Web iSite User Guide

iDirect Evolution X1 Satellite Routers

iDX Release 3.1

A component of iVantage NMS

March 27, 2012

iDirect

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About This Guide

Purpose

The *Web iSite User Guide* provides instructions for using the Web Interface to the iDirect Evolution X1 Satellite Routers. For details on configuring the X1 Satellite Routers, see the *iBuilder User Guide;* and for installing and commissioning the X1 Satellite Routers, see the *iDirect Satellite Router Installation and Commissioning Guide*, for iDX Release 3.1.

Intended Audience

The *Web iSite User Guide* is intended for iDirect installers and other field installers and technicians tasked with installing and commissioning iDirect Evolution X1 Satellite Routers.

Contents Of This Guide

This document contains the following major sections:

- *Web iSite Overview*
- *The Dashboard*
- *Status Pages*
- *Commissioning Pages*
- *Admin Pages*

Document Conventions

This section illustrates and describes the standard conventions used throughout this document. Review the documentations conventions table prior to using this manual—it provides information on how to interpret standard conventions used in iDirect documents.

Convention	Description	Example
Blue Courier font	Used when the user is required to enter a command at a command line prompt or in a console)	**[SWITCH_PORT_n]** **vid = vlan_id**
Courier font	Used to show the resultant output from a command entered at a command line or on a console.	Output similar to the following sample appears: [SECURITY] password = $idi2$/bFMhf$5H8mYAaP1sTZ0m1Ny/dYyLaS40/ admin_password = $idi2$146rgm$.KtDb4OH5CEBxzH6Ds2xM.ehHCH os_password = 1UTKh0V$cc/UfNThFmBI7sT.zYptQ0
Bold Trebuchet font	Used when the user must type information or values into a field in a Windows-type interface software. 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 opens.
Blue Trebuchet	Used to show hyperlinked text within a document.	For instructions on performing specific tasks on a remote, see *"Using the Remote Probe" on page 59.*
Bold italic Trebuchet	Used to emphasize information for the user, such as in notes.	**Note:** *The Tx Power for a remote cannot be set outside of the Min/Max range defined in iBuilder.*
Red italic Trebuchet font	Used when the user needs to STRICTLY follow instructions or have additional knowledge about a procedure or action.	**WARNING!** *The following procedure may cause a network outage.*

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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.

- *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*

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, an FAQ page, and other documents that supports our products are available on the TAC Web site. The TAC Web site is accessed at: http://tac.idirect.net. The TAC may also be contacted by telephone or e-mail.

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1 Web iSite Overview

This chapter presents an introduction of the Web iSite tool for working with iDirect Evolution X1 Satellite Routers. It contains a quick overview of what can be done with Web iSite, the various elements of which the user interface is comprised, and the basics of how to interact with the various pages of the Web iSite interface.

This chapter contains the following sections:

- "Introduction" on page 2
- "Launching a Web iSite Session" on page 3
- "Using the Web iSite Interface" on page 4

1.1 Introduction

This introduction will describe what is possible with Web iSite, what must be done prior to accessing an Evolution X1 Satellite Router, and what is seen when Web iSite is first launched.

1.1.1 What You Can Do with Web iSite

The X1 Web interface is used primarily for commissioning new sites and monitoring TDMA remotes from the local LAN side. It contains functions to help installers calculate antenna azimuth/elevation settings, perform antenna pointing, put up a continuous wave (CW) carrier for antenna peaking, cross-polarization and 1dB compression tests, and load software and configurations.

Web iSite also provides configuration and real-time status/statistical information about the X1 remote unit. Instead of interacting with the iDirect NMS, Web iSite connects directly to each remote to perform all of its operations—this access does not include historical data about the remote unit. See the *Satellite Router Installation and Commissioning Guide* for specific instructions on commissioning remotes.

Web iSite Highlights

A few highlights of Web iSite are listed below:

- Real-time display of the Satellite Router's LED status
- A dashboard view of high-level remote information such as if the remote is in network, if it's locked to the satellite, and real-time events
- Status and monitoring views of real-time modem information and events, Ethernet receive and transmit connections, and IP configuration and information
- Remote commissioning tools, including tools for lookup angle calculation, antenna pointing, and cross polarization
- Administration tools for loading new packages and options files
- Factory Default Mode restart to reset the Satellite Router to factory default settings

1.1.2 Before Accessing the Evolution X1 Satellite Router

Web iSite may be used at any time to access the X1 Satellite Router. All that is required is the IP address assigned to the remote and a physical Ethernet connection to the remote.

The default IP address for an X1 remote unit 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 X1 Satellite Router is not possible using the iVantage iSite Client.

Default factor setting of the Evolution X1 Satellite Router are as shown below:

- LAN IP address: 192.168.0.1
- Subnet Mask: 255.255.255.0
- DHCP Server: Enabled
- Single Client Address: 192.168.0.2
- Two Configured User Accounts: Admin and User (iDirect password)

1.2 Launching a Web iSite Session

Internet Explorer, Google Chrome, or Firefox Internet browsers may be used to access an Evolution X1 Satellite Router. Web iSite compatible browser versions include:

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

When initially opened, Web iSite the X1 Satellite Router already has two default user accounts: **admin** and **user**. The **admin** user has access to the full functionality of Web iSite, while the **user** account has restricted access.

By default, the **admin** and **user** accounts both have the same "iDirect" password. These accounts and passwords may be configured later using the NMS iBuilder application. For information on configuring remotes, see the *iBuilder User Guide*.

To launch Web iSite perform the following:

1. Connect the LAN port of the PC to the LAN port of the Satellite Router using an Ethernet cable.
2. Launch the Web browser of choice.
3. Enter the IP Address of the X1 Satellite Router into the url address field, as shown in the following example, where nnn.nnn.nnn.nnn is the IP Address of the X1 remote:

   `http://196.168.0.1 (the default 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. Also see Appendix A.*
4. Enter a **User** name and **Password** when the **Login** page displays. On the initial login, enter the default name of **admin** and the password of **iDirect**.

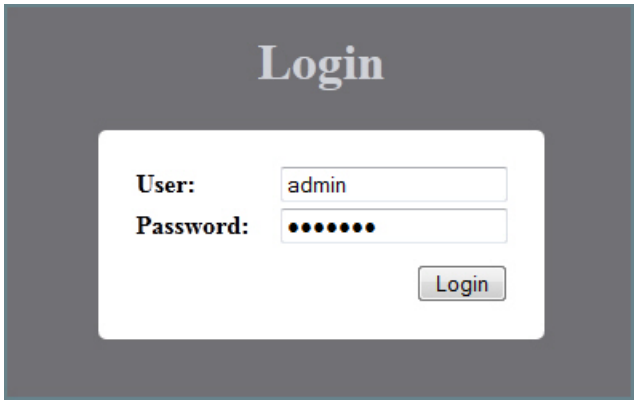


Figure 1. The Web iSite Login dialog

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

The Web iSite application automatically connects to the X1 Satellite Router and the CPU processes that perform the Web iSite functions.

1.3 Using the Web iSite Interface

The default page of Web iSite is shown in Figure 2. This page, including the visible page elements, is typical of the pages of which Web iSite is comprised. These elements are described in the following discussions.

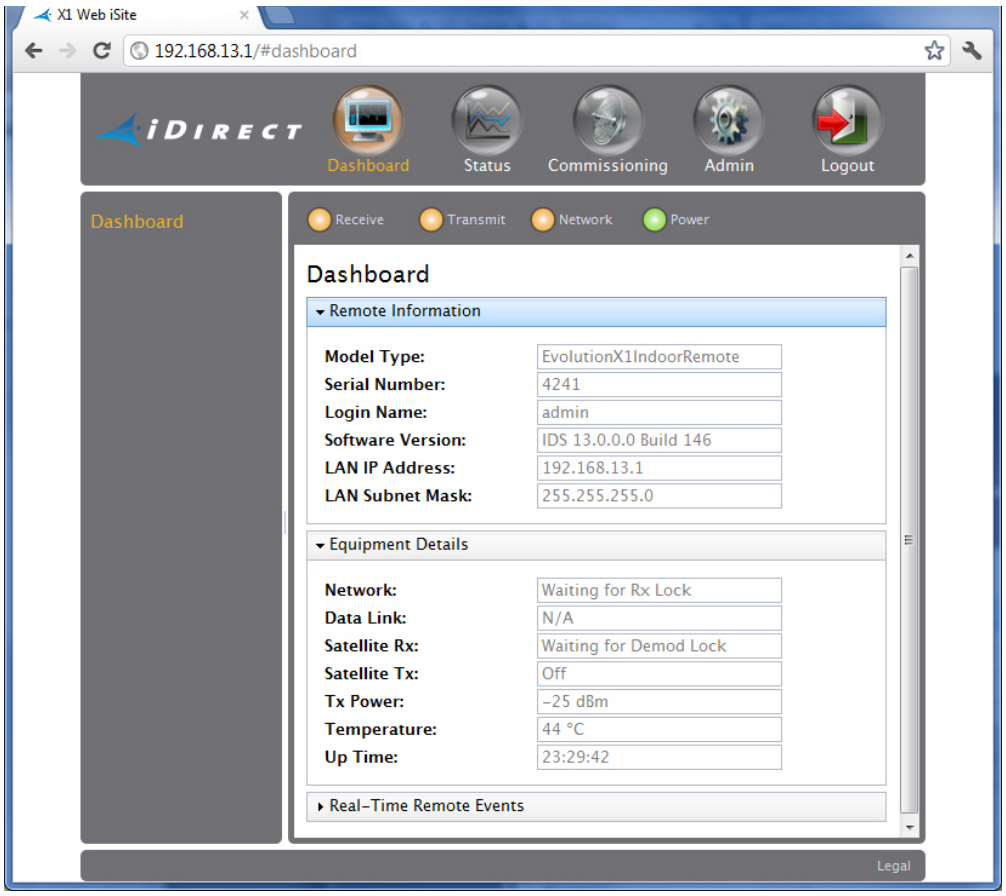


Figure 2. Web iSite Default Page

1.3.1 Web iSite User Interface Components

Web iSite consists of several pages, each comprised of one or more sections that contain various page elements. These page elements are described in the following sections.

Browser Tab

After connecting to the Evolution X1 Satellite Router, the browser tab appears as shown in Figure 3. The tab identifies the name of the Web iSite application, and the IP address of the X1 remote to which the connection is established. The browser tab may appear slightly different, based on the Internet browser.

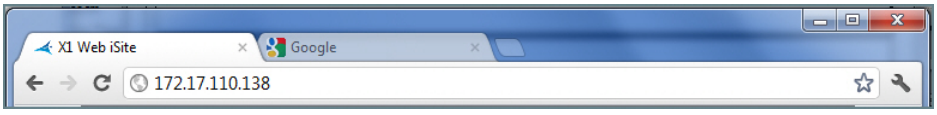


Figure 3. Web iSite Browser Tab

Page

Any screen presented in Web iSite, is referred to as a page. The entire application is comprised of several pages that either presents X1 information or supports interaction with the Satellite Router. The contents of a page may provide static or real-time information about the remote. A page may also provide interactive tools that supports a Web iSite operation.

