software Version

1.3.4.5 Hiding and Displaying a Page Section

In Web iSite, it is possible to hide and unhide page sections by clicking on the section title. In Figure 1-8, for example, **Modem Information** and **Modem State** sections are open, and the **RX State**, **TX State**, and **Geo Location** sections are closed. Clicking on **Tx State** opens the **Tx State** section. See Figure 1-9.

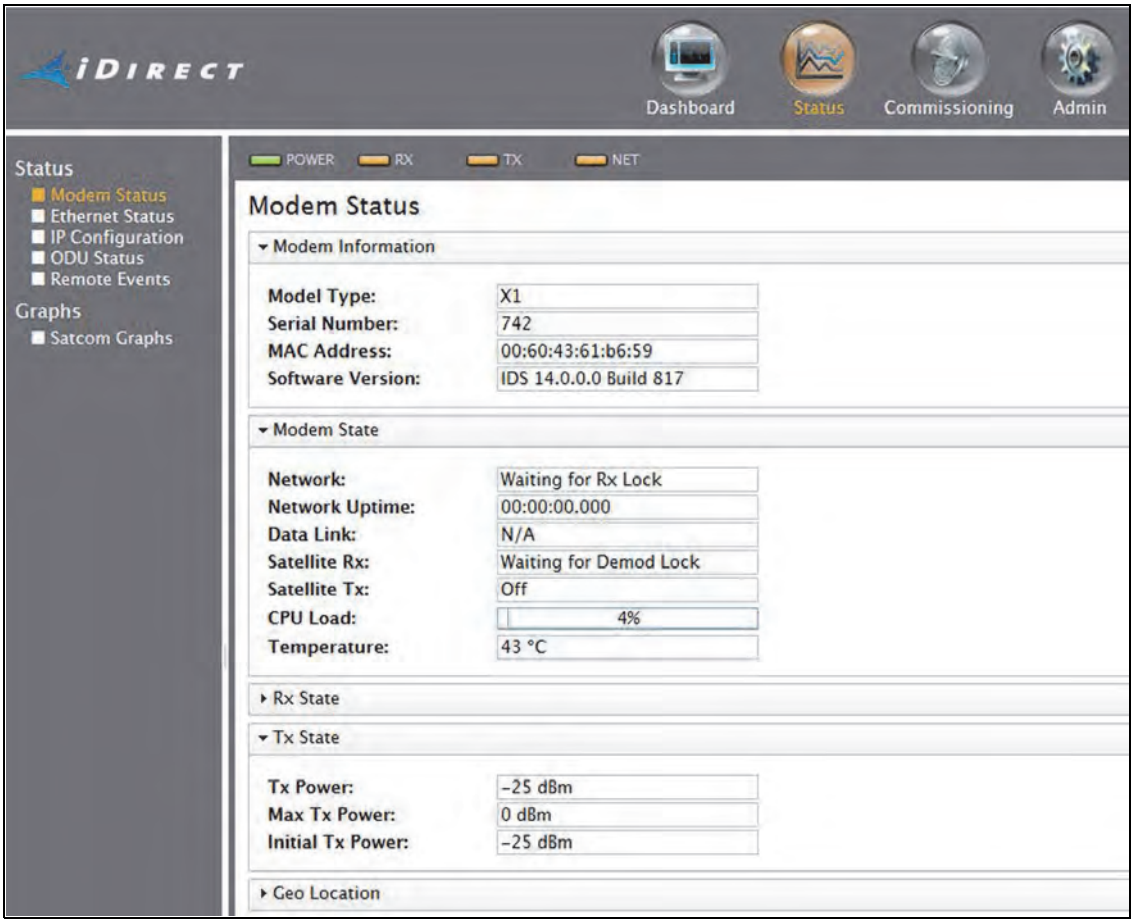

Figure 1-9. Modem Status Page with Tx Section Open

1.3.4.6 X1 Satellite Routers Status Indicators

Figure 1-10 shows the four LED status indicators that are visible below the Navigation Bar on each Web iSite page when using Web iSite with an X1. These are the same LEDs that appear on the front panel of the X1 indoor satellite router. Various combinations of the LEDs indicate different satellite router states. Table 1-1 describes the indicators.

NOTE: The X1 Outdoor Satellite Router and the e150 Satellite Router simulate the LED status indicators of the X1 indoor Satellite Router.

Figure 1-10. Web iSite X1 LED Indicators

After establishing a connection with an X1 Satellite Router, the real-time status of each LED indicator of that satellite router appears on each Web iSite page.

Table 1-1. X1 Router LED Status Indicators

Label	Signal Color/Type	Definition
RX		Provides downstream receive status
	Off	Receiver off or not configured
	Yellow	Downstream carrier configured, demodulator not yet locked
	1 second flashing Yellow	Downstream carrier configured, demodulator locked to downstream carrier, Network Clock Reference (NCR) not yet locked
	1 second flashing Green	DRAM test failed
	Green	Downstream carrier configured, demodulator and NCR locked to downstream carrier
	Flashing Red	All LEDs simultaneously flashing red indicates a software exception or bad options file
TX		Indicates the state of the transmitter
	Off	Transmitter is off
	Yellow	Transmitter enabled, mute ON
	1 second flashing Green	DRAM test failed
	Green	Transmitter enabled, mute OFF
	Flashing Red	All LEDs simultaneously flashing red indicates a software exception or bad options file
NET		Indicates the state of the satellite network connection
	Off	Router off or in sleep mode if **TX** LED is yellow (mute ON)
	Yellow	Demodulator is not locked on the primary downstream carrier
	1 second flashing Yellow	Demodulator locked on primary downstream carrier, NCR not yet locked
	2 second flashing Green	Demodulator locked on the primary downstream, NCR locked
	1 second flashing Green	DRAM test failed if RX and TX are also flashing green
	1 second flashing Green	Network acquisition and authentication in progress

Table 1-1. X1 Router LED Status Indicators (continued)

Label	Signal Color/Type	Definition
	Green	Network acquired and authenticated; if **TX** LED is OFF, then router is in Rx only mode
	Flashing Red	All LEDs simultaneously flashing red indicates a software exception or bad options file
POWER		Indicates power supply status and any power-related problems
	Off	No or low power input
	Green	Valid power input detected
	Flashing Red	All LEDs simultaneously flashing red indicates a software exception or bad options file

1.3.4.7 X7 or X7-ER Satellite Routers LED Indicators

Figure 1-11 shows the eight LED status indicators that are visible below the Navigation Bar on each Web iSite page when using Web iSite with an X7 or X7-ER. These are the same indicators that appear on the front panel of the X7 or X7-ER Satellite Router. Various combinations of the LEDs indicate different satellite router states. Table 1-2 describes these indicators.

Figure 1-11. Web iSite X7 or X7-ER LED Indicators

After establishing a connection with an X7 or X7-ER Satellite Router, the real-time status of each LED indicator of that satellite router appears on each Web iSite page.

Table 1-2. X7 or X7-ER Router LED Status Indicators

Label	Signal Color/Type	Definition
POWER		Indicates power supply status and any power-related problems
	Off	No or low power input
	Green	Valid power input detected
	Yellow	Problem with BUC voltage selection

Table 1-2. X7 or X7-ER Router LED Status Indicators (continued)

Label	Signal Color/Type	Definition
STATUS		Indicates basic operational state and problems with core hardware
	Off	Powered off or going through initial Power-on Self-test (POST)
	1 second flashing Green	Initial POST failed
	Green	HW operation is normal (all self-tests passed)
	Red	Fault: hardware, software, one or more self-test failures, or configuration error
FAN		Provides fan status
	Green	All fans working
	Red	Failure of one or more fans
TEMP		Indicates problems with the current operating temperature
	Off	Router OFF or booting if **STATUS** LED is not Green
	Green	Normal operating temperature
	Yellow	Operating temperature is nearing the over-temp or under-temp threshold
	Red	Operating temperature has exceeded the over-temp or under-temp threshold
RX1 and **RX2**		Provides downstream receive status
	Off	Receiver off or not configured
	Yellow	Downstream carrier configured, demodulator not yet locked
	1 second flashing Yellow	Downstream carrier configured, demodulator locked to downstream carrier, Network Clock Reference (NCR) not yet locked
	Green	Downstream carrier configured, demodulator and NCR locked to downstream carrier
TX		Indicates the state of the transmitter
	Off	Transmitter is off: if **STATUS** LED is green, then transmission disabled by configuration
	Yellow	Transmitter enabled, mute ON
	Green	Transmitter enabled, mute OFF

Table 1-2. X7 or X7-ER Router LED Status Indicators (continued)

Label	Signal Color/Type	Definition
NET		Indicates the state of the satellite network connection
	Off	Router off or in sleep mode if **TX** LED is yellow (mute ON)
	Yellow	Demodulator is not locked on the primary downstream carrier
	1 second flashing Yellow	Demodulator locked on primary downstream carrier, NCR not yet locked
	2 second flashing Green	Demodulator locked on the primary downstream, NCR locked
	1 second flashing Green	Network acquisition and authentication in progress
	Green	Network acquired and authenticated; if **TX** LED is OFF, then router is in Rx (receive) only mode
	Red	Authentication failed

2 Dashboard

This chapter describes the Web iSite Dashboard. It contains the following sections:

The **Dashboard** page provides key information about any e150, X1, X7, or X7-ER Remote Satellite Routers that have an established connection.

The **Dashboard** page is the default landing page and opens whenever Web iSite is launched. Clicking on the **Dashboard** button from another page causes the left navigation bar to display the Dashboard page group. It also causes the **Dashboard** page to open. See Figure 2-1.

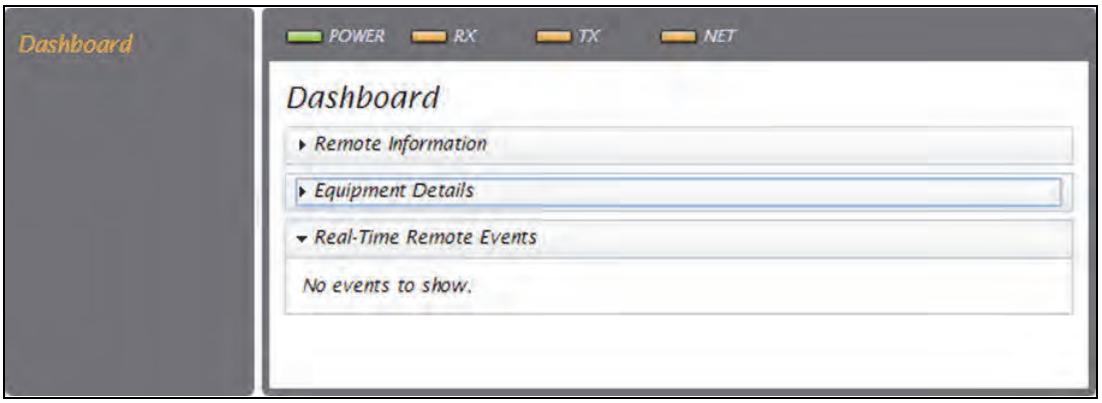

Figure 2-1. Dashboard Page

The Dashboard page provides access to basic information (for example, the IP address of the remote satellite router, whether the satellite router is in network, or if it is locked to the satellite), and real-time remote events.

NOTE: Because the Dashboard is a central point for viewing the modem's key identifiers, operating parameters, and real-time events, information that appears on the Dashboard may also appear on other Web iSite pages.

2.1 Remote Information

Figure 2-2 shows the **Remote Information** section of the Web iSite **Dashboard** page.

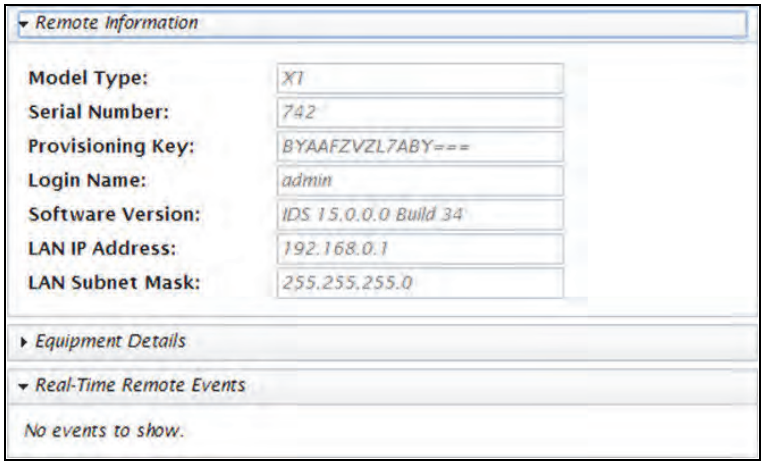

Figure 2-2. Remote Information

The **Remote Information** section provides key identifier information for the satellite routers including:

- **Model Type**: The type of remote satellite router
- **Serial Number**: The serial number of the remote satellite router
- **Provisioning Key:** For future use
- **Login Name**: The login for the current Web iSite session
- **Software Version**: The software version number and build
- **LAN IP Address**: The LAN IP address of the satellite router
- **LAN Subnet Mask**: The LAN subnet mask of the remote satellite router

2.2 Equipment Details

Figure 2-3 shows the **Equipment Details** section of the Web iSite **Dashboard** page.

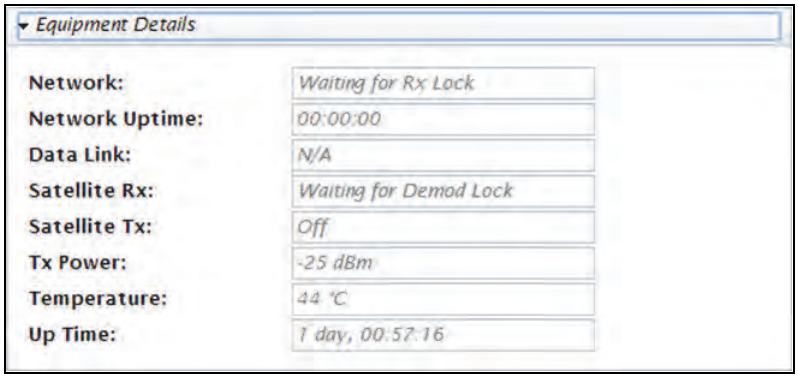

Figure 2-3. Equipment Details

The **Equipment Details** section provides the following real-time network information for the satellite router:

- **Network**: Shows one of the following:
  - **Wait for Rx Lock**: Waiting to receive the outbound carrier
  - **Wait for Acquisition**: The remote is locked to the outbound carrier and is waiting for an invitation from the Protocol Processor (PP) to join the network
  - **Detected**: The remote has received an invitation from the PP received and is actively trying to join the network
  - **In Network**: The remote has joined the network and is operational (the PP saw an ACQ burst from this remote; does not mean that any data will pass)
- **Network Uptime**: The time since the remote was last acquired into network
- **Data Link**: Shows one of the following:
  - **Opening**: Data link is opening (no user data passes)
  - **Established**: Data link is established (user data passes)
  - **Closing**: Data link is closing (no user data passes)
  - **Rx Only**: Data link can receive but not transmit
- **Satellite Rx**: Shows one of the following:
  - **Wait Tuner**: Waiting for tuner lock
  - **Wait Demod Lock**: Waiting for demodulator lock
  - **Wait NCR**: Waiting for network clock reference (NCR) lock
  - **Locked**: Receiver is locked
- **Satellite Tx**: Shows one of the following:
  - **On**: Transmit mode on
  - **Off**: Receive only mode
  - **CW**: Continuous wave (CW) is output because modulator is on; pseudo-noise (PN) is output if modulator is off

  - **Antenna Pointing**: Tx IF port is being used for antenna pointing in response to **Commissioning→Antenna Pointing** (see *Antenna Pointing Page* on page 46)
- **Tx Power**: Transmit power
- **Temperature**: Operating temperature
- **Up Time**: Time since Web iSite boot or restart

2.3 Real-Time Remote Events

Figure 2-4 shows the **Real-Time Remote Events** section of the Web iSite Dashboard.

NOTE: The Real-Time Remote Events section of the Web iSite Dashboard only shows the last 10 events. Go to *Real-Time Remote Events Page* on page 35 to see all events.

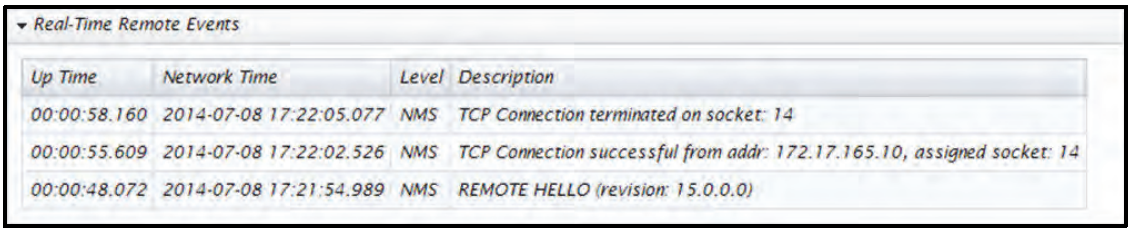

Figure 2-4. Real-Time Remote Events

After the software package and options file have been loaded and the satellite router is reset and restarted, the **Real-Time Remote Events** section shows the most recent events that have occurred on the remote satellite router.

