THALES

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Thales MissionLINK™

User Guide

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RECORD OF CHANGES

Rev	Date	Description of Change	Author
Rev A	June 2018	Initial Release	SJacques
Rev B	Sept 2018	ECN: 42153 • Update based on Beta user feedback and Testing	SJacques

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User Documentation:

Thales Defense & Security, Inc. continually evaluates its user documentation for accuracy and completeness. Any suggestions you may have for changes or additions should be sent to THALES_ILS@thalesdsi.com Subject Line: Thales MissionLINK™ User's Guide (PN 84468).

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SAFETY

The Thales MissionLINK™ system should only be installed by a qualified installers of land electronic systems. Improper installation could lead to system failure or could result in injury. The following are general safety precautions and warnings that all personnel must read and understand prior to installation, operation and maintenance of the Thales MissionLINK™ system. Each chapter may have other specific warnings and cautions.

WARNING

SHOCK HAZARD

The MissionLINK™ system is a sealed system and is not meant to be opened for repair in the field by operators or technicians. Covers must remain in place at all times on the Terminal Unit and Broadband Active Antenna to maintain the warranty terms. Make sure the system is correctly grounded and power is off when installing, configuring and connecting components.

WARNING

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

This equipment is not designed to be operated in explosive environments or in the presence of combustible fumes. Operating this or any electrical equipment in such an environment represents an extreme safety hazard.

CAUTION

LITHIUM ION BATTERIES

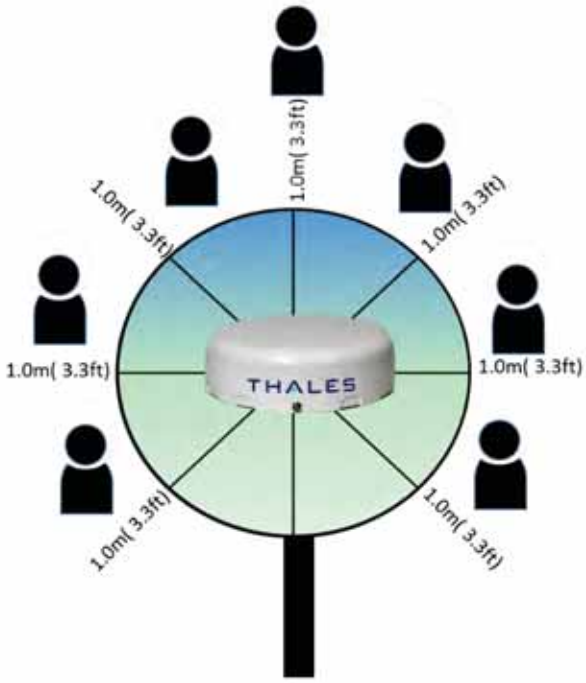
The Terminal Unit (TU) contains a small Li-ion battery. Li-ion batteries have a very high energy density. Exercise precaution when handling and testing. Do not short circuit, overcharge, crush, mutilate, nail penetrate, apply reverse polarity, expose to high temperature or disassemble. High case temperature resulting from abuse of the cell could cause physical injury.

WARNING

ANTENNA RADIATION HAZARDS

To comply with FCC Radio Frequency radiation exposure limits, the antenna must be installed at a minimum safe distance as shown below.

During operation, the antenna radiates high power at microwave frequencies that can be harmful to individuals. While the unit is operating, personnel should maintain a minimum safe distance of **1.0 meter (3.3 ft.)** from the antenna. The antenna should be mounted in an area that prevent the possibility of close exposure to the antenna's radiation.



FCC Information

NOTE

FCC Identifier: OKCMF350BV
Contains FCC ID: QOQWF121

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to a source on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada Information

NOTE

Industry Canada: 473C-MF350BV
Contains IC: 5123A-BGTWF121

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This radio transmitter (473C-MF350BV) has been approved by Industry Canada to operate with the antenna listed in Table 7-1 with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (473C-MF350BV) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Thales Defense & Security, Inc.

Declaration of Conformity with Radio Equipment Directive

The undersigned of this letter declares that the following equipment complies with the specifications of Radio Equipment Directive (2014/53/EU) concerning Radio & Telecommunications Equipment.

Equipment included in this declaration

VF350BM VesseLINK Broadband Maritime Certus Satellite Terminal and Antenna

MF350BV MissionLINK Broadband Maritime Certus Satellite Terminal and Antenna

Equipment Applicability

The VesseLINK and MissionLINK provide voice and high speed data communication over 100% of the globe through the Iridium Certus broadband Satellite system.

Declaration

The health requirement is met by conforming to EU standard EN 62311. The safety requirement is met by conforming to EN 60950-1:2006 w/A2:2013. The electromagnetic compatibility as set out in Directive 2014/30/EU is met by conforming to the EU standards ETSI EN 301-489-1 and ETSI EN 301-489-17. Effective and efficient use of radio spectrum in order to avoid harmful interference is met by conforming to the ETSI EN 301-441 standard.

Manufacturer

Thales Defense & Security, Inc. 22605 Gateway Center Drive
Clarksburg, Maryland 20871 U.S.A.

Place and Date

Clarksburg, MD, 15 August 2018

Scott Peters

Director, Product Management

CHAPTER 1 INTRODUCTION

INTRODUCTION

Thank you for your recent purchase of a Thales MissionLINK™ product. Powered by the Iridium global satellite network it's the only system with truly pole-to-pole coverage for voice and data communications. This USER MANUAL will cover a basic overview and advanced options of the Thales MissionLINK™ system.

Additional information can be found in the following documents:

- The Thales MissionLINK™ installation process is covered in the Installation Manual (Document # 84465).
- The Thales MissionLINK™ Quick Start Guide (QSG) (Document # 3402174-1).