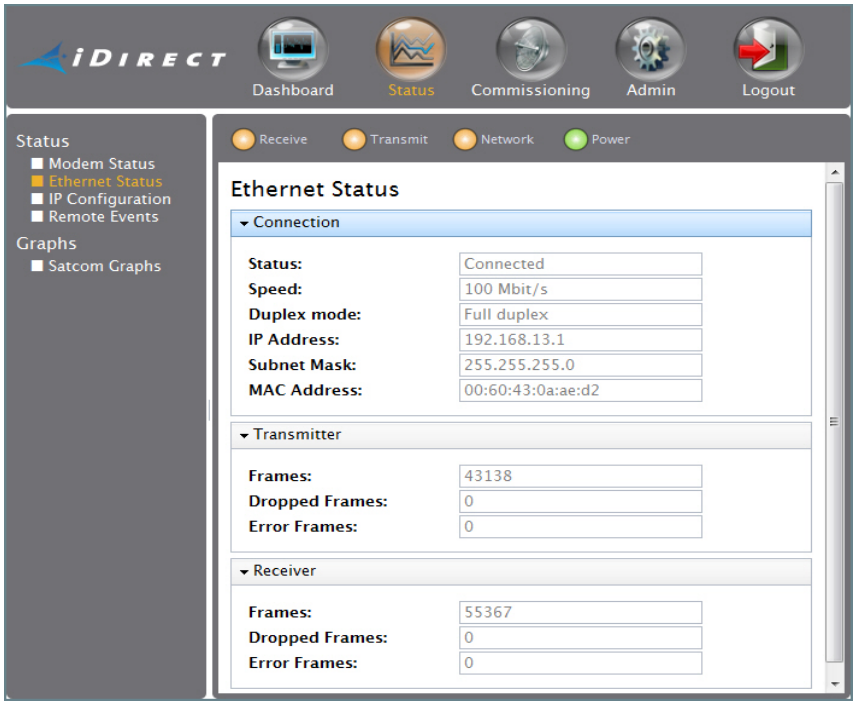


Figure 4. Typical Web iSite Page

Sections

The information on a Web iSite page is generally grouped by section. Each page is normally partitioned into two or more sections. A section contains a grouping of information fields, or elements used in performing an operation—such as file uploading or putting up a continuous carrier wave (CW). Each section is identified by a section title that reflects the specific information grouping. Figure 5, shows the **Management Interface** section of the **IP Configuration** page.

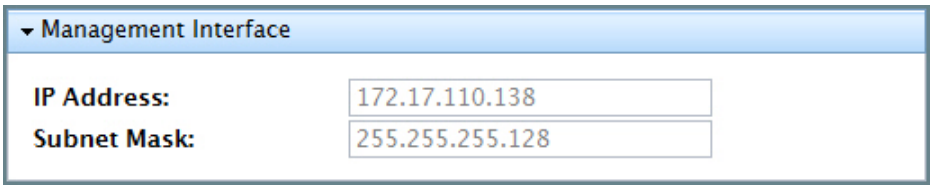


Figure 5. Management Interface Section of IP Configuration Page

Information Fields

Each data element presented in a page section is contained in an information field. Most sections contain a grouping of static or dynamic information fields. A page section generally consists of several fields, each of which is identified by a field label that indicates the field content. Some data fields may not be modified and are only for viewing or monitoring purposes; the data in other fields may be modified.

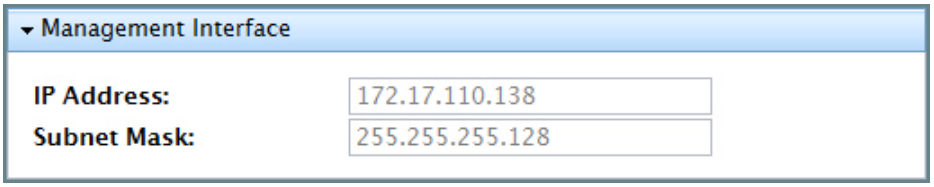


Figure 6. Typical Section with IP Address and Subnet Mask Fields

Top Navigation Bar

Across the top of each Web iSite page is the top navigation bar. This navigation bar has four main page buttons that appear on each Web iSite page. When one of these buttons is clicked, the associated page group may be accessed. Clicking the **Commissioning** button, for example, navigates to the **Commissioning** pages. Likewise, clicking the **Admin** navigates to the **Admin** page group.

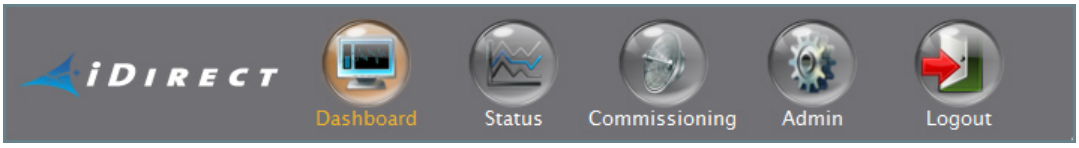


Figure 7. Main Console Buttons

Main Default Pages

To work with one of the main page groups of Web iSite, simply click on one of the main page buttons. When one of these buttons is clicked the default page for the selected page group opens. For example, the default page for the **Status** group, is the **Modem Status** page; the default page for the **Commissioning** page group is the **Angle Calculator** page; and the default page for the **Admin** group is the **File Management** page.

Sub-Pages

Each Web iSite page group is comprised of a number of pages that displays different content. The pages of the group may be accessed from the default page of a group as well as from the other pages of the group. The pages of a page group are called sub-pages. The **Console Page**, for example is a sub-page of the **Admin** page group.

Left Navigation Bar

Along the left side of each Web iSite page is the left navigation bar. This panel contains links to additional Web iSite pages in the current page group, which may be accessed from the current page. The left navigation bar and the associated page links are displayed on each page of the page group. Click on the page link to navigate to the selected page.

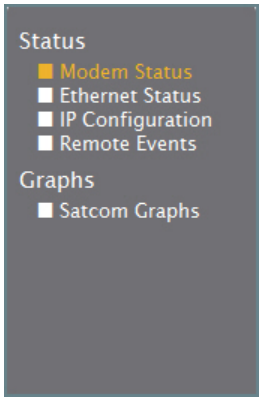


Figure 8. Status Page Links

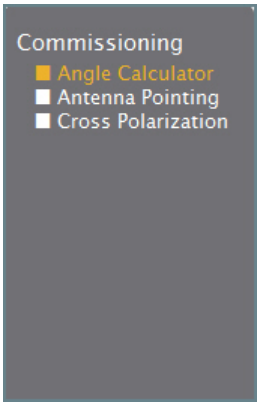


Figure 9. Commissioning Page Links

Figure 10. Admin Page Links

X1 Satellite Router LED Indicators

When a connection with an X1 Satellite Router is established, the real-time status of each LED indicator of that Satellite Router is reflected on each Web iSite page. A description of each of the indicators, shown in Figure 11, is provided in Table 1.

Figure 11. Web iSite LED Indicators

Table 1. Description of X1 LED Indicators

LED	LED State	Description of X1 State
RX	OFF	Receiver disabled or not configured.
	Yellow—Solid On	D/S carrier configured, but demodulator is not locked.
	Yellow—1 Sec Flashing	Downstream carrier configured, demodulator locked to downstream carrier, but NCR not locked.
	Green—Solid On	D/S carrier configured—Demod/NCR locked to D/S Carrier.
TX	OFF	Modem OFF (Rx only Mode)
	Yellow—Solid On	Transmitter disabled)
	Green—Solid On	Transmitter enabled
NET	Red—Solid	Serious fault indicated when **RX** and **NET** LEDs are also red.
	Yellow—Solid On	Demodulator Not Locked to downstream carrier
	Yellow—1 Sec Flashing	Demodulator locked to downstream carrier
	Green—2 Sec Flashing	Primary D/S carrier locked——acquisition in progress
	Green—1 Sec Flashing	Demodulator/NCR locked to D/S carrier—acquisition in progress
	Green—Solid	Modem acquired into network
POWER	OFF	Board DC power Input low or not present at the X1 remote.
	Green—Solid	Board DC power Input threshold detected
	Yellow—Solid	BUC/LNB power failure.

Note: *Table abbreviations include the following: Demod = Demodulator; NCR = Network Clock Reference; D/S = Downstream*

Hiding and Un-hiding a Page Section

In Web iSite, it is possible hide any page section that does not need to be viewed. With a single click on a section title—for example, **Receiver**, the information fields of that section are hidden. To un-hide or display the fields of the section, click **Receiver** a second time. The contents of a section toggles between display and hide with each click of the section title. When hidden, the section contracts, showing only the section title. In Figure 12, for example, the **Connection** and **Transmitter** sections are hidden.

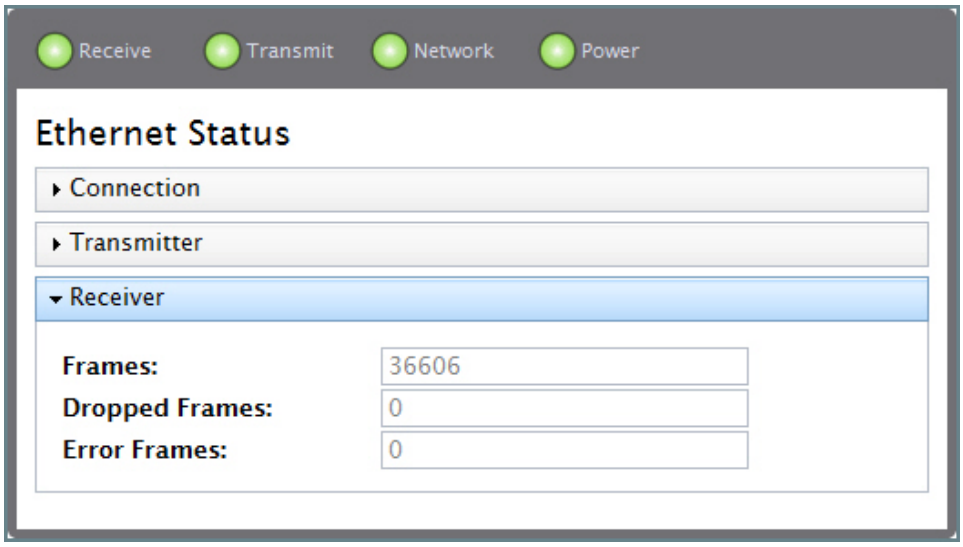


Figure 12. Ethernet Status Page with Connection and Transmitter Sections hidden.

2 The Dashboard

This chapter describes the X1 Dashboard. The **Dashboard** page provides a quick overview of key information about the X1 Satellite Router to which the connection is established.

The **Dashboard** is the default landing page—displayed whenever Web iSite is launched. From the Dashboard, access is provided to basic information such as the remote's IP Address, whether the remote is in network, if it's locked to the satellite, as well as a view of real-time remote events.

This chapter contains the following sections:

- "Remote Information" on page 12
- "Equipment Details" on page 12
- "Real-Time Remote Events" on page 13

Note: *Since the Dashboard is a central point for viewing the modem's key identifiers, operating parameters, and real-time events, information seen on the Dashboard may also be seen on another of the Web iSite pages.*

2.1 Remote Information

Figure 13 shows the Remote Information section of the Web iSite **Dashboard** page. This section provides key identifier information for the X1 Satellite Router. For example the **Model Type**, which may be and *Evolution X1 Indoor* or *Evolution X1 Outdoor* unit; the device **Serial Number**, found on the back panel of the device; the **Login Name** of the current Web iSite session; the **Software Version**, which identifies the version number and build that is currently in operation on the remote; and the remote's **LAN IP Address** and **LAN Subnet Mask**.

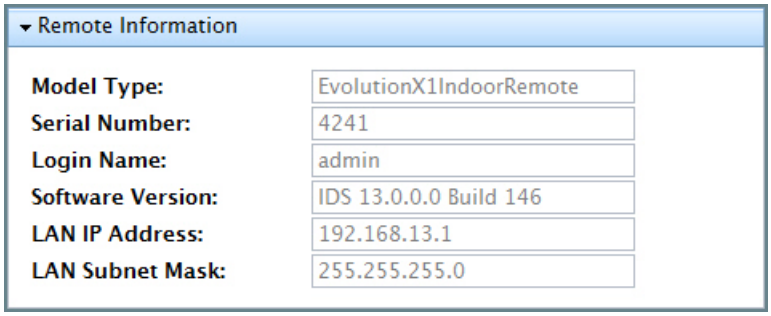


Figure 13. Page: Dashboard - Section: Remote Information

2.2 Equipment Details

The **Equipment Details** section of the Web iSite **Dashboard** page is shown in Figure 14. This section of the dashboard provides important real-time information as to the status of the remote in terms of the network—for example whether the remote's **Data Link** is established or otherwise; whether the remote is currently **In Network**, **Waiting for Rx Lock**, **Waiting for Acquisition**, or otherwise.

Other equipment details include real-time status of the key modem operating parameters of **Tx Power**, the modems maximum transmit power determined during commissioning; the remote's operating **Temperature**, and the remote's total **Up Time**.