This section is primarily a monitoring tool to aid in resolving any issues with the satellite router. An iDirect TAC representative can use the information in this section to trace events in the satellite router and perform an investigation and analysis of any problems that exist.

The **Real-Time Remote Events** section provides the following information:

- **Up Time**: Time since Web iSite boot or restart
- **Network Time**: Time and date issued by the protocol processor at ten-minute intervals that a listening remote can use to update its time of day

  NOTE: The **Network Time** column does not appear if the network time is unknown. The remote does not have a real-time clock and becomes aware of the network time only after entering and remaining in the network for 10 minutes.
- **Level**: Show level as:
  - Informational
  - Warning
  - Error
  - Fatal

  - NMS
- **Description**: Details about the event

2.3.1 Real-Time Event Messages

Typical real-time remote event messages available on the Dashboard include items such as TCP connection assigned or terminated; TX power setting; flash firmware completed; modem configuration written; or Remote Hello, upon being reset.

In general, Dashboard real-time remote events include the following:

- REMOTE HELLO: Generated on first acquisition into the network after reset
- TLS client connection/disconnection
- Package and options upload
- CrossPolTestMsg
- PanicMsg
- ResetMsg
- RxODUMsg
- TxODUMsg
- StopTxMsg
- TxPowerMsg

3 Status Pages

This chapter describes the Web iSite Status pages. It contains the following sections:

3.1 Overview

Clicking on the **Status** button causes the left navigation bar to show the **Status** page group. See Figure 3-1.

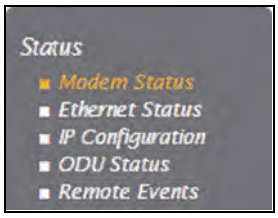

Figure 3-1. Left Navigation Bar Status Page Group

It also causes the **Modem Status** page (the default page for the **Status** page group) to open. See Figure 3-2.

The **Status** page group provides a monitoring window into satellite router real-time status. The **Status** pages provide a view of some of the satellite router key operating parameters and access to graphs for satellite router network traffic.

3.2 Modem Status Page

The **Modem Status** page is the default page of the **Status** page group. See Figure 3-2.

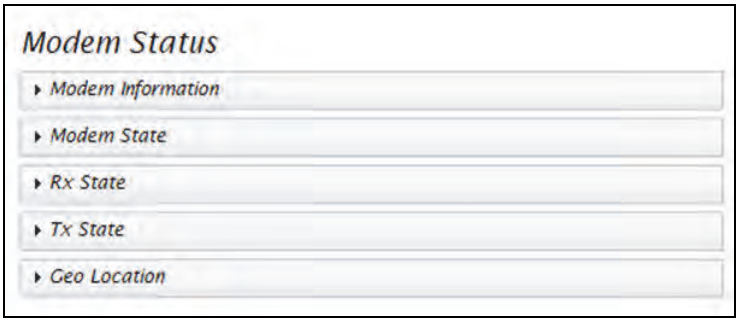

Figure 3-2. Modem Status

The **Modem Status** page contains the following sections that are described in the paragraphs that follow:

- Modem Information
- Modem State
- Rx State
- Tx State
- Geo Location

3.2.1 Modem Information

Figure 3-3 shows the **Modem Information** section of the **Modem Status** page.

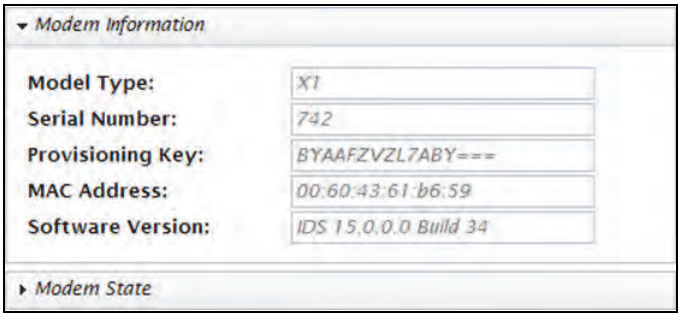

Figure 3-3. Modem Information

The **Modem Information** section provides the following key identifying information for the satellite router:

- **Model Type**: The satellite router model type
- **Serial Number**: The serial number
- **Provisioning Key:** For future use
- **MAC Address**: The Media Access Control address (MAC address)
- **Software Version**: The current software version and build numbers

3.2.2 Modem State

Figure 3-4 shows the **Modem State** section of the **Modem Status** page.

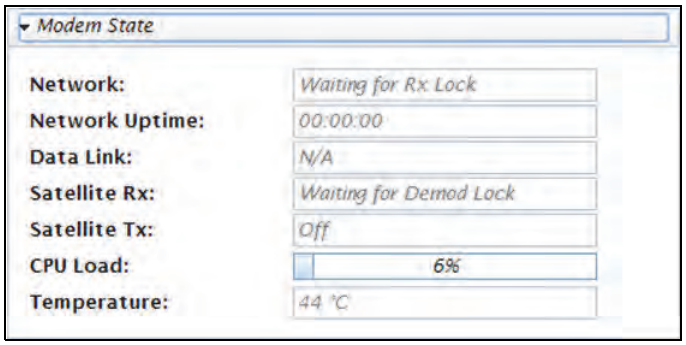

Figure 3-4. Modem State

The **Modem State** section provides information about the following modem state parameters:

- **Network**: Shows one of the following:
  - **Waiting for Rx Lock**: The demodulator is configured and waiting to lock to the downstream carrier
  - **Waiting for Acquisition**: The remote is locked to the outbound carrier and is waiting for an invitation from the Protocol Processor (PP) to join the network
  - **In Acquisition**: The remote is receiving time plans but has not been invited to join the network
  - **Detected**: The remote has received an invitation from the PP and is actively trying to join the network
  - **In Network**: The remote has joined the network and is operational (the PP saw an ACQ burst from this remote; does not mean that any data will pass)
  - **Wrong Network**: The network-locked remote has entered the wrong network
- **Network Uptime**: The time since the remote was last acquired into network
- **Data Link**: Shows one of the following:
  - **Closed**: Data link is closed (no user data passes)
  - **Opening**: Data link is opening (no user data passes)
  - **Established**: Data link is established (user data passes)
  - **Closing**: Data link is closing (no user data passes)
  - **Rx-Only**: Data link can receive but not transmit
- **Satellite Rx:** Shows one of the following:
  - Waiting for Tuner Lock: Waiting for the RF tuner to configure and lock to programmed frequency
  - Waiting for Demod Lock: Waiting for the DVB-S2 demodulator to lock to the received signal

  - Waiting for NCR Lock: Waiting for the remote Network Clock Recovery circuit to lock to the downstream timing
  - Locked: Both Demod and NCR lock achieved; this is the desired state to allow the satellite router to transmit and enter the network
- **Satellite Tx**: On/Off
  - **On**: Transmit mode on
  - **Off**: Receive only mode
- **CPU Load**: The current operating load on the satellite router CPU
- **Temperature**: The current board temperature of the satellite router

3.2.3 Rx State

Figure 3-5 shows the **Rx State** section.

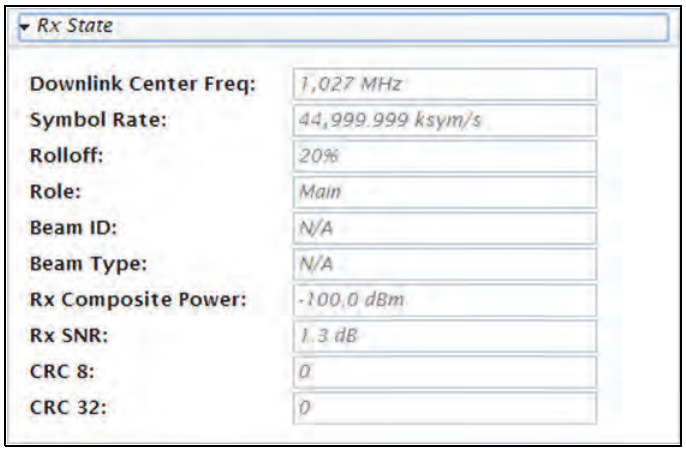

Figure 3-5. Rx State

The **Rx State** section indicates the following receive operational parameters for the modem:

- **Downlink Center Freq**: The downlink center frequency as configured in the satellite router options file
- **Symbol Rate**: The symbol rate as configured in the satellite router options file
- **Rolloff**: Shows the roll-off factor: **5%**/**10%**/**15%**/**20%**
- **Role**: Main or Auxiliary
- **Beam ID**: An integer that identifies a beam
- **Beam Type**: May be one of:
  - Primary
  - Alternate
- **Rx Composite Power**: The Rx composite power within the symbol rate and centered on the configured Rx frequency

- **Rx SNR**: The current Rx Signal-to-Noise Ratio (SNR) (assuming the demodulator is locked)
- **CRC 8**: The number of downstream DVB-S2 8-bit Cyclic Redundancy Check (CRC) 8 errors
- **CRC 32**: The number of downstream DVB-S2 32-bit CRC errors

3.2.4 Tx State

Figure 3-6 shows the **Tx State** section.

Figure 3-6. Tx State

The **Tx State** section indicates the following modem transmission parameters:

- **Tx Power**: The current Tx power related to the nominal carrier
- **Max Tx Power**: The *never exceed* power determined during commissioning, configured in iBuilder, and stored in the options file for the modem
- **Initial Tx Power**: The power used for acquisition bursts determined during commissioning, configured in iBuilder, and stored in the options file for the modem

3.2.5 Geo Location

Figure 3-7 shows the **Geo Location** section.

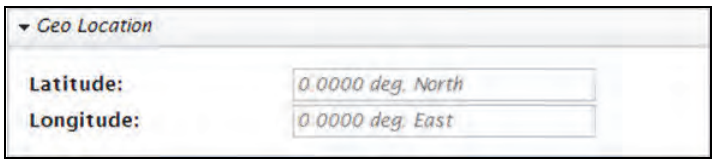

Figure 3-7. Geo Location

The **Geo Location** section indicates the following:

- **Latitude**: The remote site latitude in decimal degrees North or South
- **Longitude**: The remote site longitude in decimal degrees East or West

3.3 Ethernet Status Page

The **Ethernet Status** page provides key Ethernet connection information for the local LAN subnet of the satellite router.

Because the X7 has eight Ethernet ports and the e150 and X1 each have one Ethernet port, the **Ethernet Status** page for the e150 and X1 differs from the X7. See Figure 3-8 and Figure 3-9. The X7 **Ethernet Status** page shows the eight ports (that is, **port 1** through **port 8**).

Figure 3-8. Ethernet Status Page (e150 and X1)

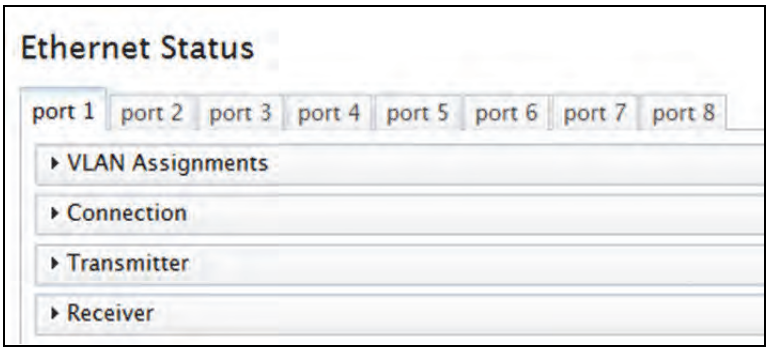

Figure 3-9. Ethernet Status Page (X7 or X7-ER)

The **Ethernet Status** pages for the X1 and the X7 both contain the following sections that are described in the paragraphs that follow:

- VLAN Assignments
- Connection
- Transmitter
- Receiver

3.3.1 VLAN Assignments

Figure 3-10 shows the **VLAN Assignments** section.

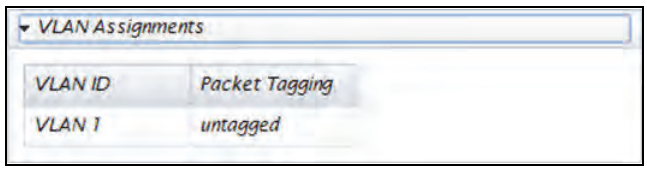

Figure 3-10. VLAN Assignments

The **VLAN Assignments** section provides the following information about Virtual LAN (VLAN) assignments:

- **VLAN ID**: A specific VLAN
- **Packet Tagging**: Whether a packet header includes a tag that identifies the VLAN it belongs to

NOTE: Packet tagging permits connecting to the Ethernet side of the default LAN from a hub PC.

3.3.2 Connection

Figure 3-11 shows the **Connection** section of the **Ethernet Status** page.

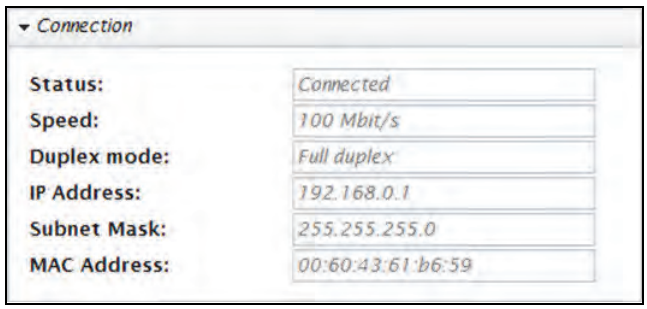

Figure 3-11. Connection

The **Connection** section provides the following information about the local LAN subnet that connects to the satellite router:

- **Status**: The connection status as either **Connected** or **Disconnected**
- **Speed**: The connection speed established at **10 Mbit/s** or **100 Mbit/s**; if there is no connection, indicates **Not Available**
- **Duplex Mode**: The **Full Duplex**, **Half Duplex**, or **Not Available**
- **IP Address**: The IP address of the untagged VLAN (i.e., the default VLAN) of the port; if there is no untagged VLAN, displays **No default VLAN**
- **Subnet Mask**: The satellite router subnet mask; if there is no untagged VLAN, displays **N/A**
- **MAC Address**: The satellite router MAC address

3.3.3 Transmitter

The **Transmitter** section shows statistical information that provides a key measure of the stability of the Ethernet transmitter.

Figure 3-12 shows the **Transmitter** section of the **Ethernet Status** page.

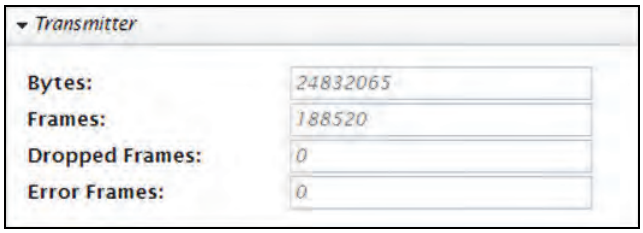

Figure 3-12. Transmitter

The **Transmitter** section provides the following information:

- Bytes: The total number of bytes that the satellite router has transmitted from the Ethernet interface
- **Frames**: The total number of Ethernet frames that the satellite router has transmitted from the Ethernet interface
- **Dropped Frames**: The number of dropped frames since the satellite router was restarted
- **Error Frames**: The number of error frames since the satellite router was restarted

3.3.4 Receiver

The **Receiver** section shows statistical information that provides a key measure of the stability of the Ethernet receiver characteristics.

Figure 3-13 shows the **Receiver** section of the **Ethernet Status** page.

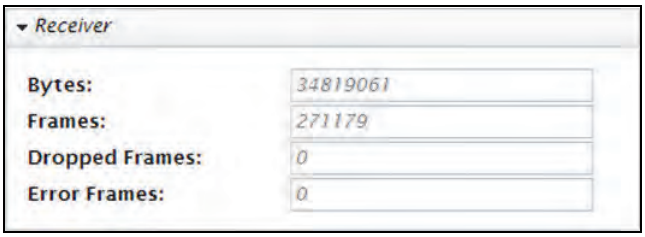

Figure 3-13. Receiver

The **Receiver** section provides the following information:

- **Bytes**: The total number of bytes received at the Ethernet interface
- **Frames**: The total number of Ethernet frames received at the Ethernet interface
- **Dropped Frames**: The number of dropped frames since the satellite router was restarted
- **Error Frames**: The number of error frames since the satellite router was restarted

3.4 IP Configuration Page

The **IP Configuration** page provides important configuration information about the network that connects to the satellite router.

Figure 3-14 shows the e150 and X1 **IP Configuration** page, and Figure 3-15 shows the X7 or X7-ER **IP Configuration** page.