ABOUT THIS MANUAL

This user manual is intended for anyone who intends to operate and configure the MissionLINK™ system. It, however, cannot cover all topics and advanced features. For questions or topics that are not covered in this manual please contact your service provider or Thales at www.Thalesdsi.com.

THE IRIDIUM SATELLITE NETWORK

The Iridium satellite network is comprised of 66 Low-Earth Orbiting (LEO), cross-linked satellites, providing voice and data coverage over Earth's entire surface. The satellites operate in six orbital planes, 781 kilometers (485 miles) from Earth.

This ensures that every region on the globe is covered by at least one satellite at all times. Each satellite is cross-linked to four other satellites; two satellites in the same orbital plane and two in an adjacent plane.

The Iridium NEXT satellite constellation replaces the Block 1 Iridium satellite constellation with faster data rates, more capacity and better voice quality.

Figure 1-1 Earth showing Iridium satellites in six defined orbital planes.

Figure 1-2 shows a typical flow over the Iridium network of a call made from the MissionLINK™ system.

A MissionLINK™ voice or data call is sent to the closest satellite overhead that has a high signal strength. The traffic is then routed through the satellite network to a Ground Station or Gateway. At the gateway, traffic is converted back to internet protocol (IP) and voice, depending on call type and delivered to the IP cloud or the public switched telephone network (PSTN).

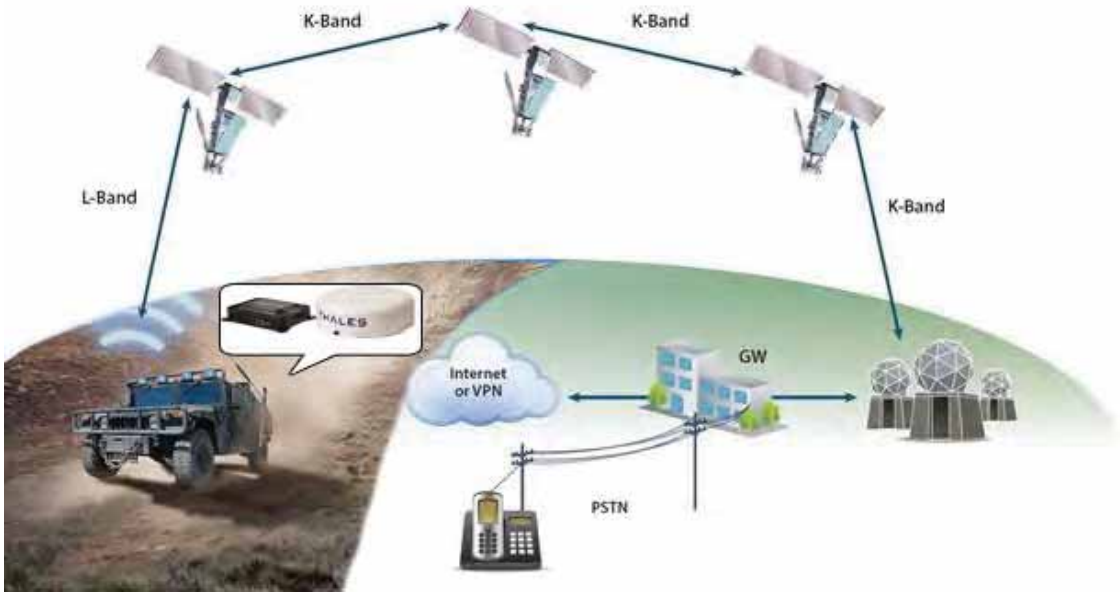


Figure 1-2 Typical Iridium Network Flow of a Voice or Data Call.

CHAPTER 2 SYSTEM OVERVIEW

SYSTEM DESCRIPTION

The MissionLINK™ system operates using Iridium Certus™ broadband services over a network of 66 satellites that cover 100% of the globe, including remote locations and the poles. The solution utilizes this robust network service to provide highly reliable, mobile and essential voice, text and web communications. For best operation, a clear view of the sky is necessary as satellites can be as low as eight degrees above the horizon. The service capabilities of the system are outlined below.

Certus™ Multi-Services Platform

- Satellite data sessions up to 352kbps (current) & 700kbps (available 2019)
- Streaming up to 256kbps (available 2019)
- 3 high quality voice lines
- Short Burst Data (future)
- Location tracking service with subscription at www.clrSight.com