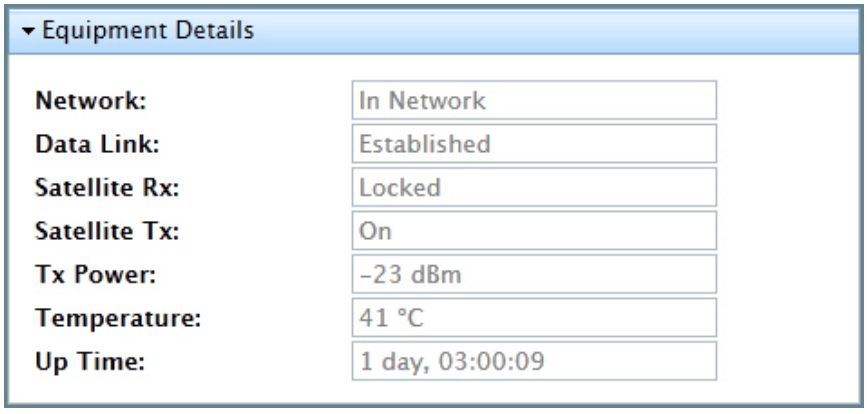
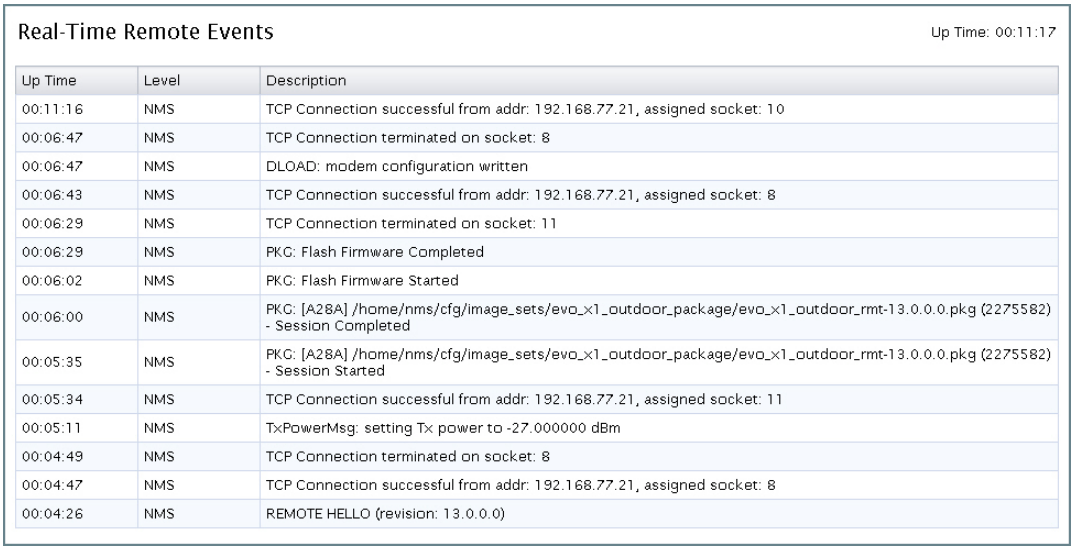


Figure 14. Page: Dashboard - Section: Equipment Details

2.3 Real-Time Remote Events

Figure 15, shows the **Real-Time Remote Events** section of the Web iSite **Dashboard**. After the software and options file has been loaded to the X1 Satellite Router and the modem is reset and restarted, Web iSite displays the last 10 events that have occurred on the remote.

This Dashboard section, the same as in the Web iSite **Status** pages, is primarily a monitoring tool used to aid in resolving issues that may exist with the remote. With the information provided in this window, an iDirect TAC representative can trace events in the remote and perform an investigation and analysis of problems that may occur in the remote.



Real-Time Remote Events — Up Time: 00:11:17

Up Time	Level	Description
00:11:16	NMS	TCP Connection successful from addr: 192.168.77.21, assigned socket: 10
00:06:47	NMS	TCP Connection terminated on socket: 8
00:06:47	NMS	DLOAD: modem configuration written
00:06:43	NMS	TCP Connection successful from addr: 192.168.77.21, assigned socket: 8
00:06:29	NMS	TCP Connection terminated on socket: 11
00:06:29	NMS	PKG: Flash Firmware Completed
00:06:02	NMS	PKG: Flash Firmware Started
00:06:00	NMS	PKG: [A28A] /home/nms/cfg/image_sets/evo_x1_outdoor_package/evo_x1_outdoor_rmt-13.0.0.0.pkg (2275582) - Session Completed
00:05:35	NMS	PKG: [A28A] /home/nms/cfg/image_sets/evo_x1_outdoor_package/evo_x1_outdoor_rmt-13.0.0.0.pkg (2275582) - Session Started
00:05:34	NMS	TCP Connection successful from addr: 192.168.77.21, assigned socket: 11
00:05:11	NMS	TxPowerMsg: setting Tx power to -27.000000 dBm
00:04:49	NMS	TCP Connection terminated on socket: 8
00:04:47	NMS	TCP Connection successful from addr: 192.168.77.21, assigned socket: 8
00:04:26	NMS	REMOTE HELLO (revision: 13.0.0.0)

Figure 15. Page: Dashboard - Section: Real-Time Remote Events

Real-Time Event Messages

Typical real-time remote event messages that may be seen 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. This page group provides a monitoring window into the real-time events of the X1 Satellite Router. The **Status** pages provides a view of some of the key operating parameters of the Satellite Router and access to graphic visuals of the Satellite Router's network satellite traffic.

This chapter contains the following sections:

- "Modem Status Page" on page 16
- "Ethernet Status Page" on page 19
- "IP Configuration Page" on page 21
- "Remote Events Page" on page 25
- "Satcom Graphs Page" on page 26

3.1 Modem Status Page

The **Modem Status** page is the default page of the **Status** page group of Web iSite. This page provides specific modem information and operating parameters of the X1 Satellite Router. The **Modem Status** page, as shown in Figure 16, is comprised of the sections **Modem Information**, **Modem State**, **Rx State**, **Tx State**, and **ODU Status**.

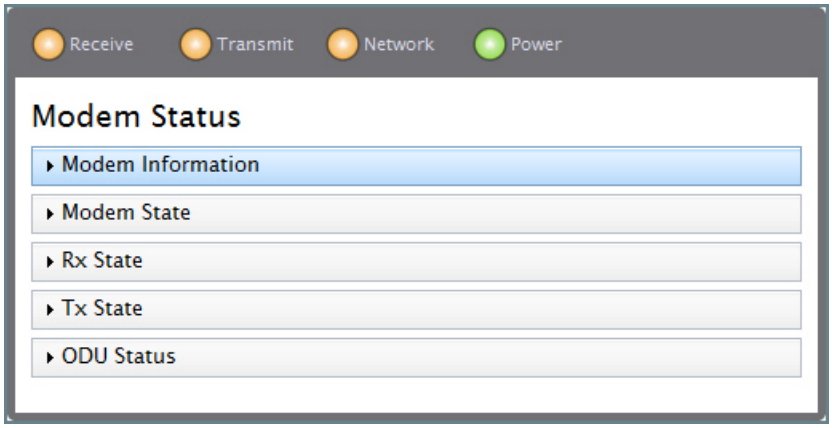


Figure 16. Page: Modem Status - Section: Modem Information

3.1.1 Modem Information

Figure 17 shows the **Modem Information** section of the **Modem Status** page. This section provides key identifier information for the X1 Satellite Router. For example the **Model Type**, which may be an *EvolutionX1Indoor* or *EvolutionX1Outdoor* unit; the device **Serial Number**, found on the back panel of the device; the Satellite Router's Ethernet **MAC Address**; and the **Software Version**, which identifies the version number and build that is currently in operation on the remote.

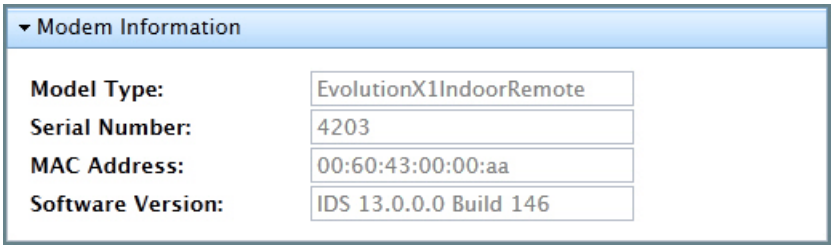


Figure 17. Page: Modem Status - Section: Modem Information

3.1.2 Modem State

Figure 18 shows the **Modem State** section of the **Modem Status** page. This section provides information relative to the modem's status with regard to the network, as well specific modem operating parameters. The **CPU Load** reflects the current operating load of the remote's CPU; and the **Temperature** reflects the remote's current board temperature. Table 2 show possible values for the **Network**, **Data Link**, **Satellite Rx**, and **Satellite Tx** fields.

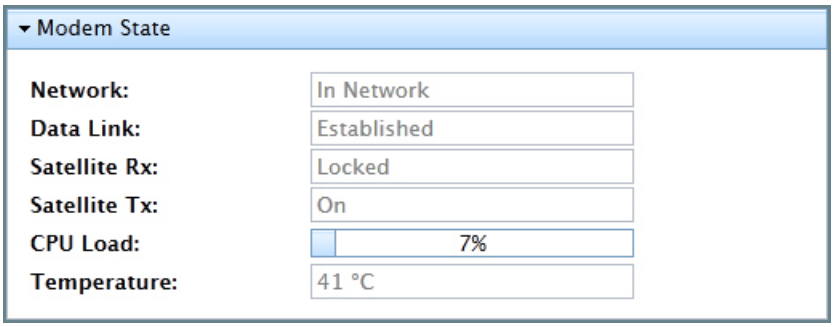


Figure 18. Page: Modem Status - Section: Modem State

Table 2 show possible values for the **Network**, **Data Link**, **Satellite Rx**, and **Satellite Tx** fields.

Table 2. Possible Values for Modem State Fields

Network	Data Link	Satellite Rx	Satellite Tx
Waiting for Rx Lock	Closed	Waiting for Tuner Lock	On
Waiting for Acquisition	Opening	Waiting for Demod Lock	Off
In Acquisition	Established	Waiting for NCR Lock	
Detected	Pass-Through	Locked	
In Network	Closing		
Wrong Network	Rx-Only		

3.1.3 Rx State

The **Rx State** section reflects the modem's receive operating parameters. iBuilder configured values contained in this section include the **Downlink Center Frequency** and **Symbol Rate**, both of which should reflect the corresponding values contained in the modem's Options file. Dynamic values of this section include the remote's **Rx Composite Power**, which changes as it reflects the fluctuating characteristics of the **Rx SNR**; and the **CRC 8** and **CRC 32** fields, which show the receive line frame errors for 8-bit and 32-bit CRC calculations.

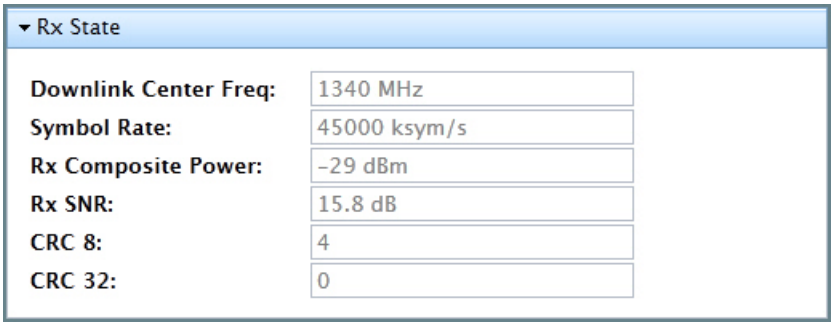


Figure 19. Page: Modem Status - Section: Rx State

3.1.4 Tx State

The **Tx State** section reflects the modem's transmit operating parameters. The values shown in the **Tx Power**, **Max TX Power**, and **Initial Tx Power** fields should reflect the corresponding values derived during commissioning, configured in iBuilder and reflected in the modem's Options file.