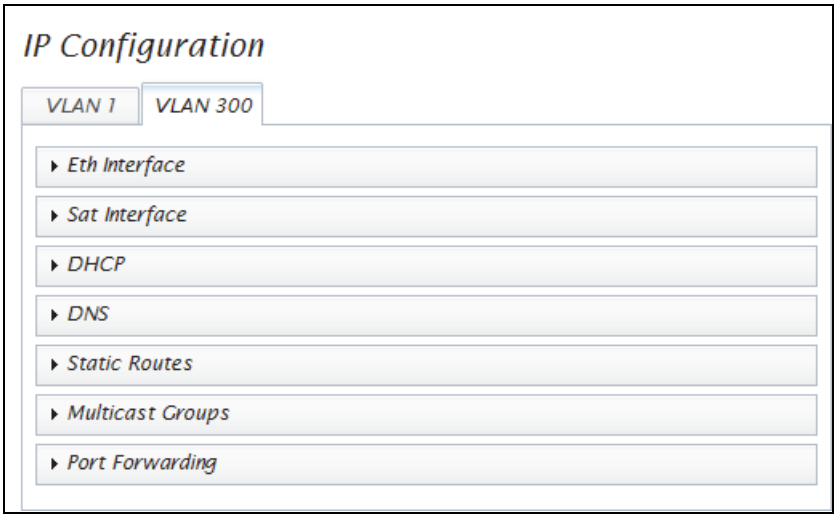

Figure 3-14. IP Configuration Page (e150 and X1)

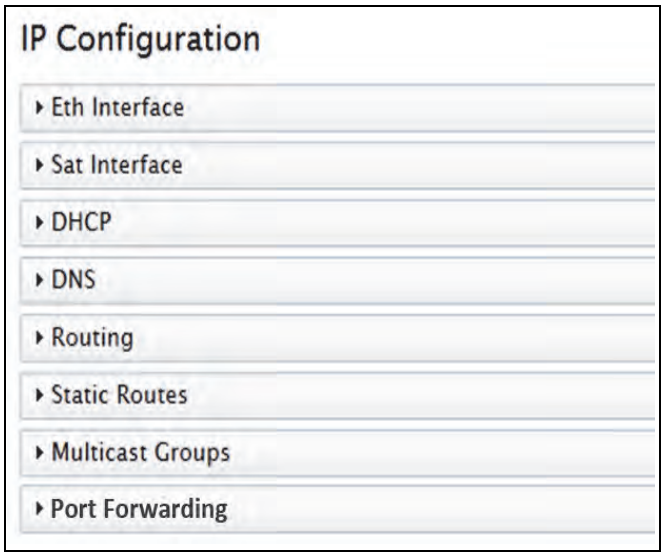

Figure 3-15. IP Configuration Page (X7 or X7-ER)

Note that both contain the sections below with the exception that the X7 or X7-ER contains a Routing section.

- Eth Interface
- Sat Interface
- DHCP
- DNS
- Routing (X7 or X7-ER only)
- Static Routes

- Multicast Groups
- Port Forwarding

By default, **VLAN1** or **eth0** is the management VLAN and the remaining VLANs (or Eths) are user VLANs.

3.4.1 Eth Interface

Figure 3-16 shows the **Eth Interface** section of the **IP Configuration** page.

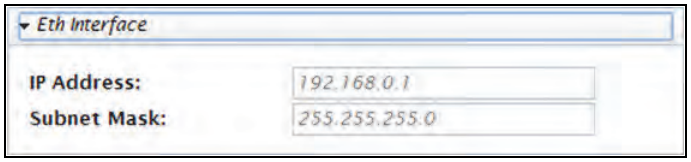

Figure 3-16. Eth Interface

In an iDirect network, the Eth (that is, the LAN) Interface refers to the IP address through which the satellite router communicates with the LAN network behind the satellite router. The **Eth Interface** contains the following fields:

- **IP Address**: The IP address of the satellite router on the user VLAN on which it is configured
- **Netmask**: The associated subnet mask for the satellite router

3.4.2 Sat Interface

Figure 3-17 shows the **SAT Interface** section of the **IP Configuration** page.

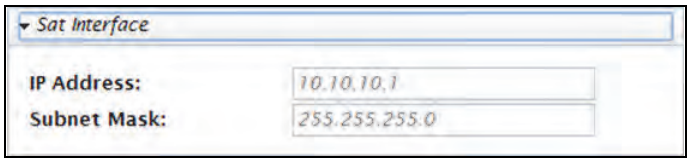

Figure 3-17. Sat Interface

In an iDirect network, the Sat Interface refers to the hub side of the network. Therefore, the Sat Interface **IP Address** represents the virtual interface of the satellite router on the default VLAN. The **Sat Interface** section contains the following fields:

- **IP Address**: The IP address of the satellite router on the user VLAN on which it is configured
- **Netmask**: The associated subnet mask for the satellite router

3.4.3 DHCP

The **DHCP** (Dynamic Host Configuration Protocol) section of the **IP Configuration** page displays the current modem DHCP configuration in one of three modes:

- **Disabled**: **DHCP Mode** is disabled
- **Server**: The satellite router is acting as the DHCP Server

- **Relay**: There is an existing or separate DHCP server at the hub location

Figure 3-18 shows the **Disabled** mode where only the **DHCP Mode** field appears.

Figure 3-18. DHCP Mode (Disabled)

Figure 3-19 shows the **DHCP** section of the **IP Configuration** page with **Server** mode selected.

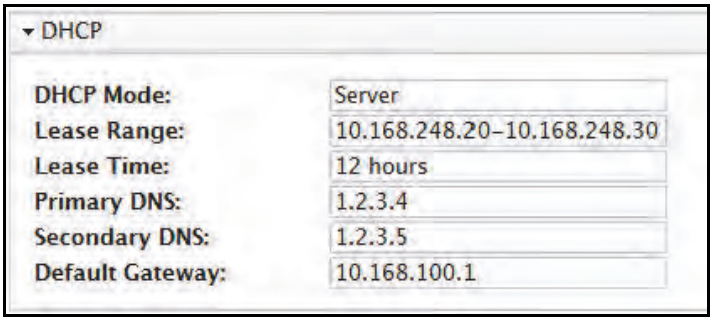

Figure 3-19. DHCP (Server Mode)

In the **Server** or **Relay** modes, the following fields are available:

- **Lease Range**: The IP address range to be used by DHCP clients
- **Lease Time**: The lease time for DHCP clients
- **Primary DNS**: The primary DNS server IP address
- **Secondary DNS**: The secondary DNS server IP address
- **Default Gateway**: The IP address of the default gateway

3.4.4 DNS

Figure 3-20 shows the **DNS** (Domain Name System) section of the **IP Config** page. If the DNS mode is **Disabled**, only the **DNS Mode** field appears.

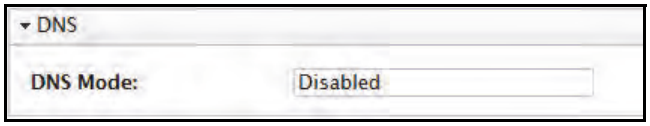

Figure 3-20. DNS (Mode Disabled)

Figure 3-21 shows the DNS mode enabled.

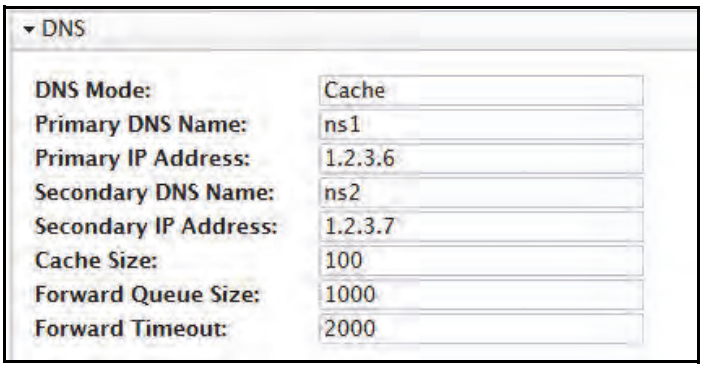

Figure 3-21. DNS (Mode Enabled)

If the DNS mode is **Enabled**, the following fields appear:

- **DNS Mode**: The DNS mode is **Cache** or **Disabled**
- **Primary DNS Name**: The primary DNS name server
- **Primary IP Address**: The primary DNS server IP address
- **Secondary DNS Name**: The secondary DNS name server
- **Secondary IP Address**: The secondary DNS server IP address
- **Cache Size**: The number of entries the DNS cache can hold
- **Forward Queue Size**: The maximum size of the DNS forward queue
- **Forward Timeout**: The expiration time for elements in the DNS forward queue (ms)

3.4.5 Routing

Figure 3-22 shows the **Routing** section of the **IP Configuration** page for the X7 or X7-ER.

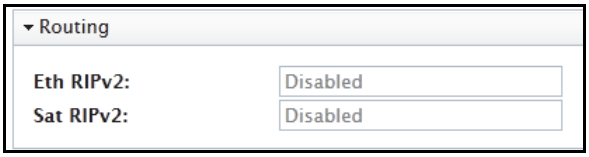

Figure 3-22. Routing

The **Routing** section contains the following fields:

- **Eth RIPv2:** Whether the RIPv2 protocol is enabled or disabled for the LAN Interface
- **Sat RIPv2:** Whether the RIPv2 protocol is enabled or disabled for the Sat Interface (The Sat Interface is called the management interface when referring to the default VLAN.)

3.4.6 Static Routes

Figure 3-23 shows the **Static Routes** section of the **IP Configuration** page.

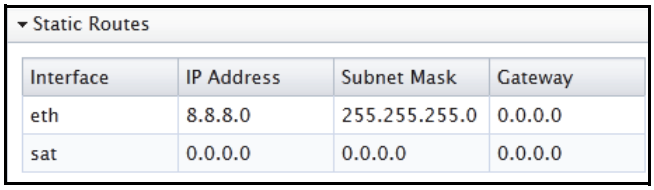

Figure 3-23. Static Routes

The **Static Routes** section shows the list of IP addresses configured in iBuilder as static routes for the satellite router.

3.4.7 Multicast Groups

Figure 3-24 shows the Multicast Groups section of the IP Configuration page.

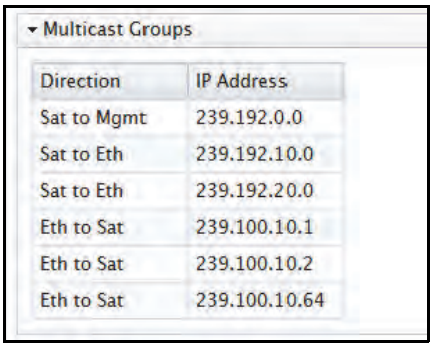

Figure 3-24. Multicast Groups

The Multicast Groups section provides the following information:

- **Direction**: The flow of traffic of the listed multicast groups
- **IP Address**: The IP addresses of the persistent Multicast Groups where the satellite router is a member

3.4.8 Port Forwarding

Figure 3-25 shows the **Port Forwarding** section of the **IP Configuration** page.

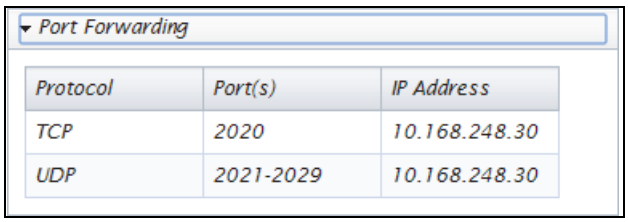

Figure 3-25. Port Forwarding

The **Port Forwarding Group** section provides the following information:

- **Protocol**: The protocol of the forwarded packets

- **Port(s)**: The port or port range of the IP packets to be forwarded
- **IP Address**: The destination IP address

3.5 ODU Status Page

Figure 3-26 shows the **ODU** (outdoor unit) **Status** page.

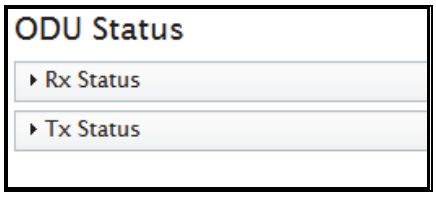

Figure 3-26. ODU Status

The **ODU Status** page indicates the following key operating parameters of the Block Up Converter (BUC) and the Low-Noise Block (LNB) Downconverter amplifier devices associated with the satellite router:

The **ODU Status** page contains the following sections that are described in the paragraphs that follow:

- Rx Status
- Tx Status

3.5.1 Rx Status

Figure 3-27 shows the **Rx Status** section.

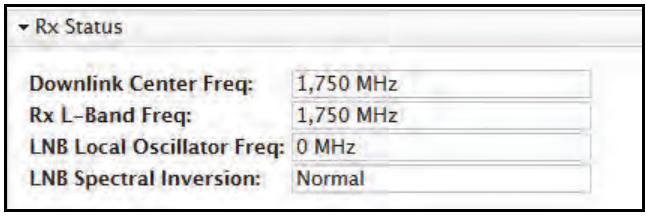

Figure 3-27. Rx Status

The **Rx Status** section provides the following information:

- **Downlink Center Freq**: The downlink center frequency of the DVB-S2 downstream carrier as configured in iBuilder
- **Rx L-Band Freq**: The output of the LNB (the downconverted IF frequency); the router receiver tunes to this frequency
- **LNB Local Oscillator Freq**: The frequency of the downconverter local oscillator
- **LNB Spectral Inversion**: **Normal** or **Inverted**

3.5.2 Tx Status

Figure 3-28 shows the **Tx Status** section.

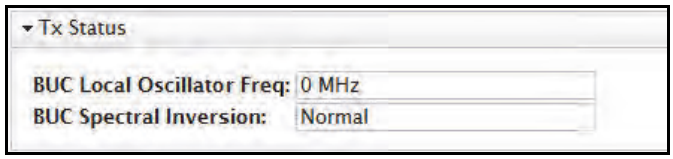

Figure 3-28. Tx Status

The **Tx Status** section provides the following information:

- **BUC Local Oscillator Freq**: The frequency of the upconverter local oscillator
- **BUC Spectral Inversion**: **Normal** or **Inverted**

3.6 Real-Time Remote Events Page

Figure 3-29 shows the **Real-Time Remote Events** page.

NOTE: The **Real-Time Remote Events** section of the Web iSite Dashboard shows similar information but is limited to ten events. This page shows all events.

Real-Time Remote Events

Up Time	Network Time	Level	Description
00:00:49.840	2013-05-20 11:46:28.010	Nms	TCP Connection terminated on socket: 27
00:00:49.610	2013-05-20 11:46:27.780	Nms	TCP Connection successful from addr: 172.17.105.10, assigned socket: 27
00:00:49.420	2013-05-20 11:46:27.590	Nms	TCP Connection successful from addr: 172.17.105.10, assigned socket: 27
00:00:42.320	2013-05-20 11:46:20.490	Nms	REMOTE HELLO (revision: 14.0.0.0)
00:00:42.320	2013-05-20 11:46:20.490	Nms	REMOTE HELLO (revision: 14.0.0.0)
00:00:18.010	2013-05-20 11:45:56.180	Information	t:15567 Remote Received First Timeplan
00:00:18.010	2013-05-20 11:45:56.180	Information	t:15567 Remote Received First Timeplan
00:00:08.350	2013-05-20 11:45:46.520	Nms	Remote exits from RxOnly Mode

Figure 3-29. Real-Time Remote Events

The **Real-Time Remote Events** page shows the most recent events that have occurred on the remote satellite router.

This page is primarily a monitoring tool to aid in resolving any issues with the satellite router. An iDirect TAC representative can use the information in this section to trace events in the satellite router and perform an investigation and analysis of any problems that exist.

This page provides the following real-time remote events information for the satellite router:

- **Up Time**: Total time the satellite router has been active since last modem restart
- **Network Time**: Time and date that the protocol processor provides at ten-minute intervals

NOTE: The **Network Time** column does not appear if the network time is unknown. The remote does not have a real-time clock and becomes aware of the network time only after entering and remaining in the network for 10 minutes.

- **Level**: Show level as:
  - Informational
  - Warning
  - Error
  - Fatal
  - NMS
- **Description**: Describes the type of real-time remote event

3.7 Satcom Graphs Page

Figure 3-30 shows the **Satcom Graphs** page.

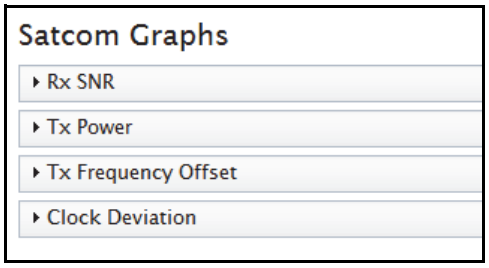

Figure 3-30. Satcom Graphs

The **Satcom Graphs** page contains the following sections that are described in the paragraphs that follow:

- Rx SNR
- Tx Power
- Tx Frequency Offset
- Clock Deviation

3.7.1 Rx SNR

Figure 3-31 shows the **Rx SNR** section.

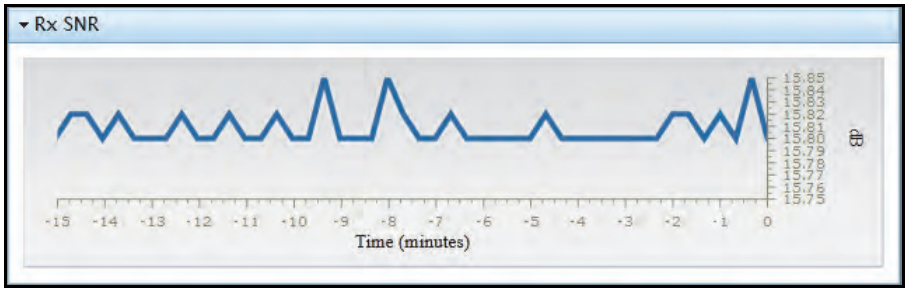

Figure 3-31. Receiver SNR

The **Rx SNR** section is a graph of the downstream signal-to-noise ratio in decibels (dB) as seen by the satellite router over time. The receive SNR varies over time depending upon propagation conditions and noise levels.

3.7.2 Tx Power

Figure 3-32 shows the **Tx Power** section.