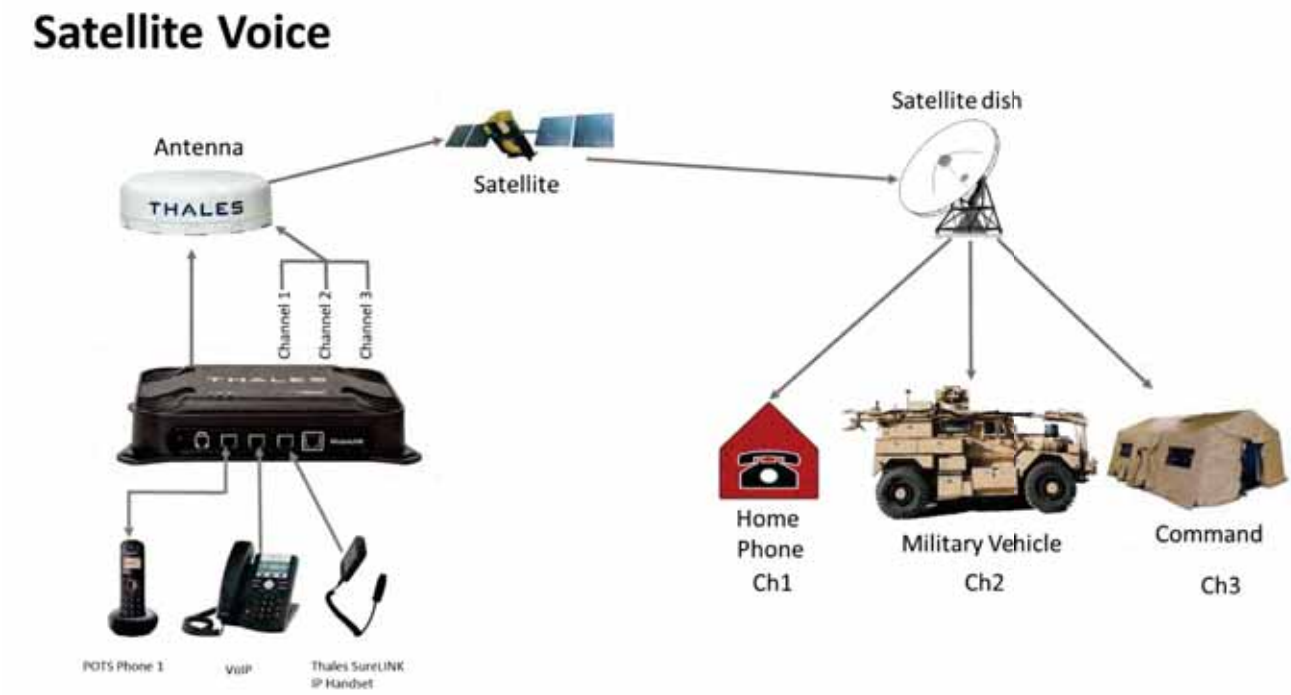


Figure 2-1 Three Channel Voice Calling Overview

Primary System Features

- Embedded 802.11b/g/n Wi-Fi access point with up to three (3) simultaneous users.
- Intuitive Management Portal user interface for configuration, monitoring and system status.
- Application Programming Interface (API) for remote management and issue resolution.
- Private Branch Exchange (PBX) functionality provides extensions for free local calling through the terminal. (Figure 2-2).
- Least Cost Routing automatically routes the data to an optional, lower cost network (i.e., cellular, Wi-Fi, etc.).
- Custom Thales softphone application available from the Apple Store and Google Play for use on iOS and Android devices.
- Low profile, IP66 rated antenna with single RF cable to the Terminal Unit (TU).
- Magnetic mount kit for easy antenna installation.
- Radio Gateway feature enables Land Mobile radios to access the satellite voice network.
- Ruggedized tethered Thales SureLINK IP Handset provides reliable, remote system configuration, monitoring and voice calls (optional).
- Supported WEB Browsers:
    - Internet Explorer
    - Chrome
    - Safari
    - Firefox
    - Android
    - iOS (Safari)

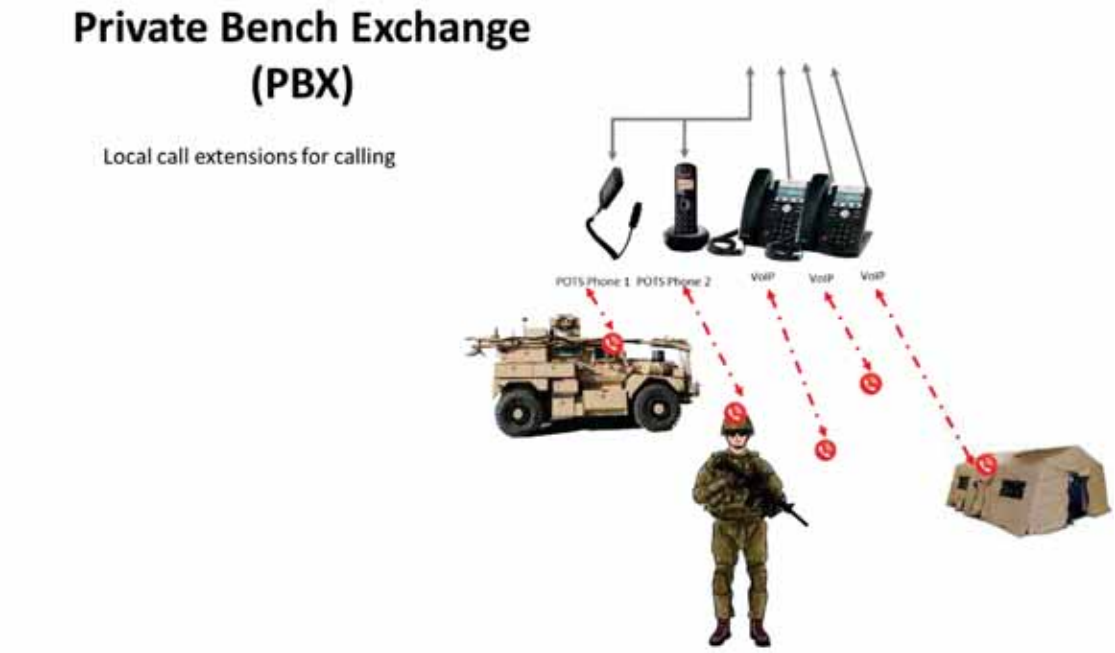


Figure 2-2 Local Communications via PBX Functionality

A typical user setup that includes the standard kit items and user provided POTS phone, VoIP phones and a computer is shown in Figure 2-3. A cellular modem can be connected to the WAN port for data least-cost routing operations. Voice calls are always routed through the Iridium satellite system.