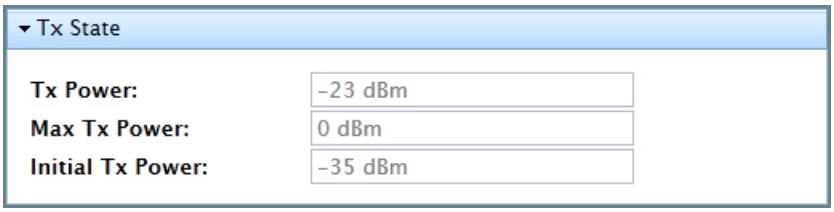


Figure 20. Page: Modem Status - Section: Tx State

3.1.5 ODU Status

The **ODU (outdoor unit) Status** section reflects key operating parameters of the Block Up Converter (BUC) and the Low Noise Block (LNB) amplifier devices that are associated with the Satellite Router.

Displayed in this section include the iBuilder configured settings for the **LNB Local Oscillator Frequency** and the **BUC Local Oscillator Frequency** translation values; the operating **L-Band Frequency** setting; and the **LNB Spectral Inversion** and **BUC Spectral Inversion** fields, both of which may show a configured value of *Normal* or *Inverted*.

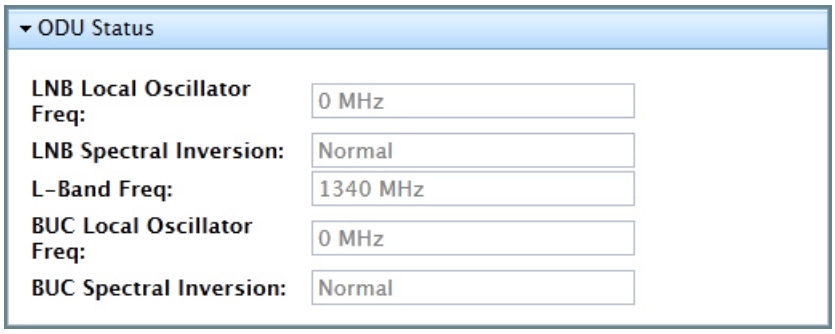


Figure 21. Page: Modem Status - Section: ODU Status

3.2 Ethernet Status Page

The **Ethernet Status** page, as the name implies, provides pertinent information about the Satellite Router's Ethernet connection, its receive data link, and its transmit data link. This information is presented in the **Connection**, **Transmitter**, and **Receiver** sections, as shown in Figure 22, and described in the following sections.

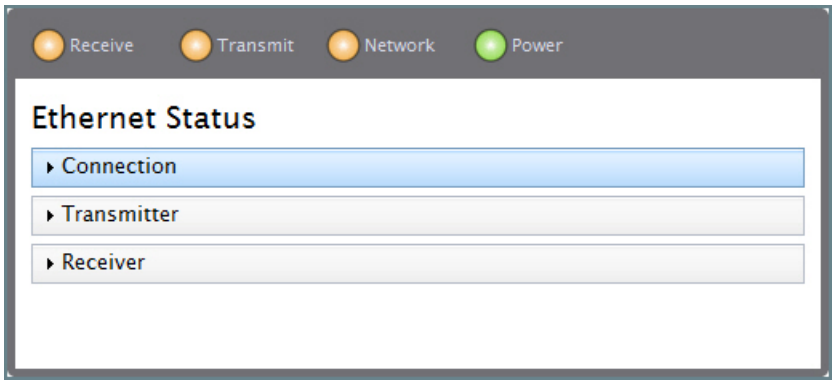


Figure 22. Page: Ethernet Status with all sections collapsed

3.2.1 Connection

Figure 23, shows the **Connection** section of the **Ethernet Status** page. This section provides key Ethernet connection information for the local LAN subnet to which the X1 Satellite Router is connected—for example connection **Speed**, **Duplex Mode**, the **IP Address**, **MAC Address**, and the **Subnet Mask**.

The **Status** field displays either *Connected* or *Disconnected* based on the actual connection status of the Satellite Router. If the modem is connected, the **Speed** field shows the connections speed established at *10 Mbit/s* or *100 Mbit/s*; otherwise the field will contain *Not Available*. Possible values for the **Duplex Mode** field include *Full Duplex*, *Half Duplex*, and *Not Available*.

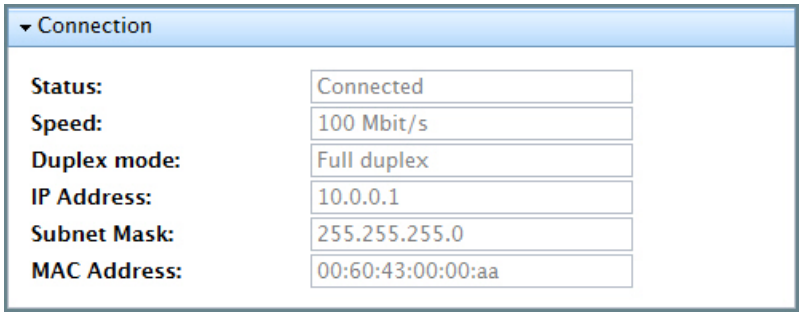


Figure 23. Page: Ethernet Status - Section: Connection

3.2.2 Transmitter

Figure 24 shows the **Transmitter** section of the **Ethernet Status** page. This section tracks and displays the total number of Ethernet **Frames** transmitted by the Satellite Router, the number of **Dropped Frames**, and the number of **Error Frames**, seen by the Satellite Router, since the modem was last restarted. This statistical information provides a key measure of the stability of the remote's Ethernet transmit characteristics.

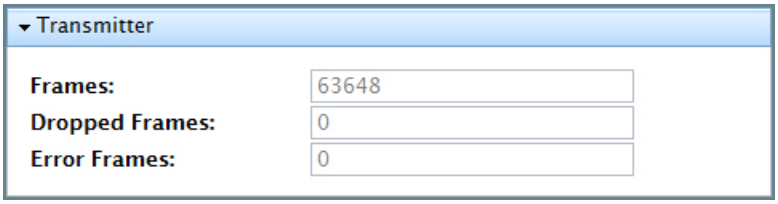


Figure 24. Page: Ethernet Status - Section: Transmitter

3.2.3 Receiver

The **Receiver** section of the **Ethernet Status** page is shown in Figure 25. This section tracks and displays the total number of Ethernet **Frames** received by the Satellite Router, the number of **Dropped Frames**, and the number of **Error Frames**, since the modem was last restarted. This statistical information provides a key measure of the stability of the remote's Ethernet receive characteristics.

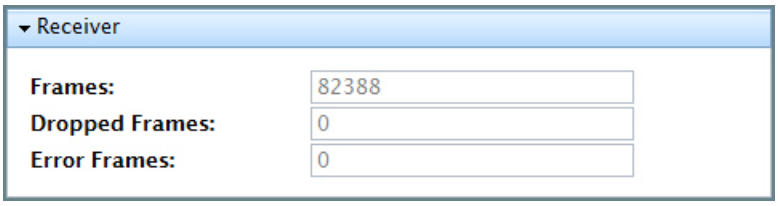


Figure 25. Page: Ethernet Status - Section: Receiver

3.3 IP Configuration Page

The **IP Configuration** page, provides important configuration information about the network in which the Satellite Router is connected. This information, which reflects data contained in the configuration database, is presented in the **LAN Interface**, **Management Interface**, **DHCP**, **Static Routes**, and **Multicast Group** sections, as shown in Figure 26. The sections of this page are all shown hidden.

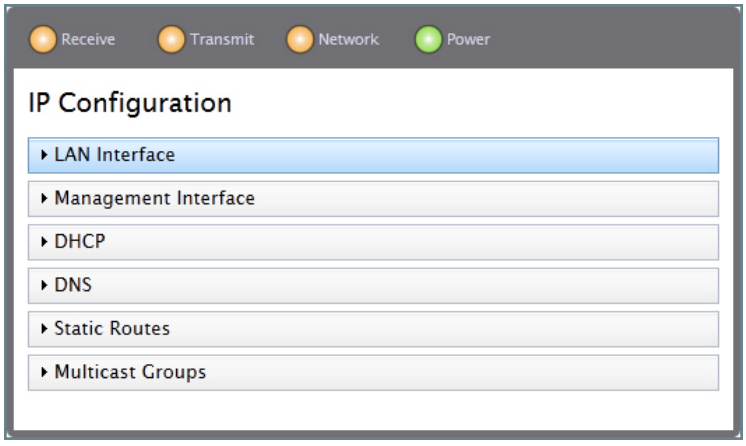


Figure 26. IP Configuration Page with all Sections collapsed

By design, the X1 Satellite Router may be configured on up to four VLANs - by default, **VLAN1** is defined as the Management VLAN; the other three are considered User VLANs. The **IP Configuration** page shown in Figure 26, indicates that only the default VLAN - the Management VLAN is configured. When additional VLANs are configured, each has a unique VLAN tab — the additional tabs are numbered **using the VLAN ID —for example VLAN1**, **VLAN12**, **VLAN22**, and **VLA32**. Only the default **VLAN** has the **Management Interface** section. These sections are described in the following discussions.

3.3.1 LAN Interface

Figure 27 shows the **LAN Interface** of the **IP Configuration** page. In an iDirect Network, the LAN Interface refers to the IP address through which the remote communicates with the LAN network behind the Satellite Router. Hence, the LAN Interface **IP Address** represents the remote's **IP Address** on the VLAN on which it is configured; the associated subnet mask is shown in the **Netmask** field.

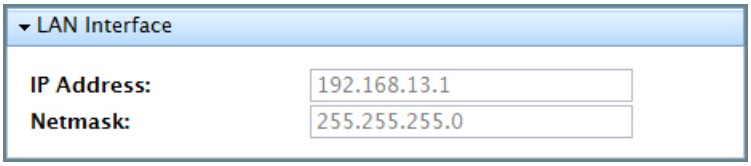


Figure 27. Page: IP Configuration - Section: LAN Interface

3.3.2 Management Interface

Figure 28 shows the **Management Interface** of the **IP Configuration** page. In an iDirect network, the Management Interface refers to the hub side of the network. Hence, the remote's Management Interface **IP Address** represents the remote's virtual interface on the default VLAN. The NMS always communicates with the remotes using this IP address. This address should not conflict with the **LAN Interface** addresses.

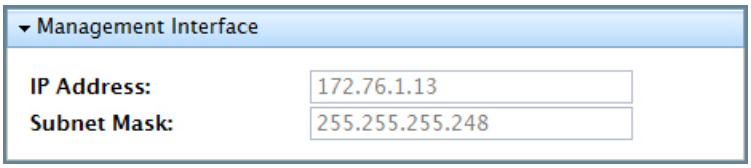


Figure 28. Page: IP Configuration - Section: Management Interface

3.3.3 DHCP

The **DHCP** section of the **IP Configuration** page displays as shown in Figure 29, when the **DHCP Mode** in iBuilder is 'set to *Relay*. The DHCP mode is configured for Relay when an existing or separate DHCP server is used at the hub location. In this mode only the IP Address of the relay station is shown, in the **Relay To** field. In iBuilder, DHCP mode is disabled by default.

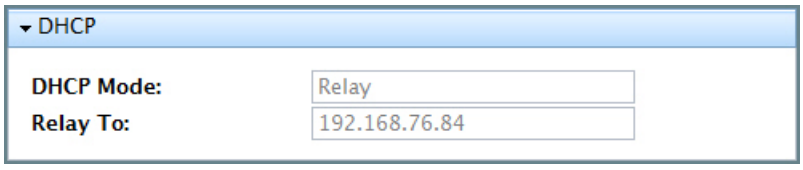


Figure 29. Page: IP Configuration - Section: DHCP Mode as Relay

The **DHCP** section is extended, as shown in Figure 30, when the **DHCP Mode** is configured for *Server*. The DHCP Mode is selected as Server if the X1 remote is enabled to act as the DHCP Server. In this case, the section is extended to show the **Lease Range** and **Lease Time**; the IP addresses for both the **Primary** and **Secondary DNS**; and for the **Default Gateway**.