Figure 3-32. Tx Power

The **Tx Power** section is a graph of the satellite router transmitter IF output power over time.

3.7.3 Tx Frequency Offset

Figure 3-33 shows the **Tx Frequency Offset** section.

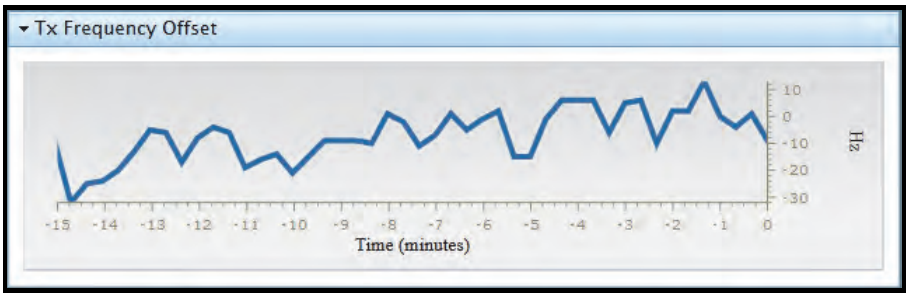

Figure 3-33. Tx Frequency Offset

The **Tx Frequency Offset** section is a graph of the satellite router transmit frequency offset over time. The data indicates the frequency offsets that the Protocol Processor (PP) applies to the satellite router determined by the uplink control process (UCP).

3.7.4 Clock Deviation

Figure 3-34 shows the **Clock Deviation** section.

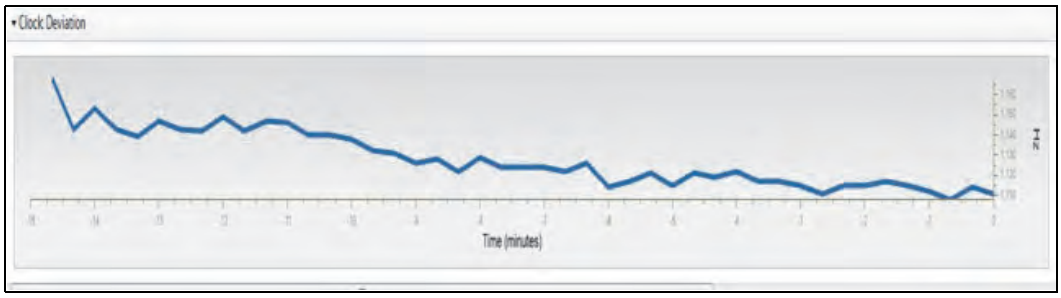

Figure 3-34. Clock Deviation

The **Clock Deviation** section is a graph that plots the difference between the satellite router 10 MHz reference clock and the Network Clock Reference (NCR) over time.

4 Commissioning Pages

This chapter describes the Web iSite Commissioning pages. It contains the following sections:

This chapter only describes the various pages of this page group, and the tools found on these pages. For full information and specific details on installing and commissioning the e150, X1, X7, and X7-ER Satellite Routers, refer to the *iDirect Satellite Routers Installation and Commissioning Guide*.

NOTE: **Commissioning** pages are only available to **admin** accounts. The **Commissioning** pages are not available to **user** accounts.

4.1 Overview

Clicking on the **Commissioning** button causes the left navigation bar to display the **Commission** page group. See Figure 4-1.

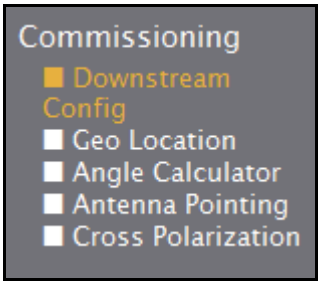

Figure 4-1. Left Navigation Bar Showing Commissioning Page Group

It also causes the **Downstream Configuration** page (the default page for the **Commissioning** page group) to open.

This page group (which may be familiar to users of the iVantage iSite client) provides the functionality required for satellite router installation and commissioning tasks.

4.2 Downstream Configuration

The **Downstream Configuration** page provides the means to enter the minimum parameters to receive the downstream carrier. After the remote has acquired the downstream carrier, the network operator can push the options file to the satellite router over the air in order to load the full configuration.

NOTE: Downstream Configuration is a commissioning option typically used for large fleets. For more information, see the *iDX Installation and Commissioning Guide for Remote Satellite Routers.*

Figure 4-2 shows the **Downstream Configuration** page.

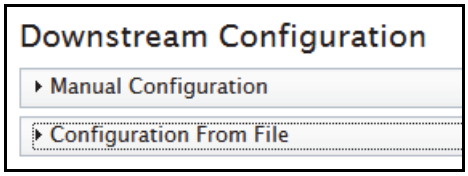

Figure 4-2. Downstream Configuration (Default)

The **Downstream Configuration** page contains the following sections that are described in the paragraphs that follow:

- Manual Configuration
- Configuration from File

4.2.1 Manual Configuration

Figure 4-3 shows the **Manual Configuration** section of the **Downstream Configuration** page.

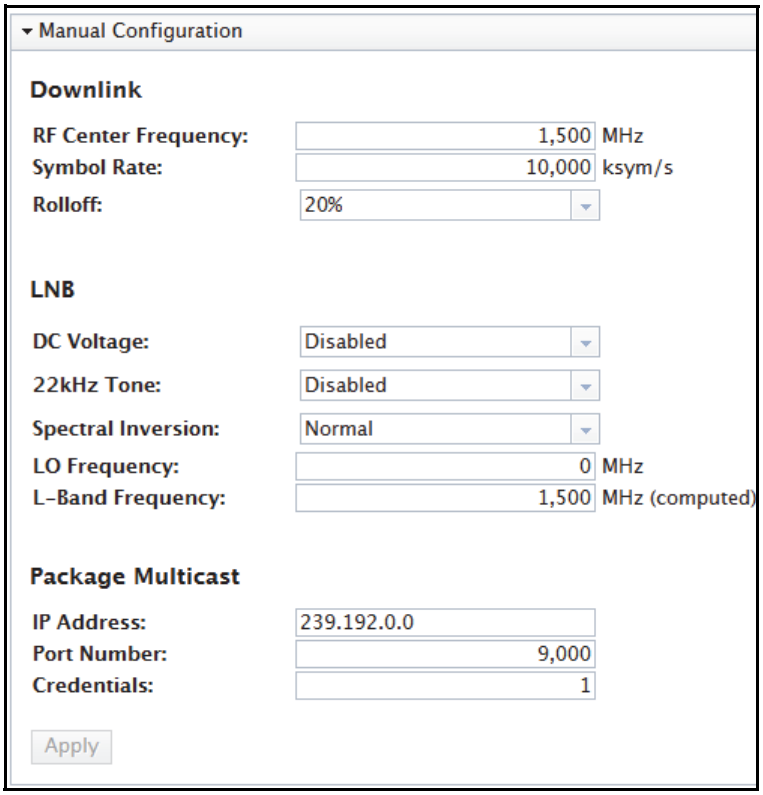

Figure 4-3. Manual Configuration

Use the **Manual Configuration** section to manually configure the downstream reception parameters. After making changes, use the **Apply** button to confirm.

4.2.1.1 Downlink

The **Downlink** section contains the following fields:

- **RF Downlink Center Frequency**: The RF downlink center frequency for the downstream carrier
- **Symbol Rate**: The symbol rate of the downstream carrier in kilosymbols per second
- **Rolloff**: Pull-down menu to select roll-off factor: **5%/10%/15%/20%**

4.2.1.2 LNB

The **LNB** section contains the following fields:

- **DC Voltage**: Pull-down menu to select LNB DC input voltage:
  - X7 or X7-ER choices are: **Disable/13V/14V/18V/19V**
  - e150 and X1 choices are: **Disable/24V**
- **22kHz Tone**: Pull-down menu to select: **Enabled/Disabled**
- **Spectral Inversion**: Pull-down menu to select: **Normal/Inverted**

- **LO Frequency**: The LNB local oscillator frequency
- **L-Band Frequency**: The LNB L-band IF output frequency (computed and entered automatically)

4.2.1.3 Package Multicast

The **Package Multicast** section contains the following fields:

- **IP Address**: The multicast group IP address
- **Port Numbers**: The port number receiving the multicast
- **Credentials**: The number used for multicast firmware image download

NOTE: The above fields must match the iBuilder multicast package or options file download dialog boxes. If they do not match, the package or options download will fail.

4.2.2 Configuration From File

Figure 4-4 shows the **Configuration From File** section of the **Downstream Configuration** page.

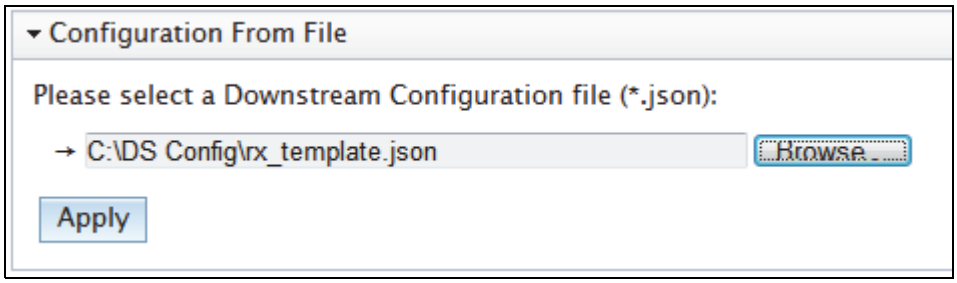

Figure 4-4. Configuration From File

Use this section to select a **Downstream Configuration** file. For example, a JSON (JavaScript Object Notation) file as shown below:

```
{
    "frequency": 12000.5678,
    "symbolRate": 1000.123,
    "rolloff": 0.20,
    "lnb": {
        "dcVoltage": 0,
        "toneEnabled": false,
        "spectralInversion": false,
      "translation": 10600.1234
    },
    "multicast": {
```

```
            "address": "239.192.0.0",
            "port": 9000,
            "credentials": 1
        }
    }
```

After making a selection, use the **Apply** button to load the file.

4.3 Geo Location

Figure 4-5 shows the **Geo Location** section of the **Commissioning** page.

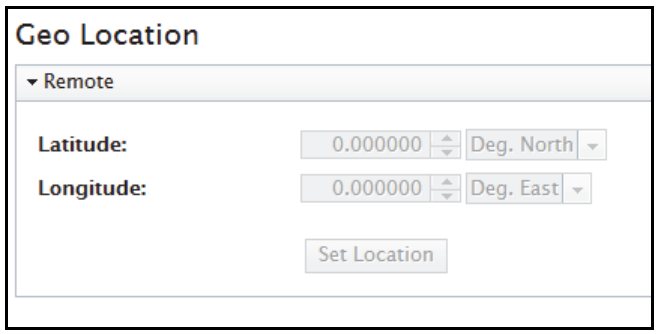

Figure 4-5. Geo Location

The **Geo Location** section contains the following fields:

- **Latitude**: Use the arrows to increment or decrement the numerical latitude of the satellite router in degrees north or south
- **Longitude**: Use the arrows to increment or decrement the numerical longitude of the satellite router in degrees east or west
- **Deg. North** or **Deg. South**: Use the arrow to select a latitude of north or south in relation to the equator
- **Deg. East** or **Deg. West**: Use the arrow to select a longitude of east or west in relation to the Prime (Greenwich) Meridian

NOTE: This page operates differently depending on the mode selection at the **Remote Geo Location Tab** in iBuilder.

- In **Stationary** mode, it shows the configuration from the options file from iBuilder
- In **Mobile → Manual** mode, it allows the user to enter a value (Mobile mode applies only to the X7)
- In **Mobile → Antenna** or **Mobile → Serial** mode, an external GPS receiver updates the fields automatically with the latitude and longitude
- If **Mobile Security** is checked, the fields show nothing to protect the terminals geo-location information

4.4 Angle Calculator Page

The Web iSite **Angle Calculator** page assists with preliminary antenna pointing. See Figure 4-6.

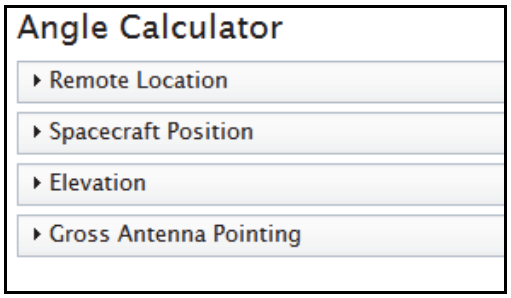

Figure 4-6. Angle Calculator

Given the appropriate values, the Angle Calculator determines the **Polarization Offset**, **Azimuth True**, and **Elevation Actual**.

The modifiable fields contain values derived from the options file for the satellite router. If an options file has not been loaded, the fields have an initial value of 0.0. All other fields will be blank.

The **Angle Calculator** page contains the following sections that are described in the paragraphs that follow:

- Remote Location
- Spacecraft Position
- Elevation
- Gross Antenna Pointing

4.4.1 Remote Location

Figure 4-7 shows the **Remote Location** section of the **Angle Calculator** page.

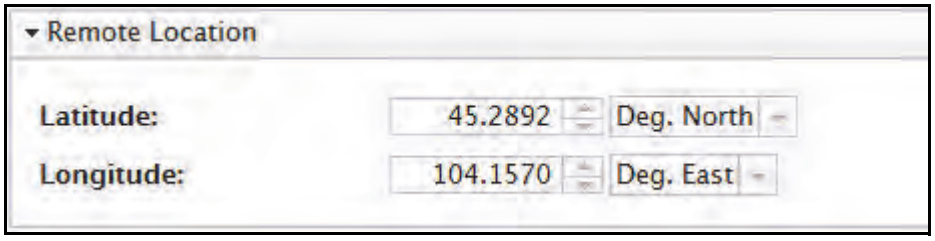

Figure 4-7. Remote Location

The **Remote Location** section contains the following fields:

- **Latitude**: Use the arrows to increment or decrement the numerical latitude of the satellite router in degrees north or south
- **Longitude**: Use the arrows to increment or decrement the numerical longitude of the satellite router in degrees east or west

- **Deg. North** or **Deg. South**: Use the arrow to select a latitude of north or south in relation to the equator
- **Deg. East** or **Deg. West**: Use the arrow to select a longitude of east or west in relation to the Prime (Greenwich) Meridian

NOTE: The data in this section differs from the data in the **Geo Location** section in that this data is used for computing look angles.

4.4.2 Spacecraft Position

Figure 4-8 shows the **Spacecraft Position** section of the **Angle Calculator** page.

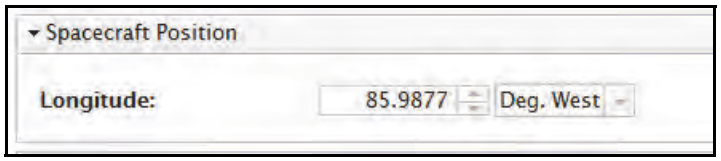

Figure 4-8. Spacecraft Position

The **Spacecraft Position** section contains the following fields:

- **Longitude**: Use the arrows to increment or decrement the numerical longitude of the satellite router in degrees east or west
- **Deg. East** or **Deg. West**: Use the arrows to select a longitude of east or west in relation to the Prime (Greenwich) Meridian

4.4.3 Elevation

Figure 4-9 shows the **Elevation** section of the **Angle Calculator** page.

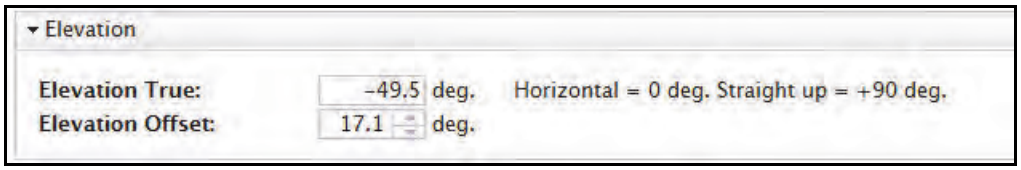

Figure 4-9. Elevation

The **Elevation** section contains the following fields:

- **Elevation True**: The angle to the spacecraft if the antenna had no offset at all. This value is derived from the site geo-coordinates and the spacecraft longitude. It does not include antenna offset.
- **Elevation Offset**: The offset angle of the antenna (i.e., the degree to which the mechanical axis of the antenna feed is different from the optical axis).

4.4.4 Gross Antenna Pointing

Figure 4-10 shows the **Gross Antenna Pointing** section of the **Angle Calculator** page.

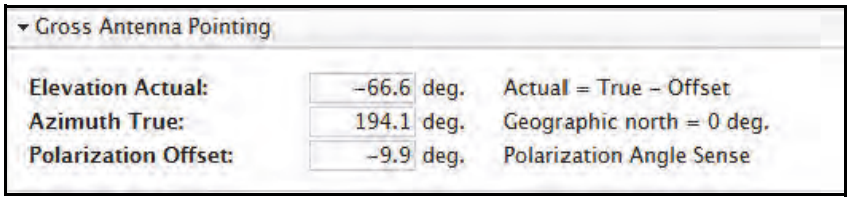

Figure 4-10. Gross Antenna Pointing

The **Gross Antenna Pointing** section contains the following fields:

- **Elevation Actual**: The calculated elevation of the mechanical axis of the antenna reflector
- **Azimuth True**: The calculated true azimuth to the spacecraft, referenced to geographic North (does not include magnetic variation)
- **Polarization Offset**: The calculated polarization skew angle

4.5 Antenna Pointing Page

Figure 4-11 shows the graph portion of the **Antenna Pointing** page that assists with antenna pointing.