Figure 2-3 MissionLINK™ System with Connected Hardware

Terminal Unit (TU)

The Terminal Unit (TU) supports voice and data communications in a land mobile or terrestrial fixed environment. The TU is capable of supporting wireless voice and data that links the user with the Iridium satellite network. The TU, depending on Line of Site (LOS) and LEO Satellites, will be able to maintain satellite connectivity while experiencing conditions varying from urban canyons to high vibration from road movement. As a wireless access point, the TU provides Wi-Fi (802.11) access for data and Voice over IP (VoIP) calls. Three RJ-45 Ethernet connectors and one RJ14 jack enables the user to tether directly to the TU, if desired. The Management Portal is a graphical user interface that can be used to modify system settings and indicate system status. The TU is powered by an included DC power cable with a 10-32V input range and remote start wire, accommodating all types of vehicles and battery types. It also can be powered by an optional 12 Volt AC to DC power source for fixed applications where AC power or a DC power inverter is available.

Figure 2-4 Terminal Unit (TU)

The Terminal Unit has three status LEDs on the top of the unit that indicate status of system power-up, satellite connection and the Wi-Fi.

Figure 2-5 Terminal Unit (TU) LEDs

Table 2-1 Terminal Unit LED Status

Indicator	Description
System	
Solid GREEN	System functioning properly
Flashing GREEN	System busy (Booting up)
Solid RED	Fault (minor issue)
Flashing RED	Critical fault (major issue)
Satellite	
Solid BLUE	Connected and passing data (over satellite)
Solid GREEN	System functioning properly
Flashing GREEN	Acquiring satellite
Solid RED	Fault (minor issue)
Flashing RED	Critical fault (major issue)
Wi-Fi	
OFF	Wi-Fi OFF
Flashing GREEN	Wi-Fi busy
Solid Green	System functioning properly
Solid RED	Fault (minor issue)
Flashing RED	Critical fault (major issue)

NOTE

The Indicator Colors are:
Solid Green: Operational
Flashing Green: start-up or in progress of configuring or acquiring service
Solid Red: fault requires user attention (Open Management Portal for Alerts)
Flashing Red: critical fault requiring immediate attention. For additional information, refer to Chapter 6 Troubleshooting

The Terminal Unit front panel (left to right) has a main power button, one RJ-14 jack for POTS (Plain Old Telephone Service) Phone(s), three PoE (Power over Ethernet) RJ-45 connections for VoIP phones or Ethernet-based devices, and one WAN (Wide Area Network) connection primarily used to connect an external cellular modem or VSAT.

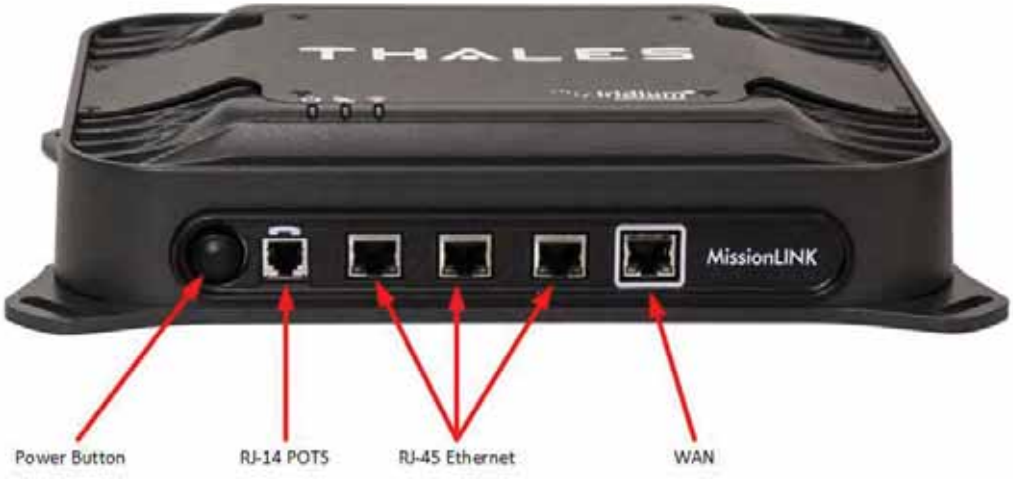


Figure 2-6 Terminal Unit (TU) Front Panel Detail

The Terminal Unit back panel (left to right) has a Wi-Fi antenna connector, reset button, SIM Card slot, GPIO (I/O) connector, 10-32Volt DC input connector, 12Volt DC power input, antenna connector, and chassis grounding lug.

Figure 2-7 Terminal Unit (TU) Back Panel Detail

Broadband Active Antenna (BAA)

The BAA is a separate unit that is required to connect to the Terminal Unit through a single coaxial cable. DC power, RF transmit and receive signals, control data and GPS data are communicated between the BAA and Terminal Unit through the single coaxial cable.

Figure 2-8 Broadband Active Antenna (BAA) Unit

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CHAPTER 3 GETTING STARTED

GETTING STARTED

STEP 1: Connect Phone (standard POTS handset) or Ethernet VoIP Phone to Terminal Unit (TU).

The TU front has a main power button, one RJ-14 port for POTS (Plain Old Telephone Service), three PoE (Power over Ethernet) RJ-45 ports for VoIP phones or Computers, and one WAN (Wide Area Network) port. Refer to Figure 3-1 for location of ports.