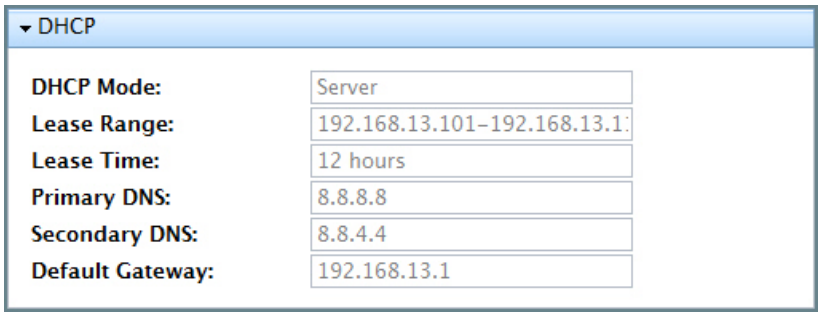


Figure 30. Page: IP Configuration - Section: DHCP Mode as Server

3.3.4 DNS

The **DNS** section of the **IP Config** page, is shown in Figure 31. Here, the section is extended to show the **Name** and IP Address for both the **Primary** and **Secondary DNS**. If the **DNS Mode** value is *Disabled*, the section only shows the **DNS Mode** field—no other fields are shown.

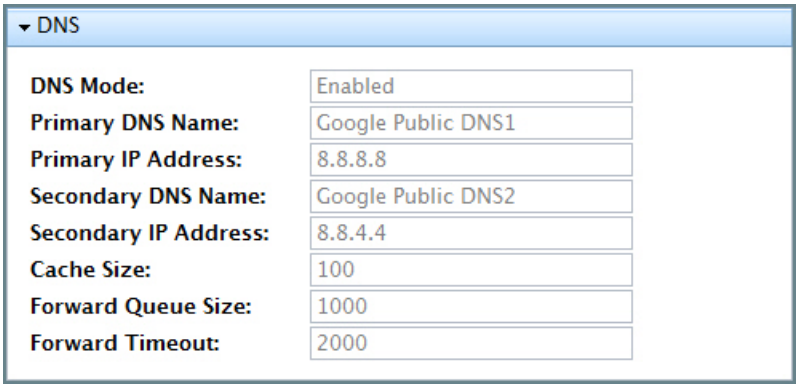


Figure 31. Page: IP Configuration Page - Section: DNS Mode as Enabled

3.3.5 Static Routes

Figure 32 shows the **Static Routes** section of the **IP Configuration** page. This page section displays the list of IP Addresses configured in iBuilder as Static Routes for the X1 Satellite Router.

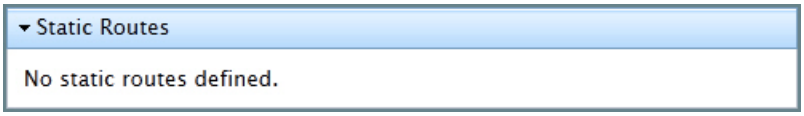


Figure 32. Page: IP Configuration Page - Section: Static Routes

3.3.6 Multicast Groups

The **Multicast Groups** section of the **IP Configuration** page is shown in Figure 33. Using the **Direction** to indicate the flow of traffic, and the **IP Address** of the multicast group, this section lists the persistent Multicast Groups in which the X1 Satellite Router is a member.

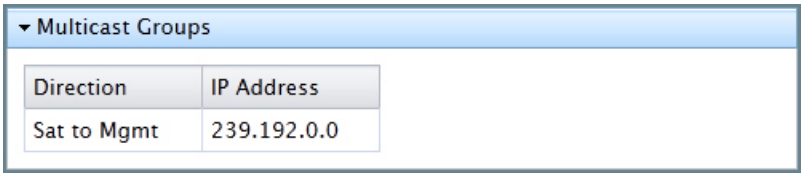
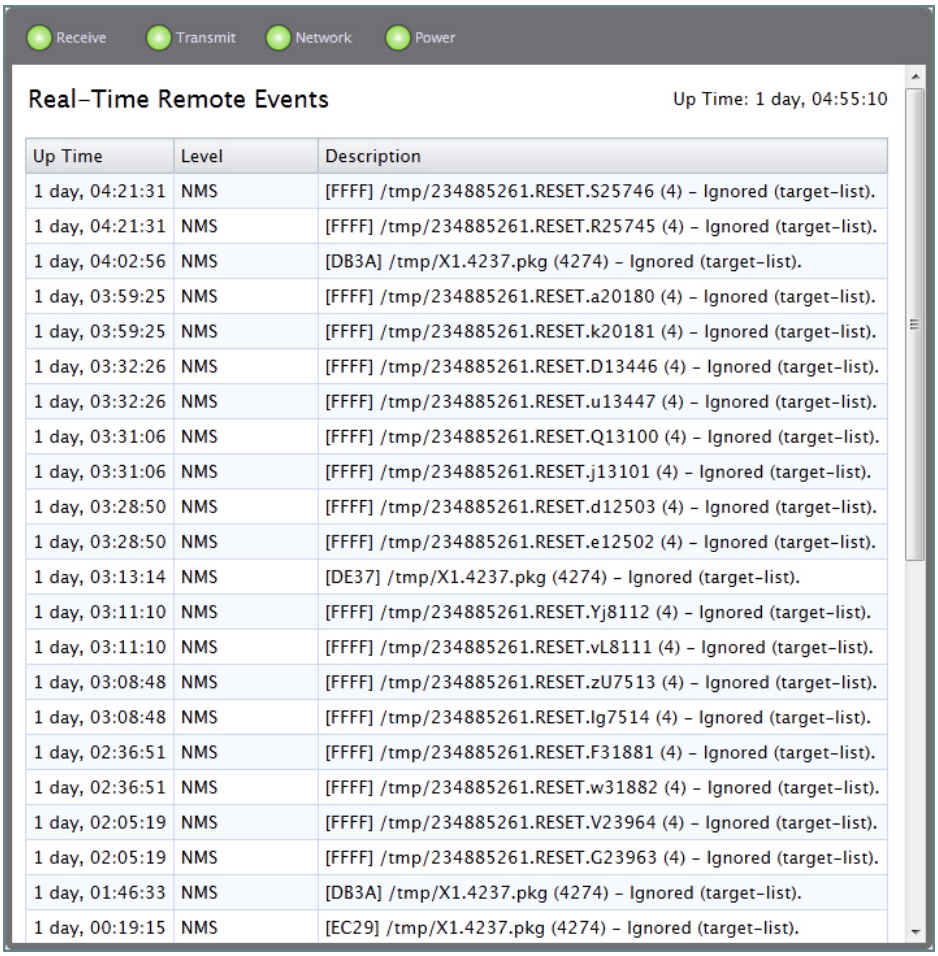


Figure 33. Page: IP Configuration Page - Section: Multicast Groups

3.4 Remote Events Page

The X1 **Real Time Remote Events** page is shown in Figure 34. When the remote is in operation, this page logs the events of the X1 Satellite Router, displaying the last 40 events that have occurred.

This area, is also a monitoring and troubleshooting tool that is used to aid in resolving problems that may exist with the remote. With the information provided in this window, an iDirect TAC representative can perform an investigation and analysis of problems with the remote and quickly pinpoint problems.



Up Time	Level	Description
1 day, 04:21:31	NMS	[FFFF] /tmp/234885261.RESET.S25746 (4) - Ignored (target-list).
1 day, 04:21:31	NMS	[FFFF] /tmp/234885261.RESET.R25745 (4) - Ignored (target-list).
1 day, 04:02:56	NMS	[DB3A] /tmp/X1.4237.pkg (4274) - Ignored (target-list).
1 day, 03:59:25	NMS	[FFFF] /tmp/234885261.RESET.a20180 (4) - Ignored (target-list).
1 day, 03:59:25	NMS	[FFFF] /tmp/234885261.RESET.k20181 (4) - Ignored (target-list).
1 day, 03:32:26	NMS	[FFFF] /tmp/234885261.RESET.D13446 (4) - Ignored (target-list).
1 day, 03:32:26	NMS	[FFFF] /tmp/234885261.RESET.u13447 (4) - Ignored (target-list).
1 day, 03:31:06	NMS	[FFFF] /tmp/234885261.RESET.Q13100 (4) - Ignored (target-list).
1 day, 03:31:06	NMS	[FFFF] /tmp/234885261.RESET.j13101 (4) - Ignored (target-list).
1 day, 03:28:50	NMS	[FFFF] /tmp/234885261.RESET.d12503 (4) - Ignored (target-list).
1 day, 03:28:50	NMS	[FFFF] /tmp/234885261.RESET.e12502 (4) - Ignored (target-list).
1 day, 03:13:14	NMS	[DE37] /tmp/X1.4237.pkg (4274) - Ignored (target-list).
1 day, 03:11:10	NMS	[FFFF] /tmp/234885261.RESET.Yj8112 (4) - Ignored (target-list).
1 day, 03:11:10	NMS	[FFFF] /tmp/234885261.RESET.vL8111 (4) - Ignored (target-list).
1 day, 03:08:48	NMS	[FFFF] /tmp/234885261.RESET.zU7513 (4) - Ignored (target-list).
1 day, 03:08:48	NMS	[FFFF] /tmp/234885261.RESET.lg7514 (4) - Ignored (target-list).
1 day, 02:36:51	NMS	[FFFF] /tmp/234885261.RESET.F31881 (4) - Ignored (target-list).
1 day, 02:36:51	NMS	[FFFF] /tmp/234885261.RESET.w31882 (4) - Ignored (target-list).
1 day, 02:05:19	NMS	[FFFF] /tmp/234885261.RESET.V23964 (4) - Ignored (target-list).
1 day, 02:05:19	NMS	[FFFF] /tmp/234885261.RESET.G23963 (4) - Ignored (target-list).
1 day, 01:46:33	NMS	[DB3A] /tmp/X1.4237.pkg (4274) - Ignored (target-list).
1 day, 00:19:15	NMS	[EC29] /tmp/X1.4237.pkg (4274) - Ignored (target-list).

Figure 34. Status Page Group: Real-Time Remote Events Page

3.5 Satcom Graphs Page

The **Satcom Graphs** page of the **Status** page group is shown in Figure 35. The sections of this page include graphs for **Rx SNR**, **Tx Power**, **Tx Frequency Offset**, and the **Clock Adjustment**.

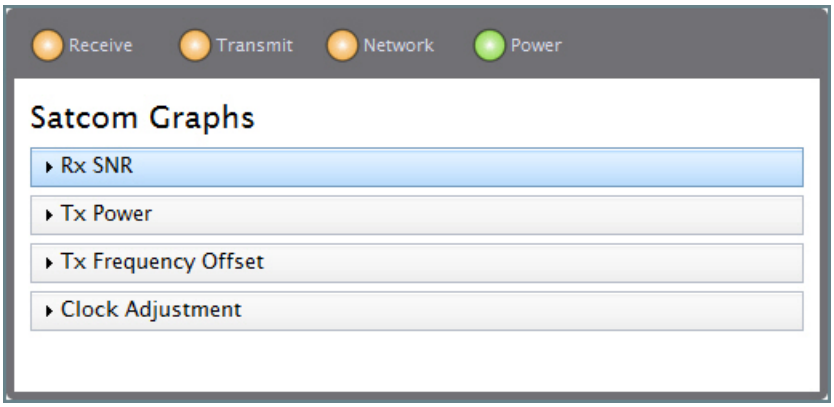


Figure 35. Satcom Graphs Page with all sections collapsed

3.5.1 Rx SNR

The **Rx SNR** section of the **Satcom Graphs** page is a graph of the downstream signal-to-noise ratio seen by the X1 Satellite Router's receive line over time. The data upon which this graph is based fluctuates with the varying environmental conditions that affect the receive signal's strength when compared to the noise interfering conditions.

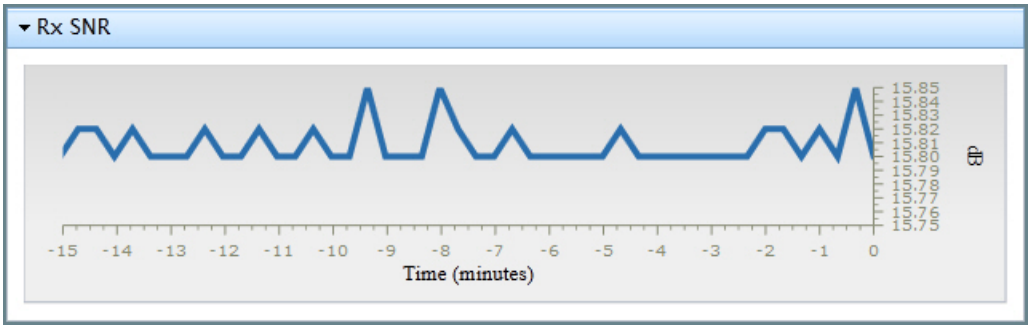


Figure 36. Page: Satcom Graphs - Section: Receiver SNR

3.5.2 Tx Power

The **Tx Power** section of the **Satcom Graphs** page is a graph of the X1 Satellite Router's transmit line power characteristics over time.