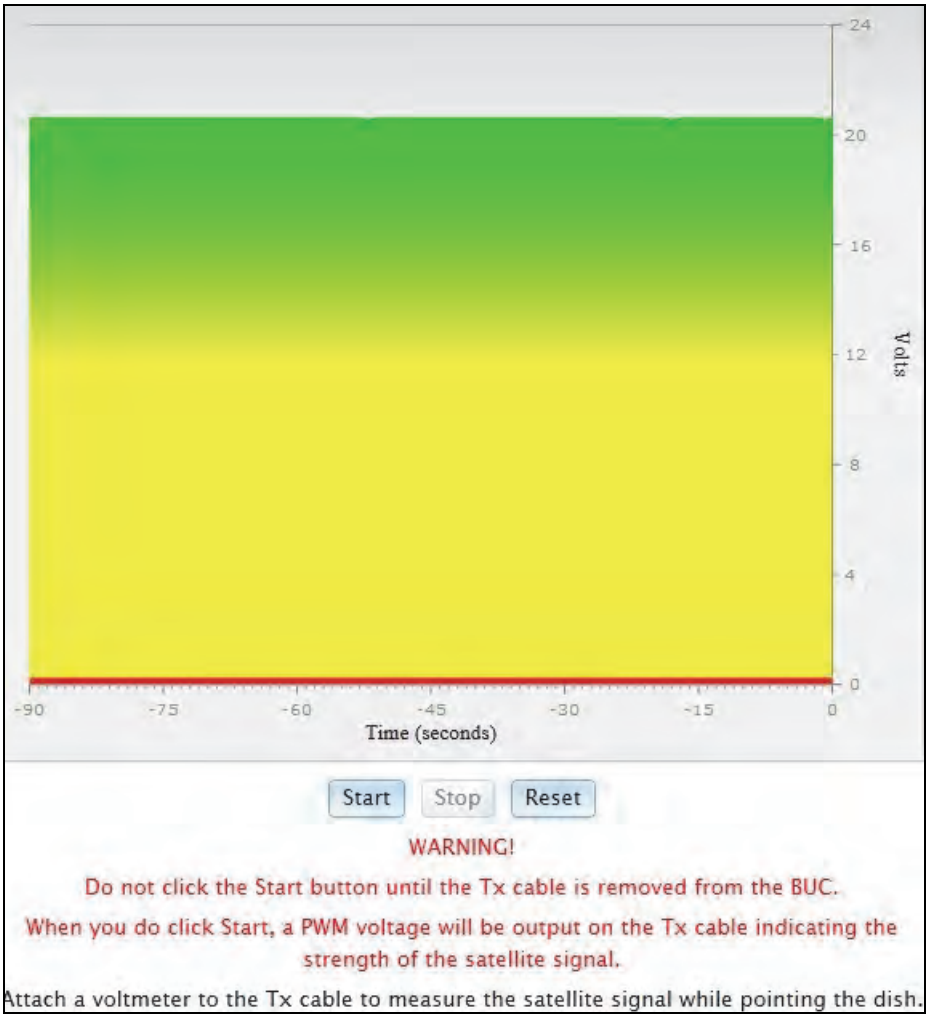

Figure 4-11. Antenna Pointing Graph

The tool itself is a color-coded graphical voltage display that simplifies the task of locking on to the downstream carrier.

As the user manipulates the antenna azimuth plane in a slow sweeping motion, the graph displays a voltage reading in the range of 0 to 20 VDC. The display indicates the signal strength as well as when the remote satellite router is successfully locked onto the satellite and downstream carrier.

Higher levels indicate more energy in the configured frequency and symbol rate (higher numbers are better). The SNR value will only be reported if the demodulator has locked to the signal (voltage is in the 10-20 VDC range).

Figure 4-12 shows how **Volts DC** relates to available **Antenna Status**.

Volts DC	Antenna Status
0 – 2	Not in pointing mode, hardware problem, or off satellite
2 – 8	Detecting RF energy, but not locked on the downstream carrier
10 – 20	Locked on the downstream carrier

Figure 4-12. Volts DC and Antenna Status

The graphical display of the voltage range is color-coded as follows:

- 0-2 VDC is RED
- 2-10 VDC is YELLOW
- 10-20 VDC is GREEN

As the signal strength increases, the graph turns RED, then YELLOW, and then GREEN as the antenna locks on the downstream carrier.

NOTE: For full information and specific details on installing and commissioning the X1, X7, and X7-ER Satellite Routers, refer to the *iDirect Satellite Routers Installation and Commissioning Guide*.

4.6 Cross Polarization Test Page

Figure 4-13 shows the **Cross Polarization Test** page.

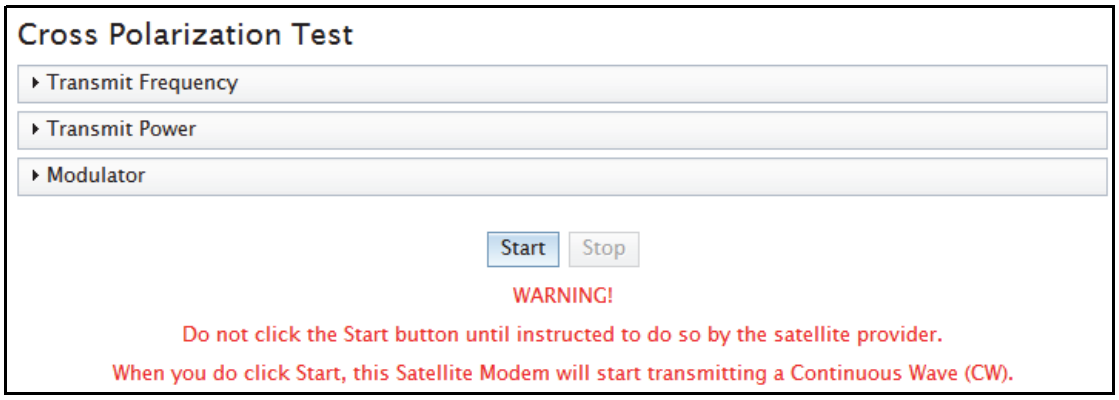

Figure 4-13. Cross Polarization Test

NOTE: Refer to the *Satellite Router Installation and Commissioning Guide* for complete instructions on commissioning the Satellite Router including the performance of the cross polarization test.

The **Cross Polarization Test** page supports the transmission of a modulated or unmodulated continuous wave (CW) as part of the test. The cross polarization test is performed under the direction of the satellite access control center.

The three sections of this page include:

- Transmit Frequency
- Transmit Power
- Modulator

4.6.1 Transmit Frequency

Figure 4-14 shows the **Transmit Frequency** section of the **Cross Polarization** page.

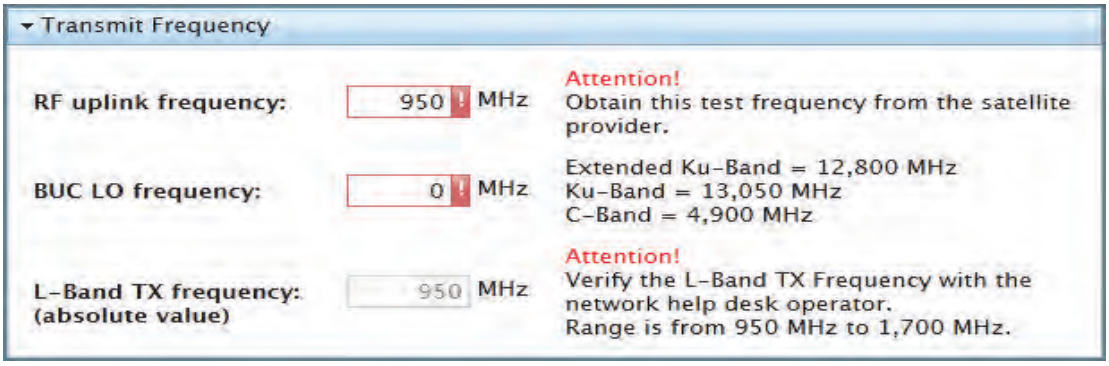

Figure 4-14. Transmit Frequency (e150 and X1)

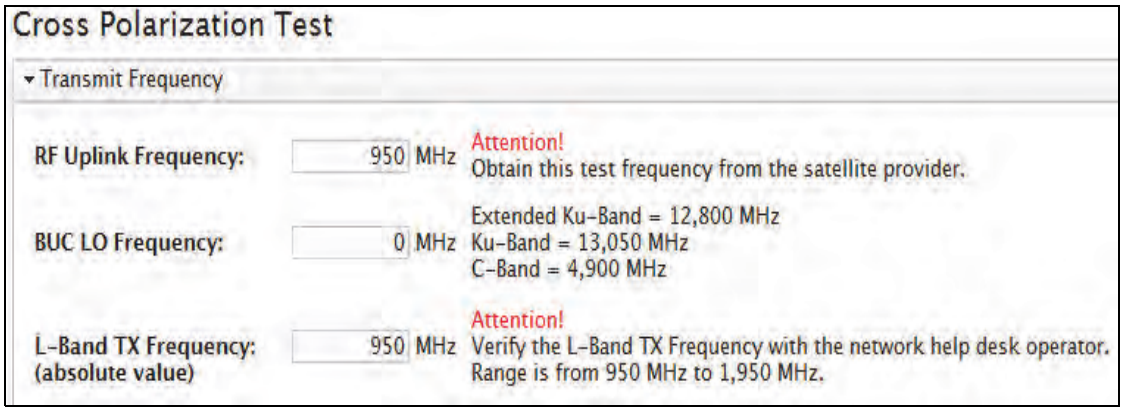

Figure 4-15. Transmit Frequency (X7 or X7-ER)

The fields in this section provide the setup for the cross-polarization test:

- **RF Uplink Frequency**: This is the over-the-air test frequency obtained from the satellite provider and entered by the user
- **BUC LO** (local oscillator) **Frequency**: Typically populated from the options file for the satellite router; user can change by entering new frequency in this field
- **L-Band Tx Frequency**: Automatically calculated and displayed

Frequency, BUC LO Frequency, and L-Band TX Frequency field values should fall within the following ranges:

- RF Uplink Frequency — 950 MHz minimum

- BUC LO Frequency — 0 MHz minimum
- L-Band TX Frequency — 950 MHz to 1,700 MHz for the e150 and X1 and 950 MHz to 1,950 MHz for the X7

If a field value exceeds the expected range, a red exclamation mark appears beside the field.

4.6.2 Transmit Power

Figure 4-16 shows the **Transmit Power** section of the **Cross Polarization** page.

Figure 4-16. Transmit Power

The installer adjusts the **Adjust Transmit Power** field under the direction of the satellite access control center when performing the 1 db compression test while monitoring the Carrier Wave (CW).

After the test starts, the installer typically adjusts the value in 1 db increments for the X1 or 0.5 dB increments for the X7 under the guidance of the satellite access controller.

4.6.3 Modulator

Figure 4-17 shows the **Modulator** section of the **Cross Polarization** page.

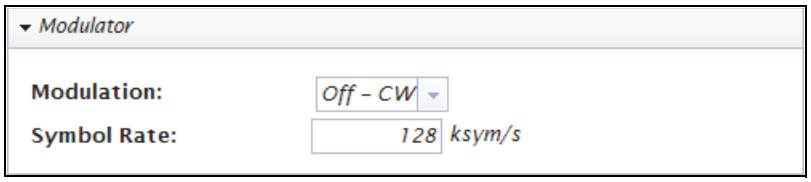

Figure 4-17. Modulator

The cross polarization test supports the testing of a satellite router by transmitting either a modulated or unmodulated carrier at a specific uplink frequency.

The unmodulated carrier is the CW. The modulated carrier is **BSPK 128ksym/s** and cannot be changed.

Using the **Modulation** option button, a user can switch between continuous-wave or modulated emission. Switch modulation **On** only after receiving clearance to do so by the satellite access control center.

5 Admin Pages

This chapter describes the Admin pages. It contains the following sections:

5.1 Overview

Clicking on the **Admin** button causes the left navigation bar to display the **Admin** page group. See Figure 5-1.

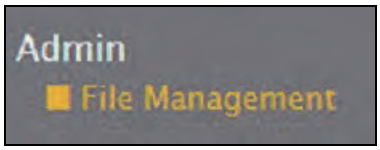

Figure 5-1. Left Navigation Bar Showing Admin Page Group

This also causes the **File Management** page (the default page for the **Admin** page group) to open. See Figure 5-2. This page provides additional tools for troubleshooting or commissioning of the remote.

NOTE: Access to the **Admin** page group is available only when logged-in as **Admin**.

5.2 File Management Page

Figure 5-2 shows the **File Management** page.

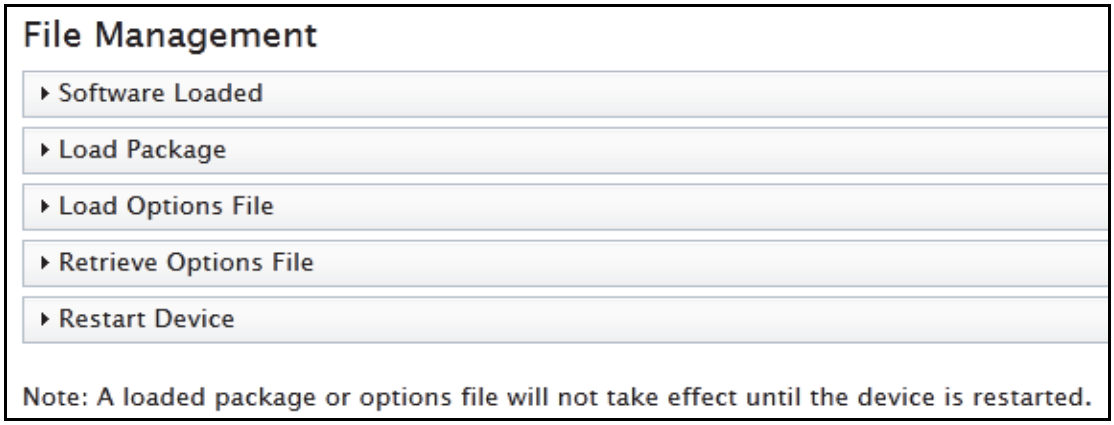

Figure 5-2. File Management

Use the **File Management** page to load the required software during the commissioning process.

The topics in this section describe how to use the **File Management** page sections. For complete instructions on performing installation and commissioning tasks, see the *Satellite Router Installation and Commissioning Guide*.

This page contains the following sections that are described in the paragraphs that follow:

- Software Loaded
- Load Package
- Load Options File
- Retrieve Options File
- Restart Device

WARNING: Use of Web iSite for loading of the remote package file and options file is typically performed only during commissioning or troubleshooting. Both files are loaded at this time. After the commissioning, the package and options file are generally downloaded from the network over-the-air

5.2.1 Software Loaded

Figure 5-3 shows the **Software Loaded** section.

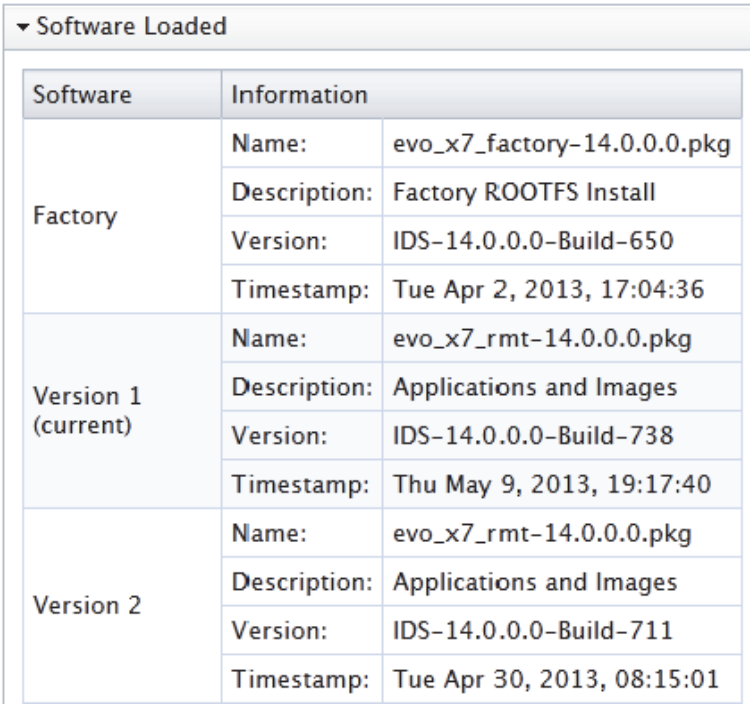

Figure 5-3. Software Loaded

5.2.2 Load Package

Figure 5-4 shows the **Load Package** section.