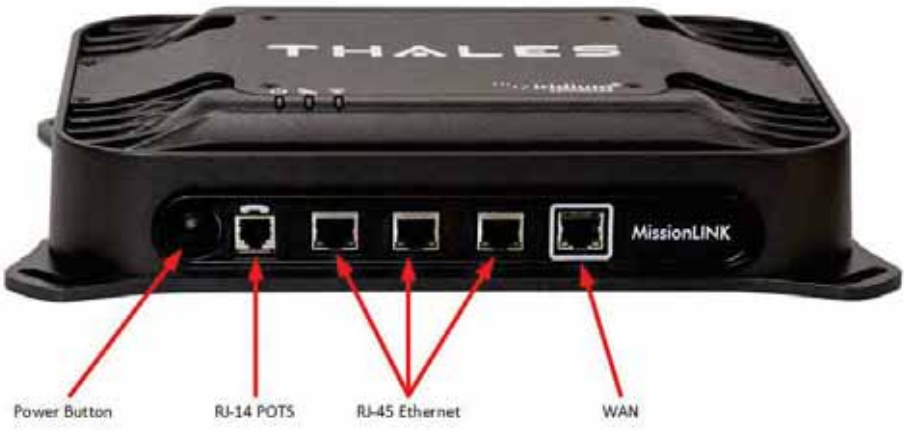

Figure 3-1 Terminal Unit (TU) Front Panel Detail

POTS Phone connection

By default, the POTS Phone are pre-configured to use the Iridium voice lines without any additional configuration.

The TU can accept up to 2 POTS Phones connected with a RJ-14 Splitter (not provided). Using a RJ-14 Splitter, the two POTS phones can each have a separate phone line (not two phones using the same phone line).

VoIP or Thales SureLINK IP Phone connection

By default the TU has (3) extensions preconfigured for use with POTS phones, VoIP phones, or Thales SureLINK IP Handsets, as shown in Table 3-1.

If using a VoIP phone, Thales recommends CISCO SPA504G and Grand Stream GXP2140 models for use with Thales MissionLINK™. Other brands and models may work but have not been tested by Thales.

Follow your VoIP phone configuration guide to setup the VoIP phone and connect to the TU using the following parameters.

Table 3-1 Typical VoIP Phone Configuration

Extension 1: (will make and receive calls on line 1 of your SIM)	User: "1001" Password: "1001" Host: "sip.thaleslink" Protocol: udp
Extension 2:(will make and receive calls on line 2 of your SIM)	User: "1002" Password: "1002" Host: "sip.thaleslink" Protocol: udp
Extension 3:(will make and receive calls on line 3 of your SIM)	User: "1003" Password: "1003" Host: "sip.thaleslink" Protocol: udp

NOTE

By default, extensions 1 and 2 are mapped to POTS phone connections and Extension 3 is flexible. A VoIP phone can be configured to any extension even those assigned to the POTS lines. The SureLINK IP Handset will have a default of 1001 or extension 1, so it will automatically work the same as the first POTS line.

STEP 2: Know your MissionLINK™

It may be necessary to know details about your MissionLINK™ system when calling for help or service.

IMEI is unique to each unit and can be found on the back plate of the TU. This IMEI can also be found in the http://portal.thaleslink under the ABOUT tab.

IMSI is a unique identifier to each SIM card. This IMSI can also be found in the http://portal.thaleslink under the STATUS→ SIM tabs. (SIM must be inserted)

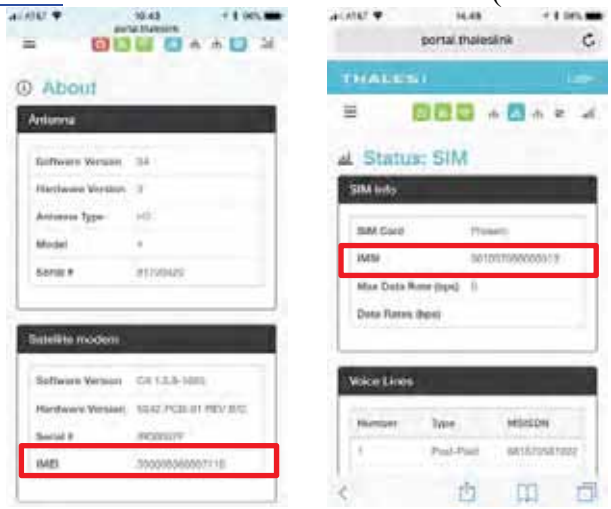

Figure 3-2 MissionLINK™ IMEI and IMSI from Mobile Device

STEP 3: Install SIM

1. Open the SIM Card protective cover by pulling it away from the TU, exposing the SIM card slot. (Figure 3-3).

Figure 3-3 SIM Card with Cover Opened

2. Install SIM card from Air-time provider (1, Figure 3-4), by inserting the card with contacts down (2) until it clicks into place (3).

3. Be sure to engage the lock for the SIM Card (4).

Figure 3-4 Installing SIM Card and Engaging the Lock

4. Secure the SIM Card cover once the SIM Card has been locked into place to prevent moisture or dust intrusion. (Figure 3-5)

Figure 3-5 Secure the SIM Card Cover

STEP 4: Power the MissionLINK™ unit.

Before powering the unit, make sure the DC power cable is connected to a 10-32VDC source, the polarity is correct, and the DC cable is securely connected to the TU. The antenna must also be connected per the installation manual. Power the unit by pressing and releasing the power button on the TU (Figure 3-1). NOTE: After the button is pressed and released, a few seconds pass before the System LED (left) starts flashing. It may take a few minutes on initial startup for all 3 LED's on the unit top to turn solid GREEN (or middle LED may turn BLUE). You may see an occasional red LED during power up. This is normal. Refer to Table 3-2 for more information on the status LEDs.