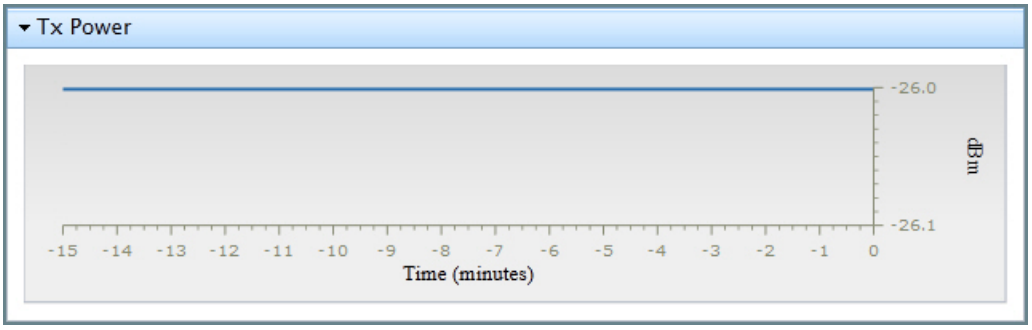


Figure 37. Page: Satcom Graphs - Section: Tx Power

3.5.3 Tx Frequency Offset

The **Tx Frequency Offset** section of the **Satcom Graphs** page is a graph of the X1 Satellite Router's transmit line frequency offset characteristics over time. The Tx frequency offset data reflects the frequency offsets applied to the remote from the Protocol Processor as part of the uplink control process (UCP).

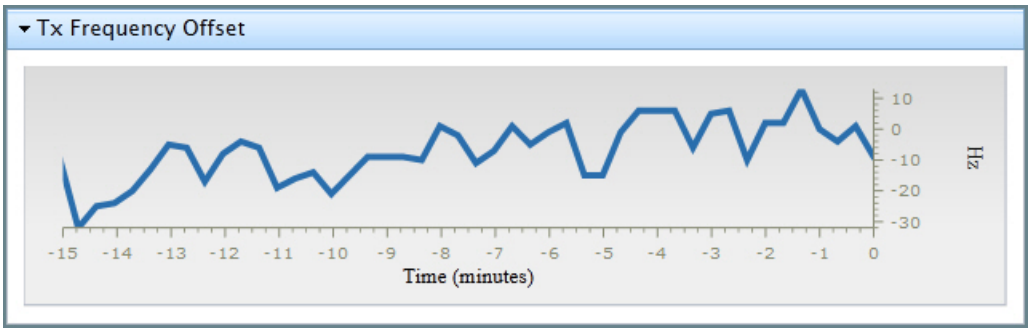


Figure 38. Page: Satcom Graphs - Section: Tx Frequency Offset

3.5.4 Clock Adjustment

The **Clock Adjustment** section of the **Satcom Graphs** page is shown in Figure 39. This graph plots the difference between the X1 Satellite Router's 10 MHz reference clock as compared to the Network Reference Clock (NCR) over time—hence referred to as the clock adjustment.

Figure 39. Page: Satcom Graphs - Section: Clock Adjustments

4 Commissioning Pages

This chapter presents the Web iSite **Commissioning** pages. The pages of this page group, which may be familiar to users of the iVantage iSite tool, are designed to assist network installers and technicians in working with the X1 Satellite Routers during the installation and commissioning tasks. Access to the **Commissioning** pages is limited to **Admin** users only.

This chapter contains the following sections:

- "Angle Calculator Page" on page 30
- "Antenna Pointing Page" on page 32
- "Cross Polarization Test Page" on page 33

Note: *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 Evolution X1 Satellite Routers, refer to the iDirect Satellite Routers Installation and Commissioning Guide.*

4.1 Angle Calculator Page

The Web iSite **Angle Calculator** page, shown in Figure 40, is a Web iSite tool designed to assist with gross antenna pointing. Given the appropriate values, the look angle calculator determines the **Polarization Offset**, **Azimuth True**, and **Elevation Actual**.

Notice that with some fields, increment and decrement buttons are adjacent to the field, so that adjust to the field value may be made as necessary. There are also fields that have an adjacent drop arrow so that the appropriate value may be selected from a list—for example, **Deg. North** or **Deg. West**. The page fields that are white spaces are display only fields.

If this is an initial installation of the Satellite Router, the modifiable fields are populated with values from the remote's Options file or will have an initial value of 0.0. All other fields will be blank.

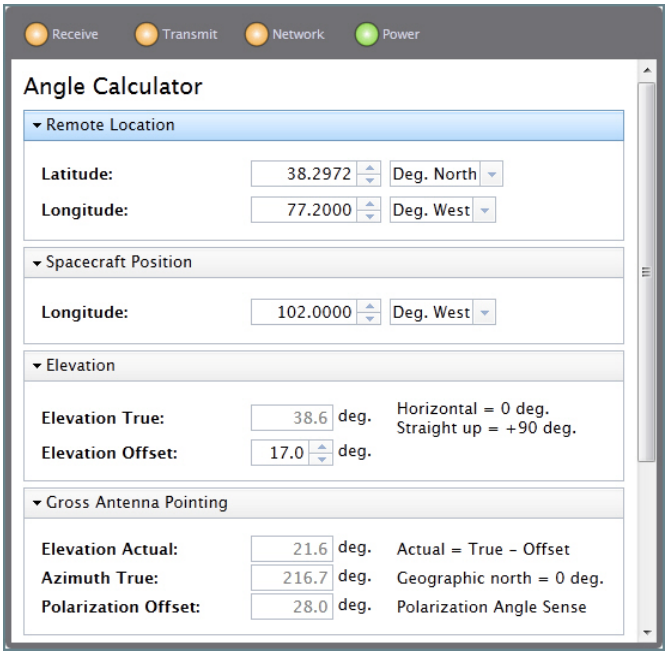


Figure 40. Angle Calculator Page

4.1.1 Remote Location

The **Remote Location** section of the **Angle Calculator** page is shown in Figure 41. This section is used to enter the **Latitude** and **Longitude** for the X1 Satellite Router' exact location.

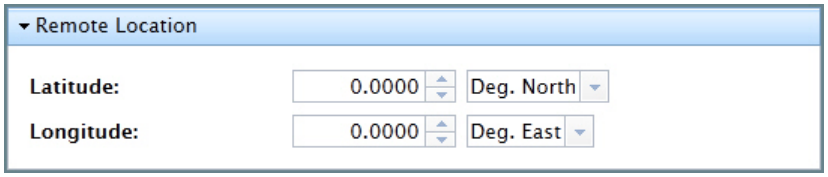


Figure 41. Page: Angle Calculator - Section: Remote Location

4.1.2 Spacecraft Position

The **Spacecraft Position** section of the **Angle Calculator** page is shown in Figure 42. Here, the **Longitude** is entered for the satellite that is being used. Use the drop arrow to select the appropriate direction of the satellite as **Deg. East** or **Deg. West**.

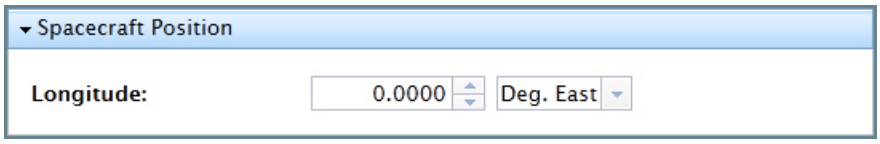


Figure 42. Page: Angle Calculator - Section: Spacecraft Position

4.1.3 Elevation

The **Elevation** section of the **Angle Calculator** page is shown in Figure 43. Here, the an **Elevation Offset** is entered in order to derive the correct value for **Elevation True**.

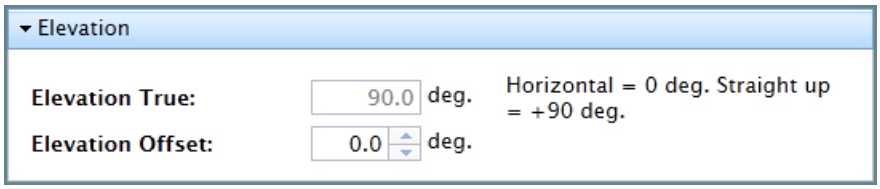


Figure 43. Page: Angle Calculator - Section: Elevation

4.1.4 Gross Antenna Pointing

The **Gross Antenna Pointing** section of the **Angle Calculator** page is shown in Figure 44. The look angle calculated values for **Elevation Actual**, **Azimuth True**, and **Polarization Offset** are displayed in this section.

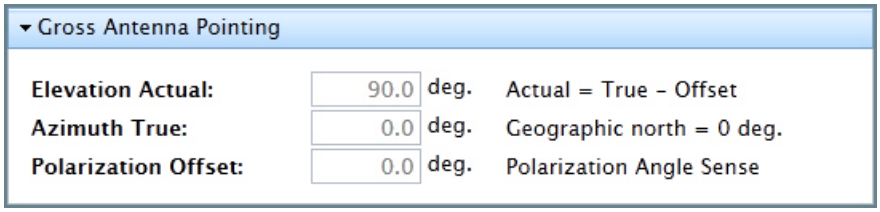


Figure 44. Page: Angle Calculator - Section: Gross Antenna Pointing

4.2 Antenna Pointing Page

The Web iSite **Antenna Pointing** page, shown in Figure 45, is a Web iSite tool designed to assist with antenna pointing. The tool itself is a color-coded graphical voltage display that simplifies the task of locking on to the downstream carrier for a specific network.

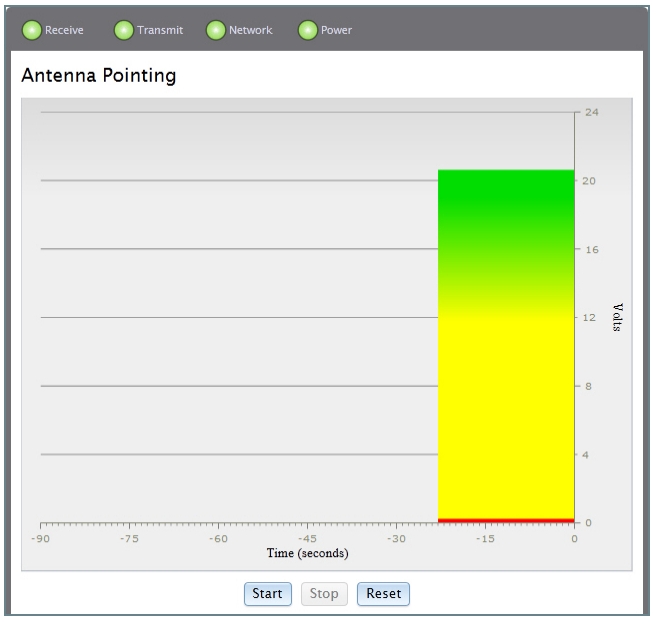


Figure 45. Antenna Pointing Page

As the antenna azimuth plane is manipulated in a slow sweeping motion, the graph displays a voltage reading in the range of 12-24 volts to indicate the signal strength and when the remote is successfully locked onto the correct satellite and outbound carrier.

The antenna status may be determined using the information given in Figure 46. The graphical display of the voltage range is color-coded, where 0-2 VDC is red; 2-10 VDC is yellow; and 12-24 VDC is green. As the antenna azimuth is moved, the graph will turn red, then yellow, and finally completely green as there is a lock on to the downstream carrier.