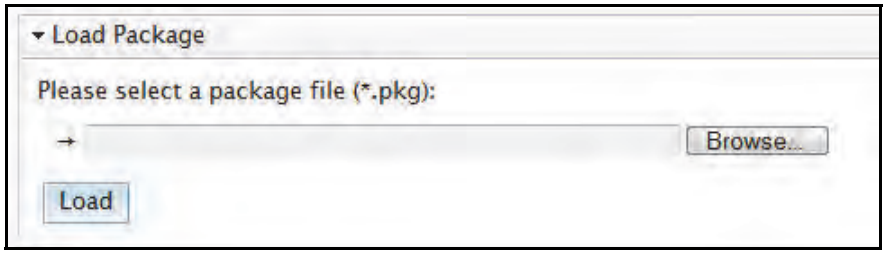

Figure 5-4. Load Package

Use the **Load Package** section to load the model-specific software image, referred to as the *package* file.

5.2.3 Load Options File

Figure 5-5 shows the **Load Options File** section.

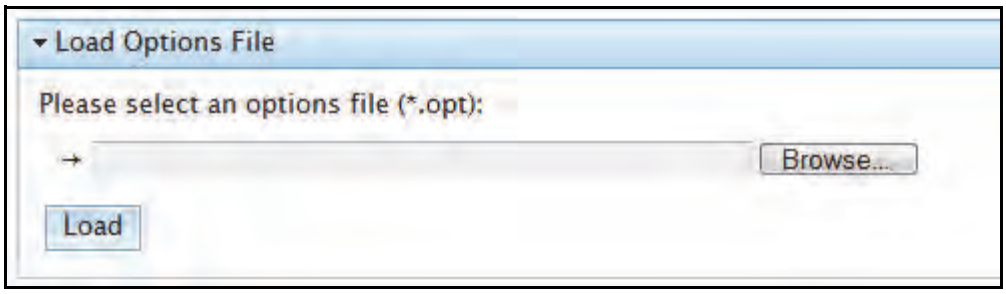

Figure 5-5. Load Options File

Use the **Load Options File** section to load the iBuilder configured options for a specific remote site.

5.2.4 Retrieve Options File

Figure 5-6 shows the **Retrieve Options File** section.

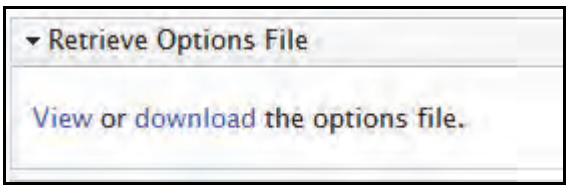

Figure 5-6. Retrieve Options File

Click **View** to open the active options file. Figure 5-7 shows part of a sample options file. Click **Download** to save the active options file to the local PC or laptop.

Options File

Download

```
[BTP]
        device_mode = tdma
        device_name = btp
        device_path = /dev

[BTP_REQ]
        device_mode = tdma
        device_name = btp_req
        device_path = /dev

[COMPRESSION]
        Threshold = 90

[DEBUG]
        cpu_util_test_enabled = 0

[DVBS2]
        frame_length = 125.000000
        frame_size = short
        mode = acm
        ncr_interval = 3375000
        pilot = 1
        rc_roll_off = 0.200000

[ENC]
        auth_level_required = 0
        enc_enabled = 0
        enc_layer_enabled = 0
        enc_mode = 0
        peer_mode = 1

[ETH0]
        interface = eth0
        phy_count = 8

[ETH0_1]
        address = 192.168.0.1
        netmask = 255.255.255.0
        rip_enabled = 0
```

Figure 5-7. Excerpt from Sample Options File

5.2.5 Restart Device

Figure 5-8 shows the **Restart Device** section.

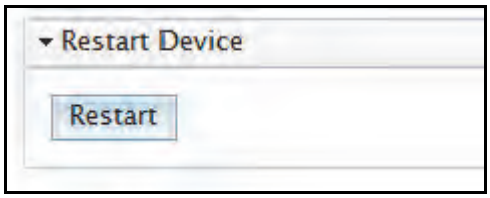

Figure 5-8. Restart Device

Click **Restart** to re-initialize the remote. (This action is equivalent to a power-on reset.)

5.2.6 Load Package

NOTE: Loading a package can be done locally using Web iSite or over-the-air using the DS Configuration Template with iBuilder. This procedure shows how to load the package with Web iSite. For information on using the DS Configuration Template, see the *Installation and Commissioning Guide*.

It may be necessary to load the satellite router with the appropriate package file for the specific iDX release. The package file is available from the iDirect TAC Web site at http://tac.idirect.net for storage on a local PC.

To load a Package file on the satellite router, perform the following steps:

1. Click the **Browse** button in the **Load Package** section of the **File Management** page, to locate the appropriate package file. See Figure 5-9.

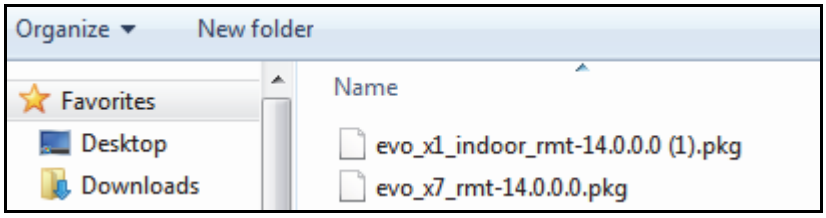

Figure 5-9. Locating the Package File

2. With the package file selected, click the **Load** button. See Figure 5-10.

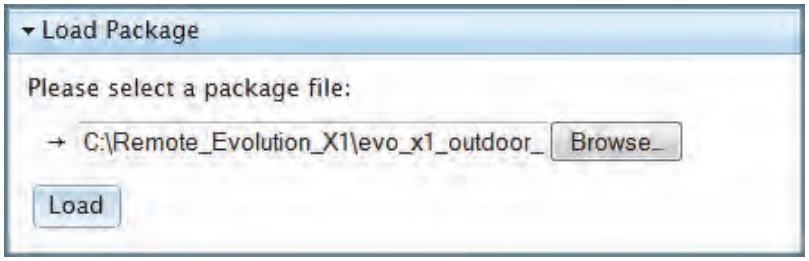

Figure 5-10. Load Button

3. Wait until the **Load Package** prompt message indicates that the package was successfully saved to the remote. See Figure 5-11.

NOTE: This step may take several minutes to complete.

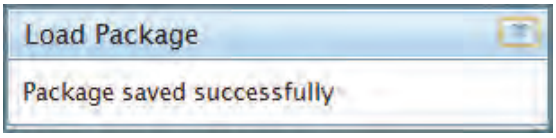

Figure 5-11. Load Package Success Message

4. Close the message dialog and continue with the following steps under **Load Options File** to load the options file to the satellite router.

5.2.7 Load Options File

NOTE: Loading an options file can be done locally using Web iSite or over-the-air using the DS Configuration Template with iBuilder. This procedure shows how to load the options file with Web iSite. For information on using the DS Configuration Template, see the *Installation and Commissioning Guide*.

It is necessary to load a satellite router with the site-specific options file created in iBuilder. The options file must be available for loading to the satellite router from the local PC. The Network Operator provides the options file. For more information, see the *iBuilder User Guide*.

To load an options file on the satellite router, perform the following steps:

1. Click the **Browse** button in the **Load Options File** section of the **File Management** page, to locate and select the appropriate options file. See Figure 5-12.

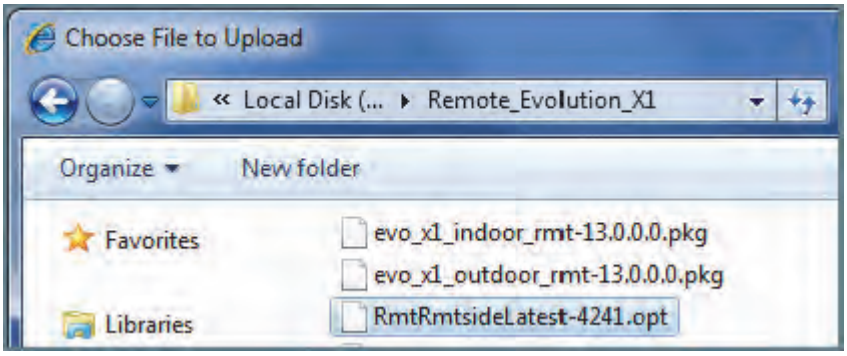

Figure 5-12. Selecting the Options File

2. With the options file selected, click the **Load** button. See Figure 5-13.

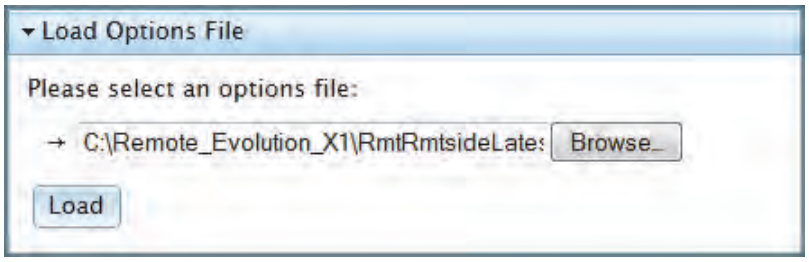

Figure 5-13. Load Button

3. Wait until the **Load Options File** prompt message indicates that the options file was successfully saved. See Figure 5-14.

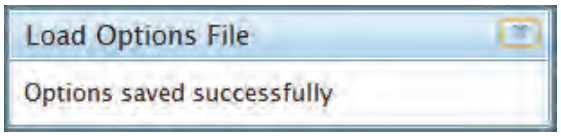

Figure 5-14. Options file Success Message

4. Close the message dialog.
5. Click the **Restart** button in the **Restart Device** section. See Figure 5-15.

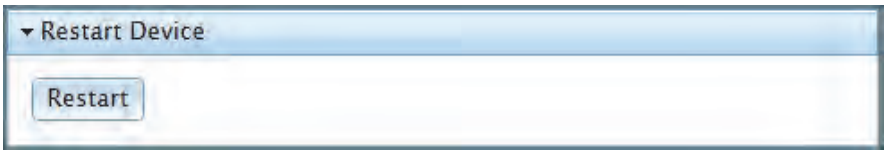

Figure 5-15. Restart Button

6. Wait until the **Restart** prompt message appears. See Figure 5-16.

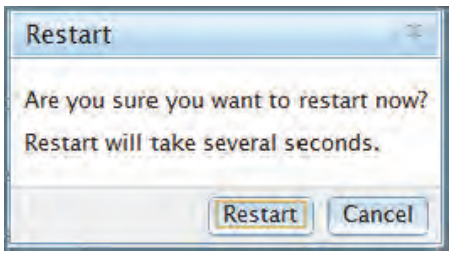

Figure 5-16. Restart Prompt

7. Click the **Restart** button or choose the **Cancel** button.
8. After clicking **Restart**, the current Web iSite session logs out. Wait until the power-on self test (POST) has completed. The IP connection is subsequently re-established and the **Login** page appears.

Appendix A Remote Locking for X1 and e150 Satellite Routers

Remote soft, temporary, and hard locking for an X1 or e150 uses a unique Locking Key for each satellite router in combination with a Network Key and a randomly generated Confirmation Word to securely lock satellite routers to a network.

An X1 or e150 can be configured with a hard (permanent) lock. However, during the configuration of a hard lock, the network operator may choose to create a temporary lock. This is to allow a network operator to test the locking of the first X1 or e150, to verify operation, and to record the Netkey Fingerprint that is returned.

A hard locked satellite router cannot be unlocked; it must be returned to iDirect for a Non-Warranty RMA hardware replacement. A Netkey Fingerprint can help to avoid errors when locking the satellite router. The fingerprint identifies the network for the satellite router without revealing the Network Key on the satellite router.

A remote locked with a Soft Lock can be unlocked. A Soft Lock is removed by entering the Confirmation Word provided when the lock was performed. If the Confirmation Word is lost, the soft lock cannot be disengaged. In order to unlock the remote, it must be returned to iDirect for a Non-Warranty RMA hardware replacement.

Remote locking is performed at the operator's own risk. Non-Warranty RMA charges (plus all shipping) apply to all satellite routers returned to iDirect for the purpose of removing a network lock.

WARNING: It is possible to remove a soft lock or temporary lock with Web iSite. However, it is not possible to remove a hard lock with Web iSite. Removing a hard lock requires returning the satellite router to iDirect for a Non-Warranty RMA hardware replacement.

NOTE: Non-Warranty RMA and shipping charges apply to all satellite routers returned to iDirect for the purpose of removing a network lock.

This appendix contains the following sections:

A.1 Locking an X1 or e150 Overview

Temporary, Soft, and/or Hard locking an X1 or e150 requires the following:

1. Creating the Network Key, at the network level, in iBuilder, and applying the changes. See *Configuring the Network Key* on page 60.
2. Connecting to the satellite router to be locked and entering the Network Key.
3. Generating the Netkey Fingerprint and Confirmation Word, and recording their values.
4. Entering the Confirmation Word and locking the remote.

A.2 Configuring the Network Key

Remote Locking, whether soft, temporary, or hard, requires the creation of a Network Key before locking the satellite routers to a network. Create the Network Key by configuring the following custom key on the Custom tab for the network in iBuilder:

```
[NETWORK_DEFINITION]
  net_key = <Network Key>
```

where <Network Key> is a string of between 5 and 64 alphanumeric characters.

After configuring the custom key in iBuilder, propagate the key to all satellite routers in the network by applying the changes to the network.

During operation, if a locked satellite router receives a Network Key message containing a Network Key that is different from the key set on the satellite router, the satellite router immediately stops sending upstream messages.

A.3 Performing an Temporary Lock

Performing a Temporary Lock is optional. A Temporary Lock allows a network operator to test the locking of the first X1 or e150, to verify operation, and to record the Netkey Fingerprint that is returned. Perform the following steps to temporarily lock the first X1 or e150 to a network.

1. Using a Web browser, connect to the satellite router to be locked and log on as admin. See Figure A-1.

Figure A-1. X1 and e150 Web iSite Login Page

NOTE: Locking a satellite router requires an admin login.

2. Click **Admin** at the top of the Web page.
3. In the browser address bar, type **`/#admin-netlock`** to the right of the IP address. For example:

   `https://192.168.0.1/#admin-netlock`

   The **Network Lock** page appears. See Figure A-2.

NOTE: If the satellite router is locked, only the **Lock Status** section of the page appears.

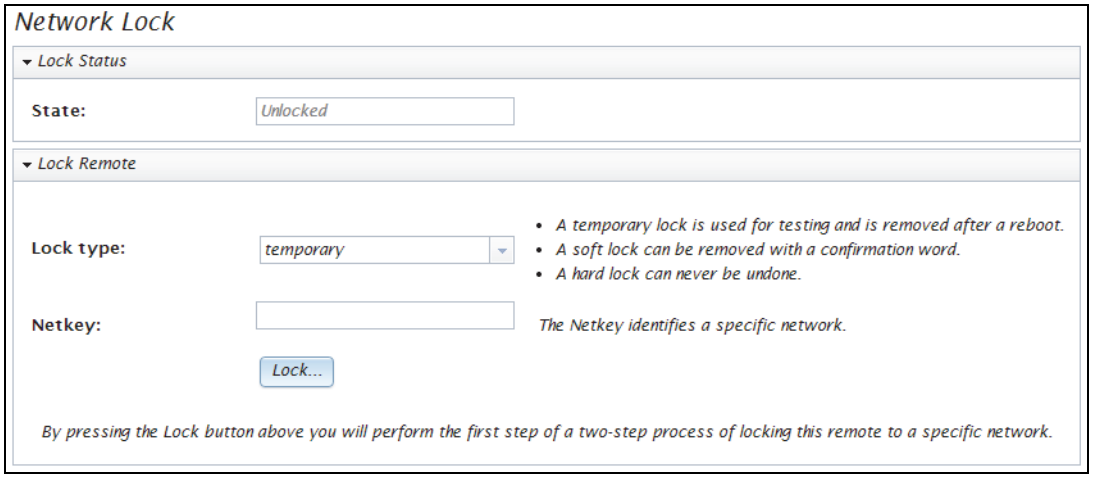

Figure A-2. Network Lock Page

4. In the **Lock Status** section, verify **State** displays Unlocked.
5. In the **Netkey** field, enter the Network Key obtained at *Configuring the Network Key* on page 60. See Figure A-3.

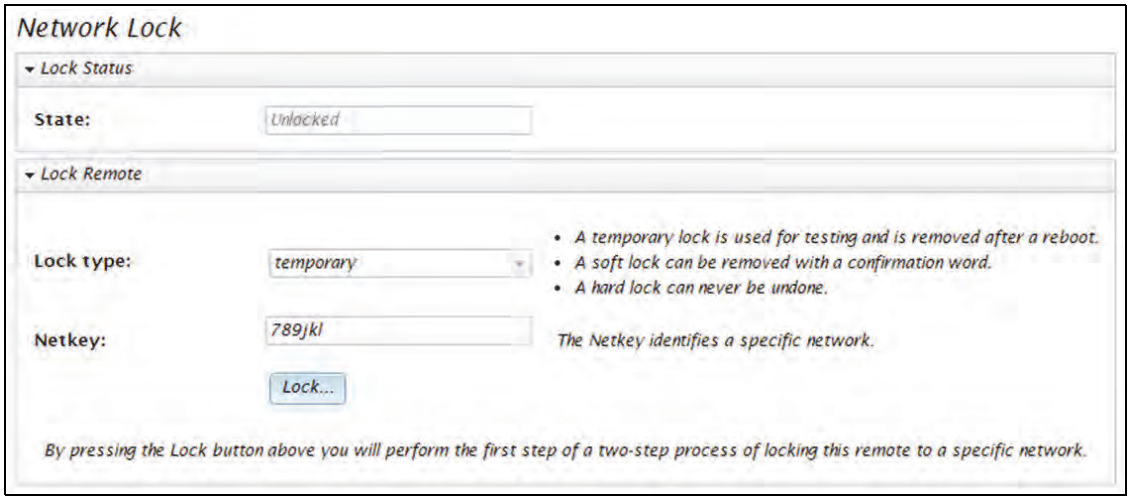

Figure A-3. Entering Network Key

6. Click **Lock**. The **Lock Remote** section expands to show the following fields:
   - **Netkey**
   - **Netkey Fingerprint**
   - C**onfirmation Word**

   See Figure A-4.