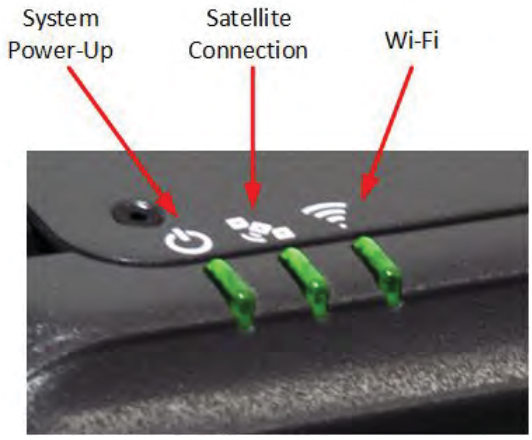

Figure 3-6 System, Satellite and Wi-Fi Status LED's

Table 3-2 Terminal Unit LED Status

Indicator	Description
System	
Solid GREEN	System functioning properly
Flashing GREEN	System busy (Booting up)
Solid RED	Fault (minor issue)
Flashing RED	Critical fault (major issue)
Satellite	
Solid BLUE	Connected and passing data (over satellite)
Solid GREEN	System functioning properly
Flashing GREEN	Acquiring satellite
Solid RED	Fault (minor issue)
Flashing RED	Critical fault (major issue)
Wi-Fi	
OFF	Wi-Fi OFF
Flashing GREEN	Wi-Fi busy
Solid Green	System functioning properly
Solid RED	Fault (minor issue)
Flashing RED	Critical fault (major issue)

STEP 5: Connect to MissionLINK™ portal to configure system.

Reference Figure 3-7. There are a couple options to login to the Management Portal.

Option A: Via Wi-Fi.

1. Power on the MissionLINK™ TU and let it boot up (may take a few minutes).
2. On the wireless device, find and select the SSID ThalesLINK as an available Wi-Fi access point. No password is required on initial setup and is left to the user to add WPA2 protection with a password during this configuration process.
3. Open a browser and type: http://portal.thaleslink (do not type .com or any other extension)
4. As a default, no changes to setup are necessary, but advanced users may want to configure their preferred system settings.
5. Once the Management Portal opens, click LOGIN button. Enter “admin” for Login ID and Password.
6. At this time, it is advised that you change the Management Portal admin password. To change password: Go to SETTINGS →GENERAL and change the password for the “Admin” user.

Option B: Via (PC, Mac or Linux) Ethernet connection

1. With your computer connect the Ethernet RJ-45 Cable (included) to any of the 3 Ethernet ports on the TU. (Shown on Figure 2-6) (Do not connect to the WAN port identified on the TU with a box around the port.)
2. Via the network settings on your computer's operating system, enable the MissionLINK connection .
3. Open a web browser and type: http://portal.thaleslink (do not type .com or any other extension)
4. As a default, no changes to setup are necessary, but advanced users may want to configure their preferred system settings.
5. Once the Management Portal opens, click LOGIN button. Enter "admin" for the Login ID and Password.
6. At this time it is advised that you change the Management Portal admin password. To change password: Go to SETTINGS → GENERAL and change the password for the "Admin" User.

NOTE

If you forget the Wi-Fi WPA2 password or the admin password, press and hold the reset pin on the back of the box (while powered on) in order to reset the system to factory settings. All custom configuration settings will be lost.

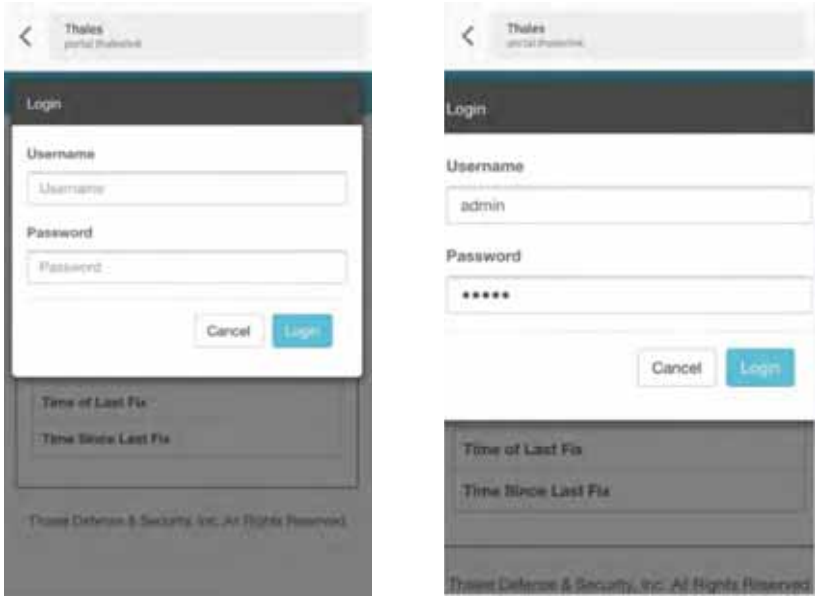

Figure 3-7 MissionLINK™ User Interface Login

STEP 6: Place a phone call.

NOTE

The MissionLINK™ system contains Private Branch Exchange (PBX) functionality, where both local calls and outside calls can be made. Local extensions can be dialed directly from another local phone, but outside calls require dialing a "9" in order to connect to an outside line prior to dialing the phone number.

1. Choose either POTS or VoIP handset.
2. Lift the handset from the base and listen for a dial tone.
3. For all calls using the Iridium Voice Services, dial 9 before the phone number. When making a local call, simply dial the extension.
4. Call a known number to test call and voice clarity

Call the Iridium automated message: (9) 1-480-752-5105

STEP 7: Access the Internet.

Once your device has successfully connected to the TU, open the Management Portal http://portal.thaleslink to verify the satellite connection.