Volts DC	Antenna Status
0 – 2	Not in pointing mode, hardware problem, or off satellite
2 – 10	Detecting RF energy, but not locked on the downstream carrier
12 – 24	Locked on the downstream carrier

Figure 46. Antenna Pointing Status

Note: *For full information and specific details on installing and commissioning the Evolution X1 Satellite Routers, refer to the iDirect Satellite Routers Installation and Commissioning Guide.*

4.3 Cross Polarization Test Page

The Web iSite **Cross Polarization Test** page is shown in Figure 47. This test page supports the putting up of a modulated or unmodulated continuous wave (CW) carrier as part of the test. The three sections of this page include **Transmit Frequency**, **Transmit Power**, and **Modulator**. The cross polarization test is generally performed in conjunction with the Satellite Provider.

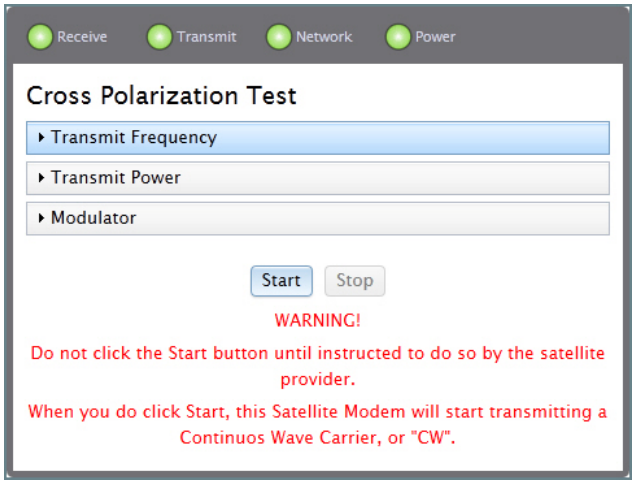


Figure 47. Cross Polarization Test Page with all sections collapsed

Note: *As mentioned earlier, refer to the Satellite Router Installation and Commissioning Guide, for complete instructions on commissioning the X1 Satellite Router—including the performance of the Cross Polarization Test.*

4.3.1 Transmit Frequency

Figure 48 shows the **Transmit Frequency** section of the **Cross Polarization** page. The fields in this section provide the setup for the cross-polarization test. The test frequency, the value entered for **RF Uplink Frequency**, is obtained from the satellite provider. The **BUC LO** (local oscillator) **Frequency**, which is generally read from the remote's Options file, should reflect the appropriate value associated with Ku-Band, Ka-Band, or C-Band. The **L-Band Tx Frequency** is automatically calculated and displayed for the X1 Satellite Router.

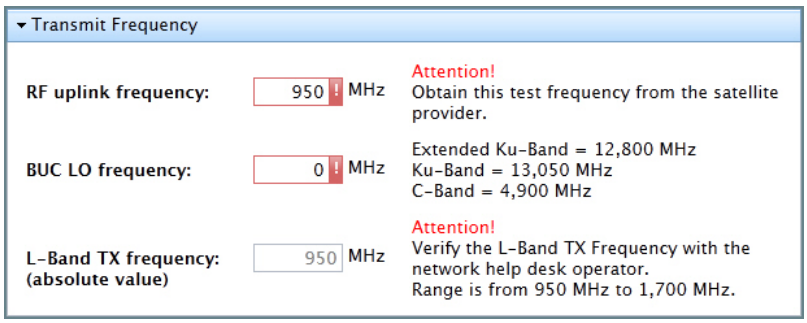


Figure 48. Cross Polarization Page - Transmit Frequency Section

In the **Transmit Frequency** section of the **Cross Polarization Test** page, the **RF Uplink Frequency**, **BUC LO Frequency**, and **L-Band TX Frequency** field values should fall within the following ranges:

RF Uplink Frequency — 5,850 MHz to 14,750 MHz

BUC LO Frequency — 4,900 MHz to 13,050 MHz

L-Band TX Frequency — 950 MHz to 1,700 MHz

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

As part of the cross polarization test the operator is instructed by the Satellite Provider's Operator to put up the carrier wave (CW), at the frequency that was entered in the **RF Uplink Frequency** field. When instructed, simply click the **Start** button shown in Figure 49. At any time or when instructed, click the **Stop** button to take down the CW carrier.

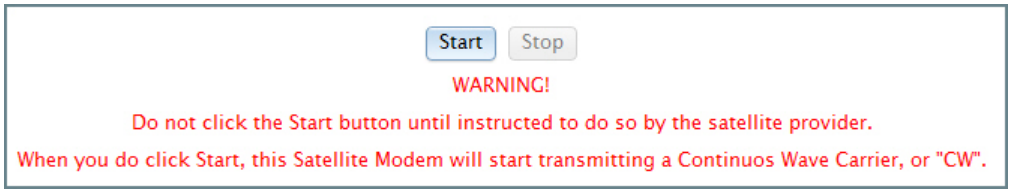


Figure 49. Cross Polarization Test Page - Start and Stop buttons

As long as the **L-Band TX Frequency** is within range, the **Start** button will be enabled and a Cross Polarization Test can be started.

4.3.2 Transmit Power

Figure 50 shows the **Transmit Power** section of the **Cross Polarization** page. The **Adjust Transmit Power** field is used in performing the 1 db compression test, while the Network Operator continues to monitor the Carrier Wave (CW). The value, which is generally incremented in 1 db adjustments under the advice of the satellite provider's operator, may only be adjusted after the test is started. The transmit power adjustment value may also be adjusted downward if the BUC is already saturated and the 1 db adjustment shows no further increase in power.

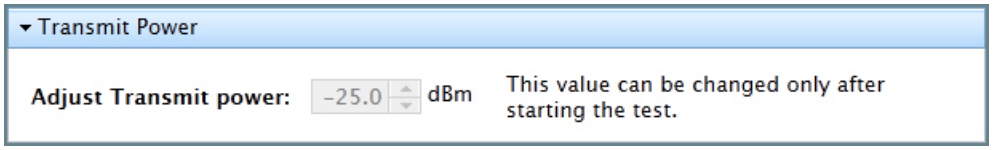


Figure 50. Cross Polarization Test Page - Transmit Power Section

4.3.3 Modulator

Figure 51 shows the **Modulator** section of the **Cross Polarization** page. The cross polarization test supports the testing of a remote by transmitting either a modulated or unmodulated carrier at a specific uplink frequency. Using this section, and the **Modulator PN** radio buttons, an installer can control the **ON** and **OFF** switching of the CW carrier. The modulation should only be switched **On** after receiving instruction to do so by the Satellite Provider operator.

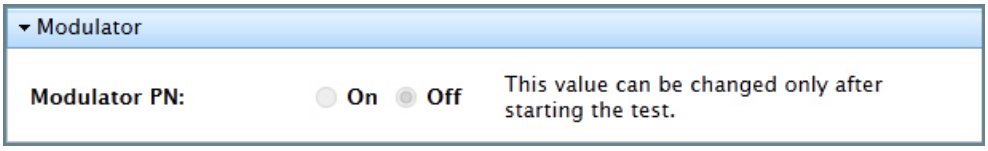


Figure 51. Cross Polarization Test Page - Modulator Section

5 Admin Pages

This chapter describes the Web iSite **Admin** pages. This page group provides additional tools for assisting installers or technicians with the task of troubleshooting or commissioning of the remote. Tools are included for loading the software Package and Options file to the X1 Satellite Router, as well as a command console tool for invoking a limited set of commands on the X1 remote.

Access to the **Admin** page group is available only to **Admin** users.

This chapter contains the following sections:

- "File Management Page" on page 38
- "The X1 Console Page" on page 40

5.1 File Management Page

The **File Management** page, shown in Figure 52, is generally used at the Satellite Router location, during a commissioning phase, to load the necessary files to the X1 remote. The topics in this section describes how these page sections are used, however the *Satellite Router Installation and Commissioning Guide* must be referenced for complete instructions on performing the installation and commissioning tasks.

As shown in the figure, this page consists of the **Load Package** section, used to load the software image required by the X1 Satellite Router; the **Load Options File** section, used to load the iBuilder configured options for a specific remote; and the **Restart** section, used to re-initialize the remote.

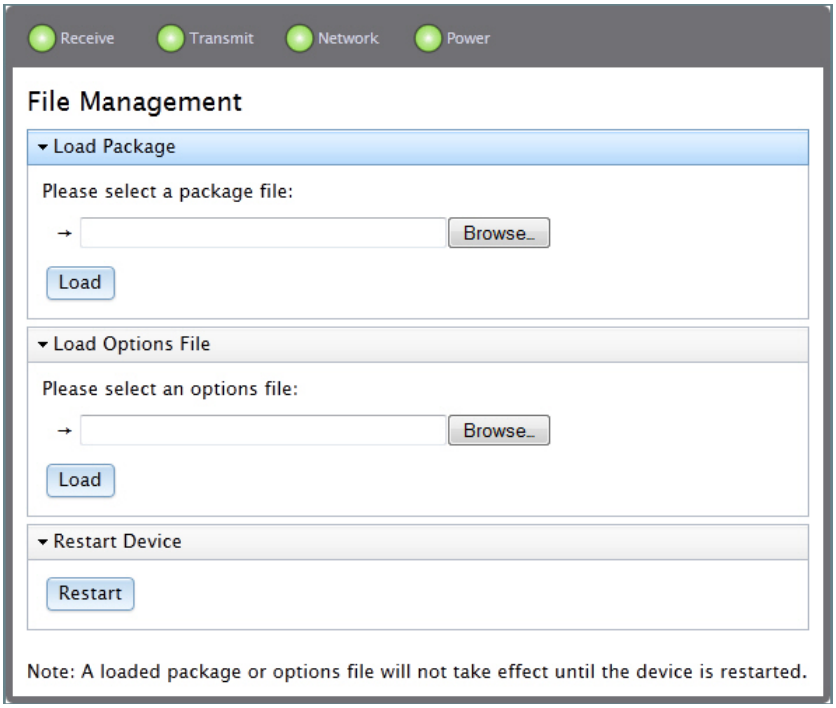


Figure 52. File Manage Page with all sections collapsed

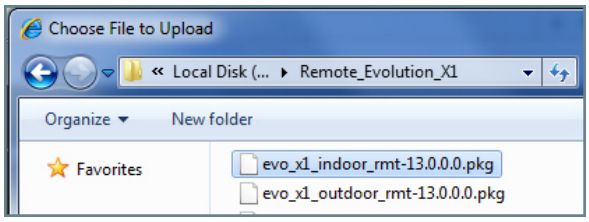
WARNING! *Use of Web iSite for loading of the remote Package file and Options file is typically performed only during the commissioning of the remote or in case of recovering the remote. Both files should always be loaded at this time. After the remote has been commissioned, loading of the Package and Options file is generally downloaded from the iBuilder application.*

5.1.1 Load Package

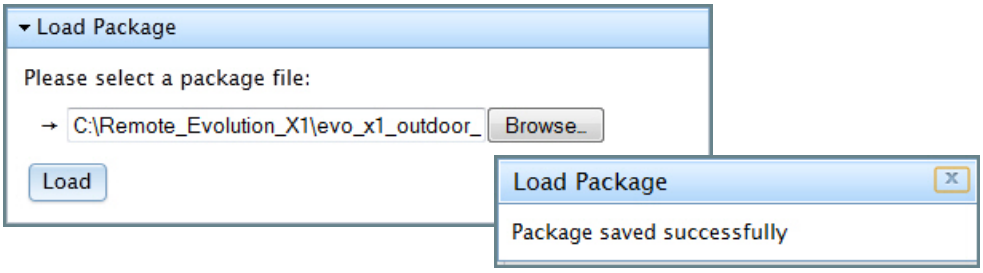
Each X1 Satellite Router must be loaded with the appropriate Package file, which is based specifically on the iDX release and whether the operation involves an X1 Indoor unit or X1 Outdoor unit. In either case, the package file is generally downloaded from the iDirect TAC Web site at http://tac.idirect.net, and stored on a local PC.

To load a Package file to 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.



2. With the Package file selected, click the **Load** button and wait until the **Load Package** prompt message indicates that the package was successfully saved to the remote.