NOTE: When locking the satellite router, use the Netkey Fingerprint to catch typographical errors and prevent accidentally locking the satellite router to the wrong network. Record the Netkey Fingerprint value returned when locking the first satellite router to a network. When locking subsequent satellite routers, verify that the Netkey Fingerprint has the same value before confirming the lock.

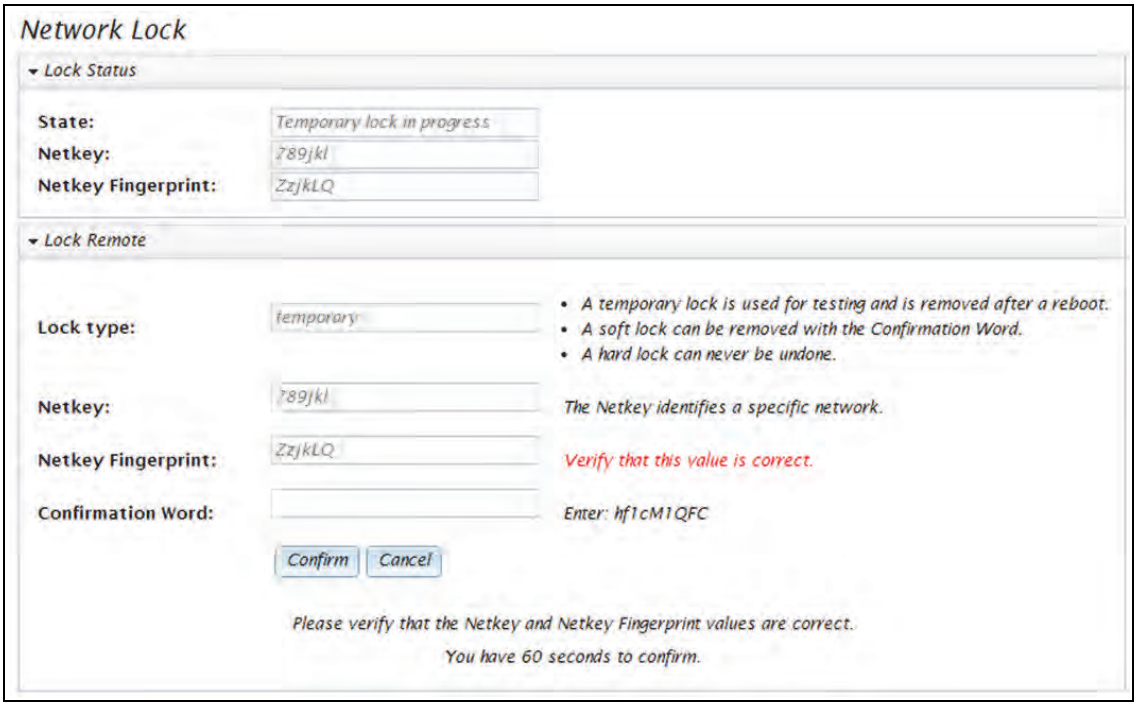

Figure A-4. Lock Remote Section

7. Perform the following actions:

a. Verify the **Netkey**.

b. Record the value of the **Netkey Fingerprint**.

c. Enter the Confirmation Word in the designated area.

See Figure A-5.

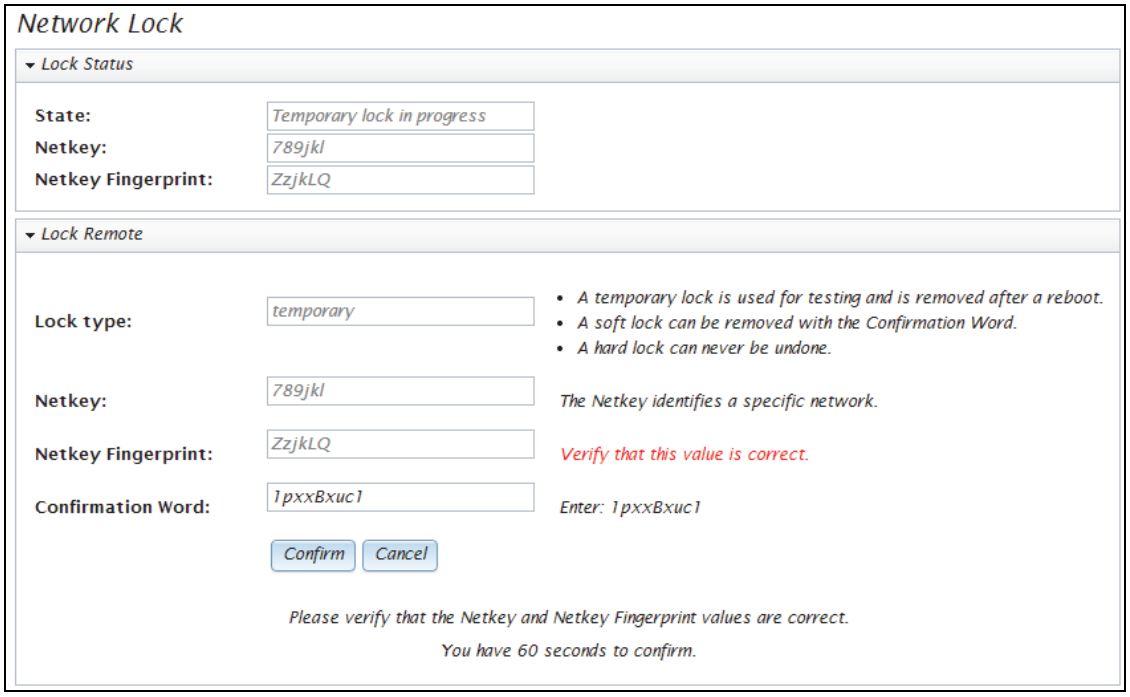

Figure A-5. Entering the Confirmation Word

8. Click **Confirm**. The **Lock Status** section shows the **State** is Temporarily locked. See Figure A-6.

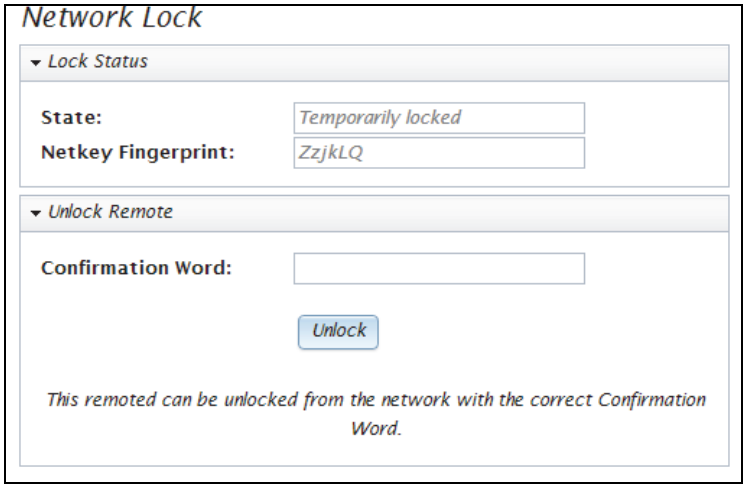

Figure A-6. Temporarily Locked State

9. Click **Admin** to open the **File Management** default page. See Figure A-7.

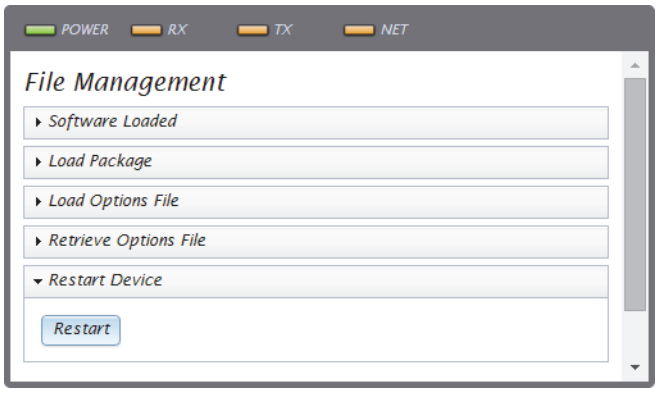

Figure A-7. File Management Default Page

10. Click **Restart** to reboot. The **Restart** dialog box appears. See Figure A-8.

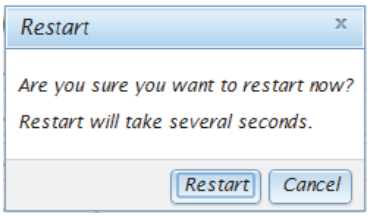

Figure A-8. Restart Dialog Box

11. Click **Restart**.

A.4 Performing a Soft Lock

Perform the following steps to soft lock the first X1 or e150 to a network.

1. Using a Web browser, connect to the satellite router to lock and log on as admin. See Figure A-9.

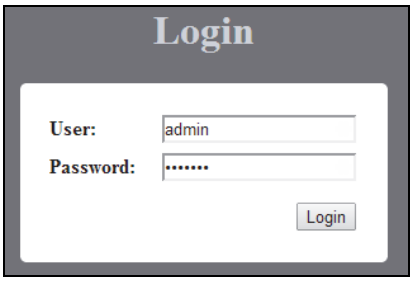

Figure A-9. X1 and e150 Web iSite Login Page

NOTE: Locking a satellite router requires an admin login.

2. Click **Admin** at the top of the Web page.
3. In the browser address bar, type **`/#admin-netlock`** to the right of the IP address. For example:

   `https://192.168.0.1/#admin-netlock`

   This **Network Lock** page appears. See Figure A-10.

NOTE: If the satellite router is locked, only the **Lock Status** section of the page appears.

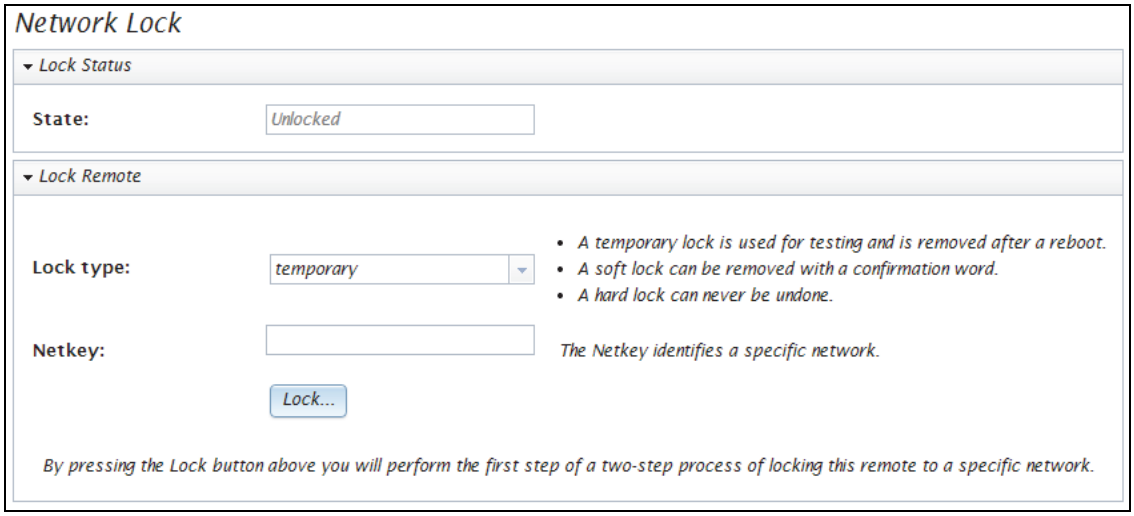

Figure A-10. Network Lock Page

4. In the L**ock Status** section, verify **State** displays **Unlocked**.
5. In the **Lock Remote** section, select **Soft** from the **Lock type** drop-down list.
6. In the **Netkey** field, enter the Network key obtained at *Configuring the Network Key* on page 60. See Figure A-11.

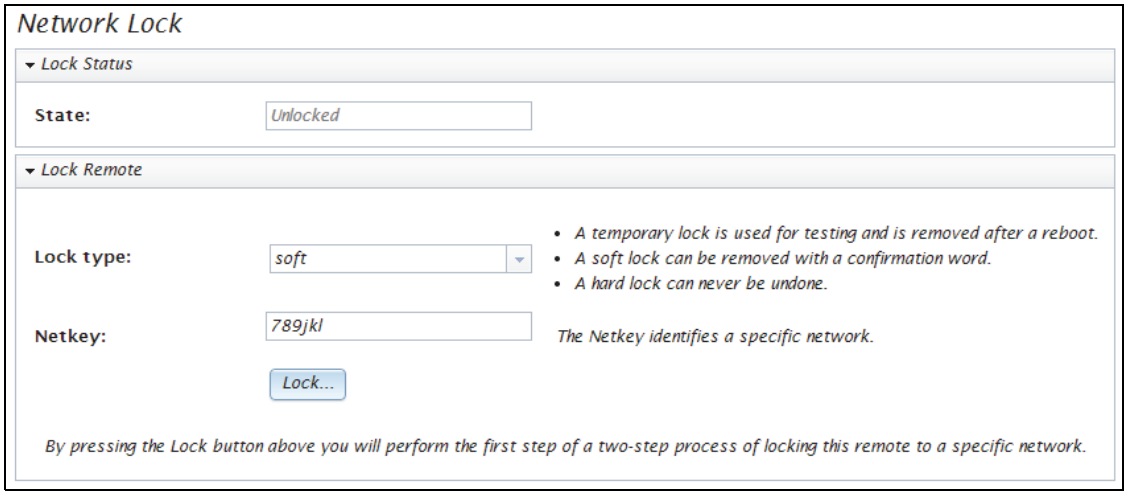

Figure A-11. Entering Network Key

7. Click **Lock**. The **Lock Remote** section expands to show the following fields:
   - **Netkey**
   - **Netkey Fingerprint**
   - **Confirmation Word**

   See Figure A-12.

NOTE: When locking the satellite router, use the Network Key Fingerprint to catch typographical errors and prevent accidentally locking the satellite router to the wrong network. Record the Network Key Fingerprint value returned when locking the first satellite router to a network. When locking subsequent satellite routers, verify that the Network Key Fingerprint has the same value before confirming the lock.

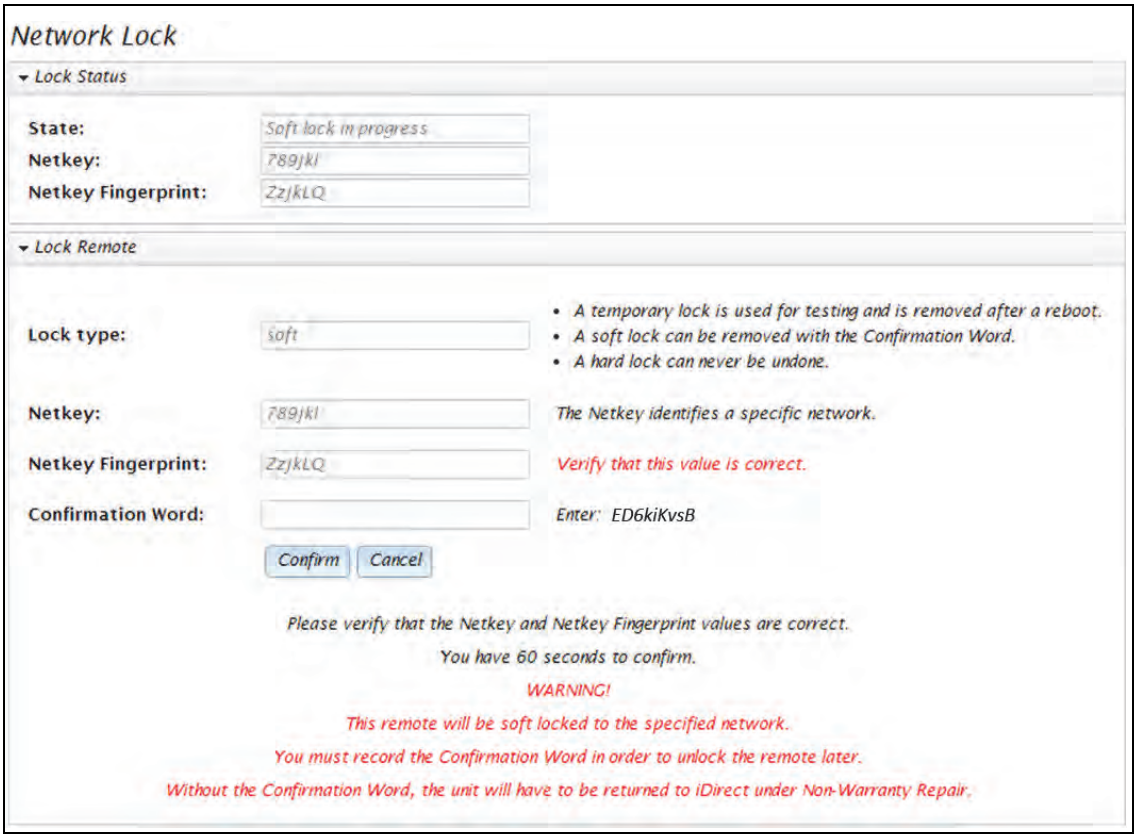

Figure A-12. Lock Remote Section

8. Perform the following actions:

a. Note the warning at the bottom of the page

b. Verify the Netkey.

c. Verify the value of the Netkey Fingerprint matches the value recorded in Section A3, Step 7.b.

d. Record the Confirmation Word.