Verify:

- No active alerts (DASHBOARD or ALERTS page on the Management Portal)
- Satellites detected (go to STATUS → SERVICE), signal strength bars (top right of screen) should show more than 1 bar as available.
- Data is defaulted off from the factory. To enable data, login and click the "ACTIVATE" button by enable session on the Dashboard tab.
- Check that the antenna has a clear view of the sky or check the alerts if voice calls or data fail.

Try loading a small website such as www.google.com to verify your internet connection. If the page loads successfully you are ready to browse the internet.

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CHAPTER 4 THALES MANAGEMENT PORTAL

NOTE

To access the Management Portal from a laptop:

- Power on the Thales MissionLINK™ TU and let it boot up (may take a few minutes)
- Open a web browser
- Type: http://portal.thaleslink (do not type .com or any other extension)
- The Management Portal appears in "guest" mode.
- To make changes, log in as an administrator by selecting LOGIN at the top of the window
- When prompted, enter the default Username (admin) and Password (admin)
- Immediately change the Password for added security (SETTINGS→GENERAL)

NOTE

To access the Management Portal from a wireless device using Wi-Fi:

- Power on the MissionLINK™ TU and let it boot up (may take a few minutes)
- On the wireless device, find and select ThalesLINK as an available Wi-Fi access point.
- Open a browser and type: http://portal.thaleslink (do not type .com or any other extension)
- The Management Portal appears in "guest" mode.
- To make any changes, log in as an administrator by selecting LOGIN at the top of the window
- When prompted, enter the default Username (admin) and Password (admin)
- Immediately change the Password for added security (SETTINGS→GENERAL)

GETTING TO KNOW THE THALES MANAGEMENT PORTAL

The Thales Management Portal is a Graphical User Interface (GUI) with an intuitive menu structure that is used to configure and monitor the MissionLINK™ system. The Management portal provides key information and status alerts about the operation and condition of the system and Iridium network. The Thales Management Portal is resident on the TU and can be accessed and viewed on almost any smart device or computer including phones, tablets, laptops, desktop computers, and the optional Thales SureLINK IP Handset. Restrictions apply on browser type and version. The menu structure and content will automatically scale to the device's screen size. The descriptions below are applicable for all devices but screen shots apply to larger display devices such as laptop computers. The actual view may vary depending on the size of the screen being used.

The Thales Management Portal is the primary user interface for the MissionLINK™ system. There are four access levels to the system. Three of them are under password control.

- Local access levels include GUEST access, which is for general users of the system that do not need to make configuration changes.
- The second local access is for administrators who need to view all data, perform software updates and make configuration changes.
- The first remote access level is for remote users who need to monitor the system, but no configuration changes are permitted. This is similar to the "guest" access except that it is a remote user instead of a local user.
- The second remote access level is for remote administrators such as Service Providers. This level allows for viewing all data and making configuration changes through the custom Thales Application Programming Interface (API).

The guest access level is not password protected, so when the Management Portal is opened, the guest user can view the current configuration and status of the system and any alerts that have been generated, but cannot change any parameters. The three other access levels are password protected. Passwords can be controlled and changed by the administrator in the SETTINGS → GENERAL menu, where the local administrator is denoted as "admin", the remote user is denoted by "wan_user" and the remote administrator is denoted by "wan_admin". By password control, the local system administrator can enable or prevent any remote access to the system.

Administrators, after initially logging in to the admin account with default password (admin), can view all data and also make changes to all the configuration settings to customize the MissionLINK™ system. It is highly recommended that the administrator creates a new Password immediately after signing in for added security and protection.

In the following pages, the Thales Management Portal is described in detail. Read through the entire contents before attempting to configure the TU for the first time.

When you first enter into the Thales Management Portal, menu items appear on the left side of the screen (see Figure 3-1). Each of these menu items is discussed in the following sections. A short description of each menu item is below.

- Status – Provides status of each of the items listed below. These informational screens cannot be edited.
  - Current Devices
  - GPS
  - LAN
  - Phones
  - Services
  - SIM
- Alerts – Provides a listing of system alerts
- Calls – Provides current calls, call history, and call management.
- Distress – Allows the operator to send a distress message.
- Settings – Enables the Administrator to configure the system.
- System – Enables the Administrator to perform system backups, view data usage, reset the system, and view/update system firmware.

- Diagnostics – Enables the administrator to run a self-test, check system status, and view the diagnostics log.
- About – Provides system level information for the antenna, modem, power supply, system, VoIP Module, and Wi-Fi.
- Help – Provides a link to the MissionLINK™ User Documentation (Users Guide, Installation Instructions, and Quick Start Guide (QSG)).

Menu Components

The System Status Icons at the top of the screen, highlighted in Figure 4-1, provide system level information at a glance. When selected, these icons provide addition screen(s) of information and a quick way to make certain configuration setting changes by the administrator.