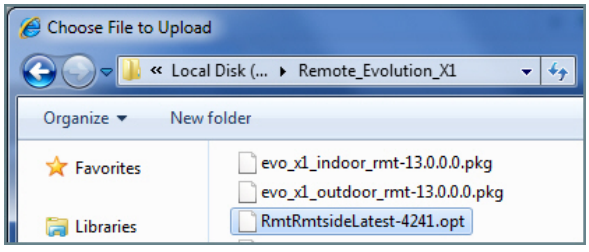
3. Close the message dialog and continue with the following steps under **Options File Load** (See 5.1.2) to load the Options file to the Satellite Router.

5.1.2 Load Options File

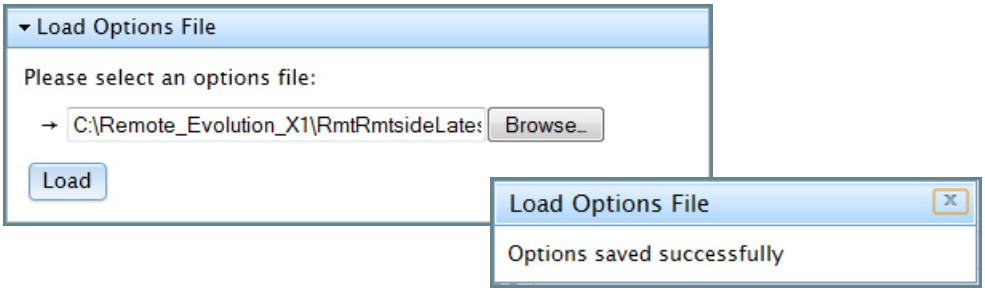
Each X1 Satellite Router must also be loaded with the appropriate Options file, which is based on the iBuilder generated configuration, created specifically for a unique Satellite Router. In either case, the package file is generally provided and must be available for loading to the Satellite Router from the local PC.

To load an Options File to the Satellite Router, perform the following steps:

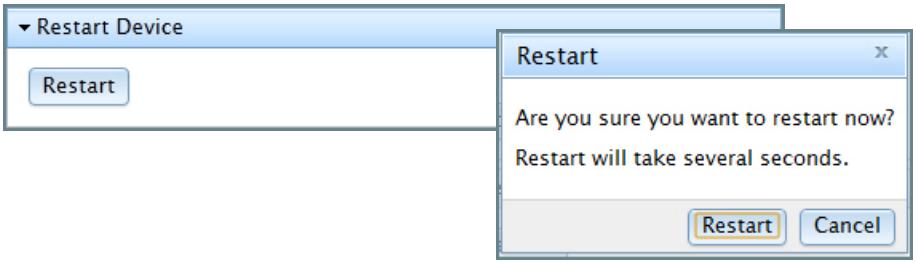
1. Click the **Browse** button in the **Load Options File** section of the **File Management** page, to locate and select the appropriate Options file.



2. With the Options file selected, click the **Load** button and wait until the **Load Options File** prompt message indicates that the options files was successfully saved to the remote.



3. Close the message dialog and perform the following step to restart the Satellite Router.
4. Click the **Restart** button in the **Restart Device** section, and wait until the **Restart** prompt message is displayed. Click the **Restart** button or choose the **Cancel** button.



5. After clicking **Restart**, wait until the Satellite Router has successfully restarted, the current Web iSite session is logged out, and the **Login** page is again displayed.

5.2 The X1 Console Page

The X1 **Console** page, shown in Figure 53,is a diagnostic and troubleshooting tool to assist with any problems that may arise during the commissioning task, or in any situation where troubleshooting may be required after the X1 remote has been commissioned. The page is comprised of three areas—the *command response window,* the top most area just under the **Console** label; the *command line*, the blue highlighted area beneath the command response window; and the *X1 event message window*, the bottom message area of the page.

Whereas there are no restrictions on its use other than the fact that it is limited to use by **Admin** user accounts, the tool is primarily intended for use in conjunction with the iDirect Technical Assistance Center (TAC) in resolving issues with the remote.

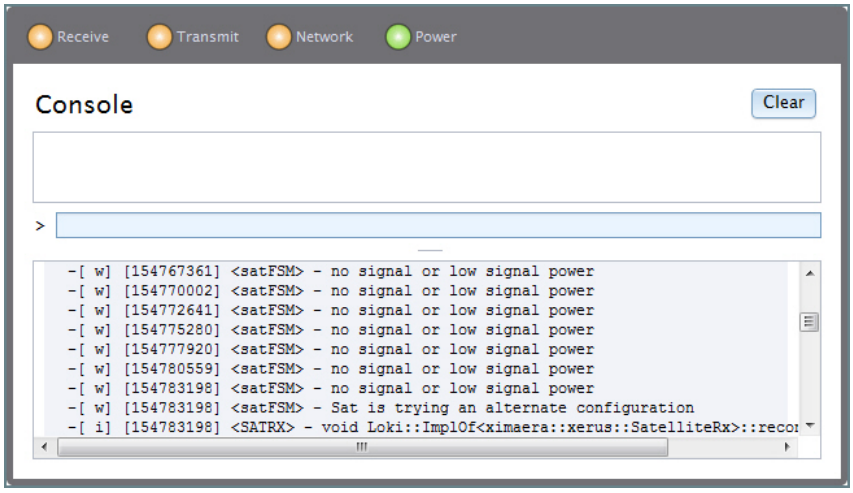


Figure 53. The X1 Console Page

5.2.1 Using The Command Line

Figure 54 shows the command line field and the command response window of the **Console** page. The command line is the blue highlighted field, showing the words “type command here.” When a valid command is typed using the correct syntax, and followed by pressing the **Enter** key, a command response displays in the above command response window. Clicking the **Clear** button at any time erases the contents of the command response window.

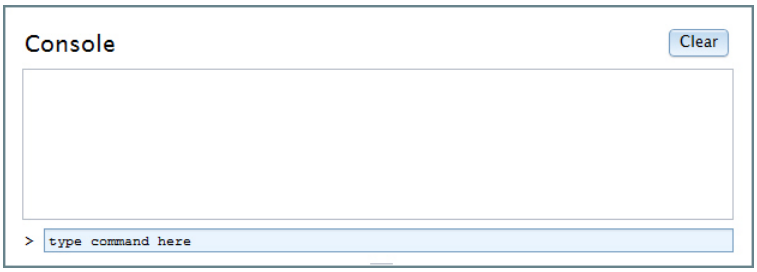


Figure 54. The X1 Command Line and Command Window

Note: *When using the tx_power command from the Web iSite command line, the value that is submitted is in tenths of a dbm and must therefore be multiplied by a factor of 10 (same as adding zero to the value). Two examples are shown below:*

Example 1: Enter a Tx power of -22dbm

```
tx_power -220
```

Example 2: Enter a Tx power of -25dbm

```
tx_power -250
```

5.2.2 The X1 Event Message Window

The X1 event message window is the page area just below the command line, as shown in Figure 55. When the remote is in operation, this area displays a continuous log of events of the X1 Satellite Router. This area is also a troubleshooting tool that is used to aid in resolving problems that may exist with the remote unit. With the information provided in this window, an iDirect TAC representative can perform a detailed investigation and analysis of problem with the remote and quickly pinpoint causes.

If necessary, it is possible to increase the size of the event message window. First, click and hold down the mouse button directly on the horizontal hash mark just above the window—then drag the line up to increase the window size or down to decrease the size.

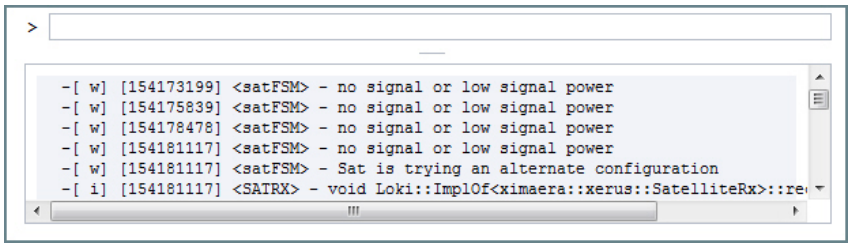


Figure 55. The X1 Event Message Window

Event Message Format

The messages displayed in the event message window are intended for debugging purposes only. The format of the event message is as seen in the following example:

Example:

-[i] [236626366] <satFSM> - snr: 2057; fade slope: 0; time: 750

where the components of the message, in the order as seen in the example, include:

Level indicator as follows:

[d] — debug; [i] — info; [w] — warning; [e] — error; [c] — critical; [L<n>] — level 0 to 9.

Time since startup (in milliseconds counter): [nnnn]. This counter will wrap around and restart from 0 on every 49 days.

Area of interest identifier: <identifier>.

Arbitrary message: message preceded by dash (-).

Appendix A Restart X1 Satellite Router in Factory Default Mode

Factory Default Mode is a restart operation in which the X1 remote is reset to its default factory settings. This appendix describes the Factory Default Mode of the Evolution X1 Satellite Router; conditions under which it may be necessary to restart the remote in Factory Default Mode; the procedure for starting the remote in this mode; and the procedure for returning the remote to the normal operational mode.

A.1 Restarting the X1 Satellite Router in Factory Default Mode

The Evolution X1 Satellite Router should be restarted in "Factory Default Mode" whenever it is necessary to return the Satellite Router to its default settings. The following discussions describe the Factory Default Mode operation and how to start the X1 Satellite Router for this operational mode as well as how to return to the normal operational mode.

A.1.1 When to Use the Factory Default Mode

A Factory Default Mode restart should only be used as a last resort when it is no longer possible to upload a software package and/or options file to the Satellite Router. Physical presence at the Satellite Router location is required in order to press the reset button and connect a PC to the LAN port of the Satellite Router. Typical cases for restarting in Factory Default Mode are listed below:

- Connecting to an Evolution X1 Satellite Router with an unknown IP address
- Reloading the software package and options file on a failed Evolution X1 Satellite Router

A.1.2 Operating in Factory Default Mode

When operating in Factory Default Mode, the Satellite Router always executes the factory firmware using the default options even if a software package and/or options file are loaded on the Satellite Router. The laptop PC must have either DHCP enabled or a static IP address of 192.168.0.X to connect to the Satellite Router.

The default factor setting of the Evolution X1 Satellite Router are as follows:

- LAN IP address: 192.168.0.1
- Subnet Mask: 255.255.255.0
- DHCP Server: Enabled
- Single Client Address: 192.168.0.2
- Two Configured User Accounts: **Admin** and **User** (iDirect password)

A.1.3 Factory Default Mode Restart Procedures

To enter Factory Default Mode, access to the reset button on the Satellite Router is required. Both the indoor and outdoor versions of the Evolution X1 have reset buttons. Locating and accessing the reset button on either the X1 Indoor unit or X1 Outdoor unit is as follows:

X1 Indoor Unit: The reset button is accessed through a small hole on the back panel between the **Rx In** and **LAN** ports; a small diameter straight tool is required.

X1 Outdoor Unit: If already installed, remove the M25 Cable Gland that covers the LAN port where the Ethernet cable is connected—the reset button below the **LAN** port.

Note: *See the Evolution X1 Outdoor Satellite Router Installation and Safety Manual for details on the physical connections to the modem.*

Perform the following steps to restart the X1 Satellite Router in Factory Default Mode:

1. Press and hold the reset button.
2. Release the reset button after eight seconds.
3. At this point, the procedures in the *Satellite Router Installation and Commissioning Guide*, to load the software package and options file to the Satellite Router may be used.

Perform the following steps to restart the X1 Satellite Router if after the first procedure establishing a connection to the remote is still unsuccessful:

1. Remove power from the X1 Satellite Router.
2. Press and hold the reset button.
3. Apply power to the X1 Satellite Router while still holding the reset button.
4. Release the reset button after eight seconds.
5. The procedures for loading the software package and options file to the Satellite Router, in the *Satellite Router Installation and Commissioning Guide* may now be used.

A.1.4 Returning to Normal Operational Mode

When you have finished loading the package file and options file, you must restart the Satellite Router to return to normal operational mode.

Perform the following to restart an X1 Satellite Router in Normal Operational Mode:

1. Hold down the reset button for less than eight seconds to restart the Satellite Router in operational mode. This process is identical to cycling the power by removing power and then re-applying power to the Satellite Router.

iDirect, Inc.

13865 Sunrise Valley Drive
Herndon, VA 20171
+1 703.648.8000
+1 866.345.0983
www.idirect.net

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