WARNING: Recording the Confirmation Word is critical. Without the Confirmation Word, the unit will have to be returned to iDirect under Non-Warranty RMA repair.

NOTE: Each remote has a unique Conformation Word. It may necessary to maintain and table/database of each remote model, serial number, and Confirmation Word.

e. Enter the Confirmation Word in the designated area.

See Figure A-13.

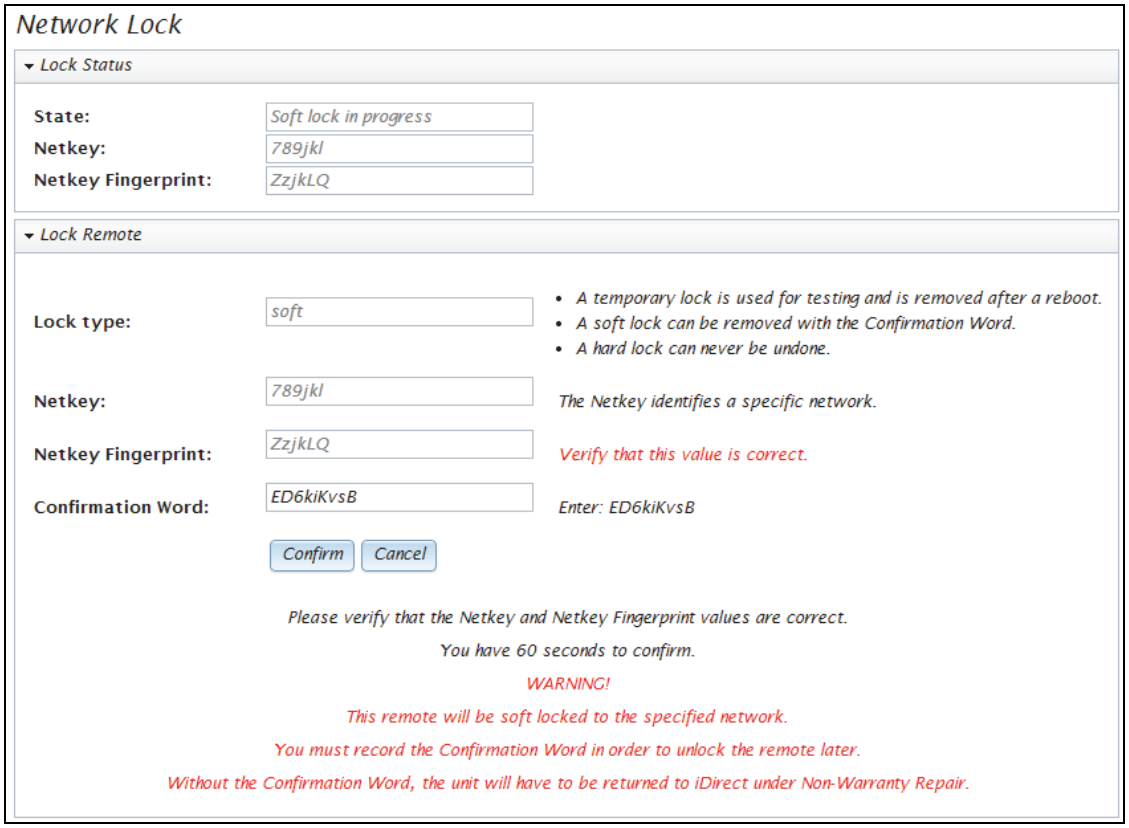

Figure A-13. Entering the Confirmation Word

9. Click **Confirm**. The **Lock Status** section shows the **State** is Soft locked. See Figure A-6.

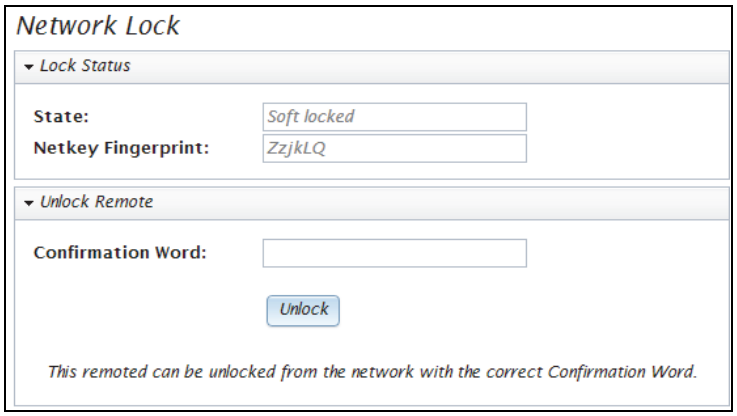

Figure A-14. Soft Locked State

10. Click **Admin** to open the **File Management** page. See Figure A-7.

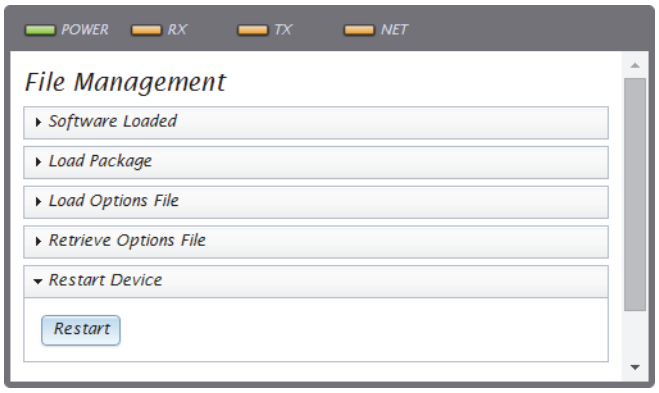

Figure A-15. File Management Default Page

11. Click **Restart** to reboot. The **Restart** dialog box appears. See Figure A-8.

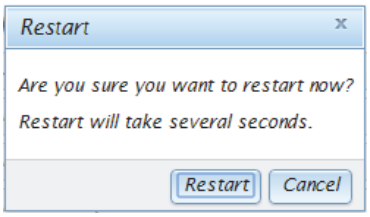

Figure A-16. Restart Dialog Box

12. Click **Restart**.

A.5 Performing a Hard Lock

A hard lock permanently burns the Locking Key into the remote hardware using the generated Confirmation Word.

WARNING: It is possible to remove a soft lock or temporary lock with Web iSite. However, it is not possible to remove a hard lock with Web iSite. Removing a hard lock requires returning the satellite router to iDirect for a Non-Warranty RMA hardware replacement.

To hard lock a remote into the network, do the following:

1. At a Web browser, connect to the satellite router to lock and log on as admin at the **Web iSite Login Page**. See Figure A-17.

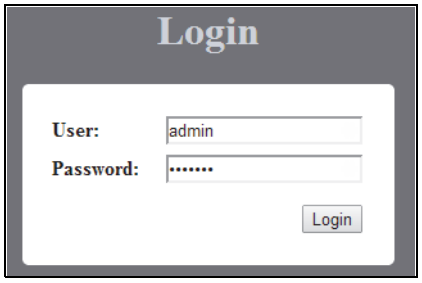

Figure A-17. X1 and e150 Web iSite Login Page

NOTE: Locking a satellite router requires an admin login.

2. Click Admin at the top of the Web page.
3. In the browser address bar, type **`/#admin-netlock`** to the right of the IP address. For example:

   `https://192.168.0.1/#admin-netlock`

   This Network Lock appears. See Figure A-18.

NOTE: If the satellite router is locked, only the **Lock Status** section of the page appears.

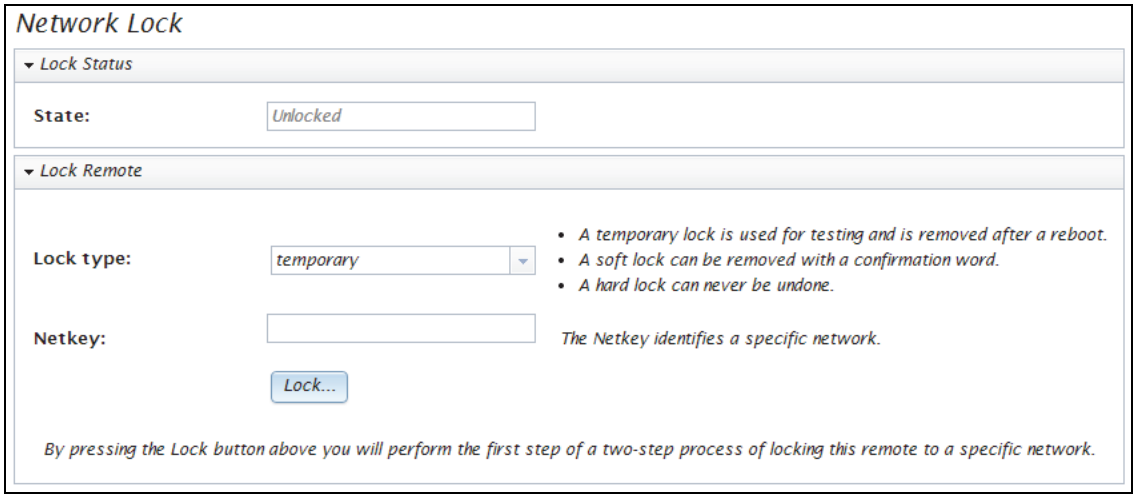

Figure A-18. Network Lock Page

4. In the **Lock Status** section, verify State displays Unlocked.
5. In the Remote Lock section, select Hard from the Lock type drop-down list.

6. At the Netkey field, enter the Network Key obtained in *Locking an X1 or e150 Overview* on page 60. See Figure A-19.

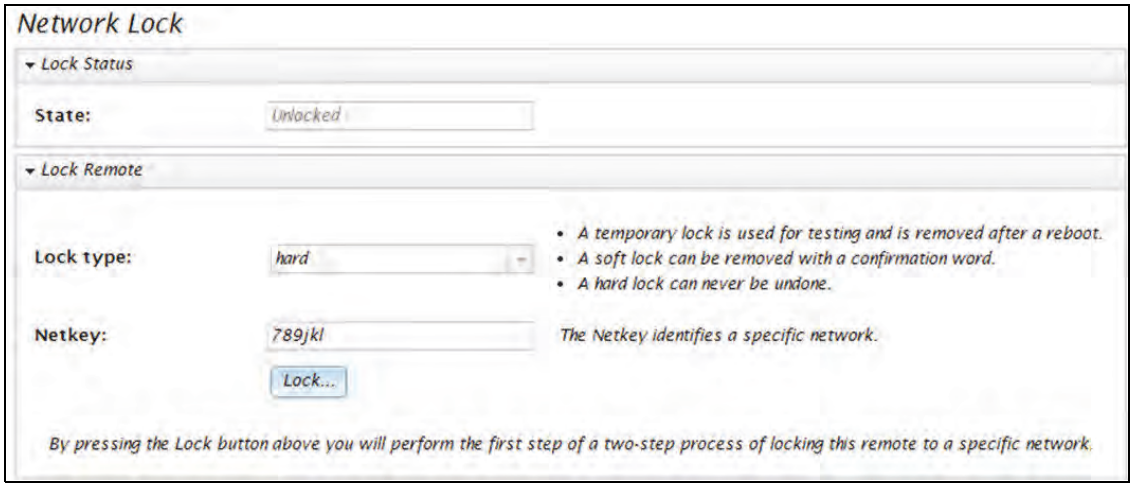

Figure A-19. Entering the Network Key

7. Click Lock. The Lock Status section expands to display the following fields:
   - Netkey
   - Netkey Fingerprint
   - Confirmation Word

   See Figure A-20.

NOTE: When locking the satellite router, use the Network Key Fingerprint to catch typographical errors and prevent accidentally locking the satellite router to the wrong network. Record the Network Key Fingerprint value returned when locking the first satellite router to a network. When locking subsequent satellite routers, verify that the Network Key Fingerprint has the same value before confirming the lock.

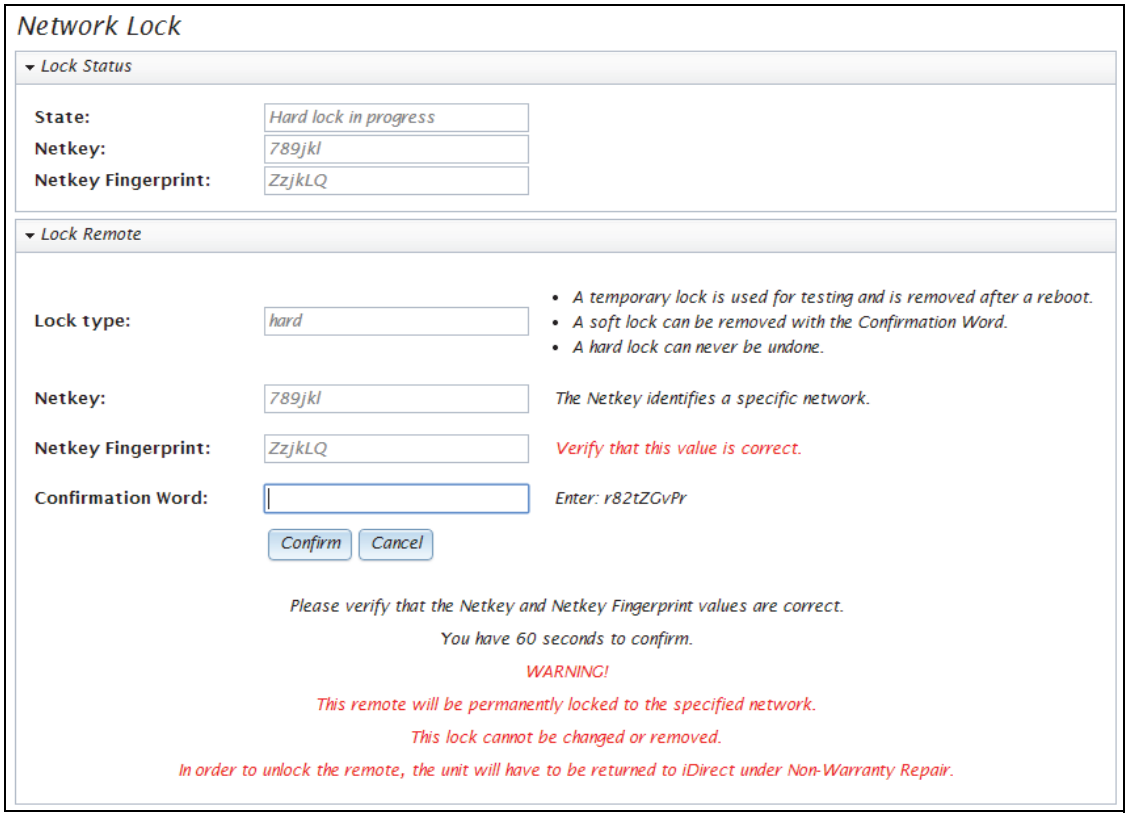

Figure A-20. Confirmation Word Text Box

8. Perform the following actions:
   a. Note the warning at the bottom of the page
   b. Verify the Netkey.
   c. Verify the value of the Netkey Fingerprint matches the value recorded in Section A3, Step 7.b.
   d. Enter the Confirmation Word in the designated area.

   See Figure A-5.

WARNING: The following step will permanently lock the satellite router to the network. Only a hardware replacement can reverse this lock.

9. Click Confirm. A window opens showing the lock status of the satellite router. See Figure A-21.

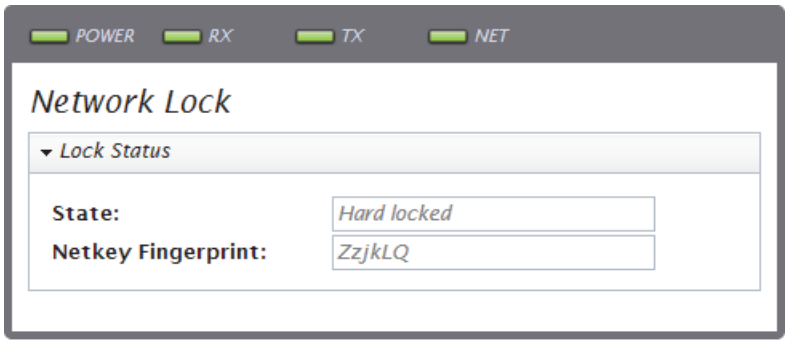

Figure A-21. Lock Status

NOTE: Repeat these procedures to lock additional remotes.

A.6 Non-Warranty RMA Required to Remove Remote Locks

It is not possible to change or remove a lock on an Evolution X1 or e150. In order to unlock the satellite router, return it to iDirect for a Non-Warranty RMA hardware replacement.

NOTE: RMA and shipping charges apply to all satellite routers returned to iDirect for the purpose of removing a network lock.

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