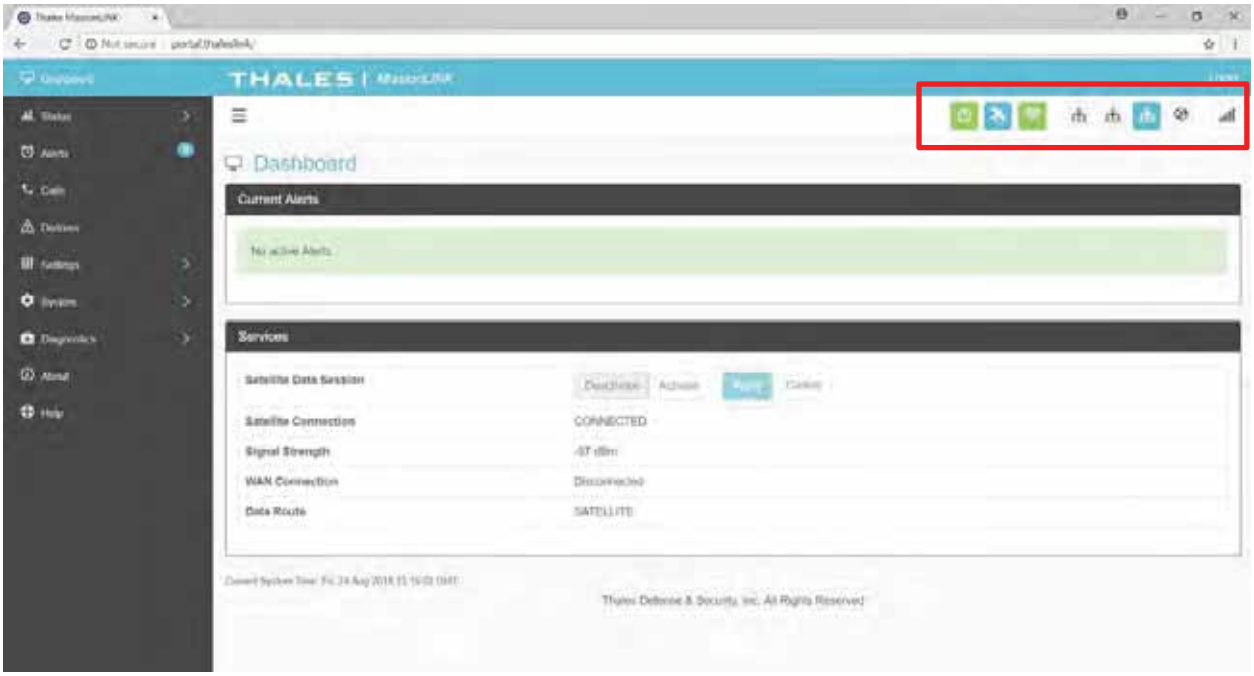

Figure 4-1 Quick Link Icons

NOTE

Status icons on the GUI may lag those on the TU, due to the GUI refreshing every 10 to 15 seconds.

Table 4-1 Quick Link Icons

ICON	Description
	System Status
	Satellite Status
	Wi-Fi Status
	LAN 1, 2, and 3 Status
	WAN Status
	Satellite Signal Strength

- System Status – The System Status icon provides a quick view of the state of the system. It mirrors the status of the System LED on the TU. Selecting the System Status icon brings up the additional information in Figure 4-2.
  - STATUS shows the current condition of the system.
  - UPTIME indicates how long the terminal has been in use.
  - The RESTART button allows an administrator to reboot the terminal.
  - Selecting VIEW ALERTS opens the ALERTS window and displays any Current Alerts.

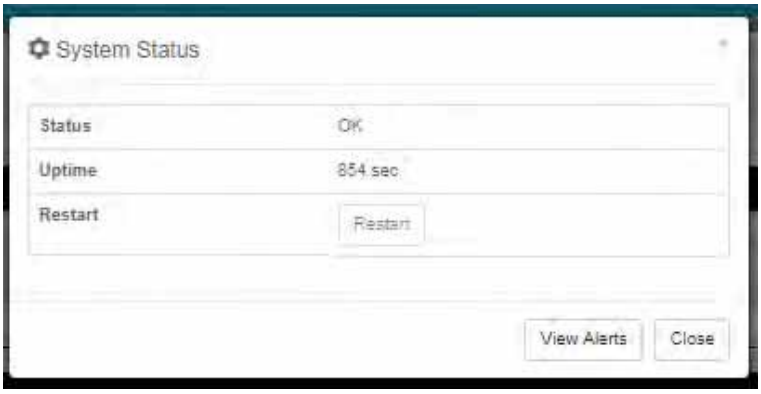

Figure 4-2 Quick Link – System Status

NOTE

If the system requires a RESTART, the operator can simply press RESTART to reboot the terminal. Once the system has rebooted, verify that you are connected to the Wi-Fi for the terminal. Once you are connected to the terminal, you can login to the GUI by reentering the user name and password.

- Satellite Status – The Satellite Status icon provides a quick view of the Satellite Status. It mirrors the status of the Satellite LED on the TU. Selecting the Satellite Status icon displays the information in Figure 4-3, showing "Connection Status", "Signal Strength" and the "Current Data Path". Selecting ACTIVATE / DEACTIVATE enables and disables data sessions. Changes will take effect once SAVE CHANGES is selected. Selecting VIEW STATUS will open the STATUS → SERVICES Window.

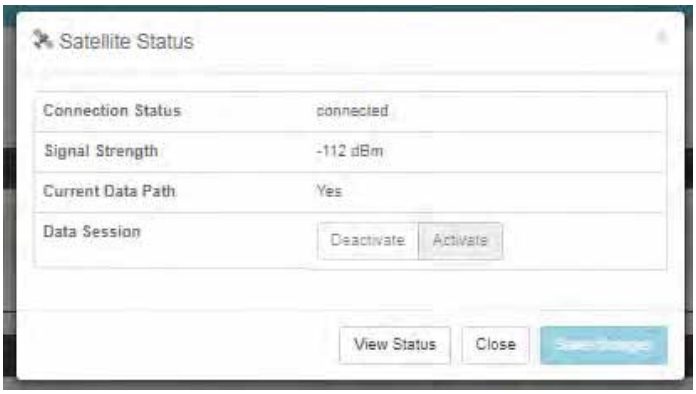

Figure 4-3 Quick Link – Satellite Status

- Wi-Fi Status – The Wi-Fi Status icon (Figure 4-4) provides a quick view of the Wi-Fi status. It mirrors the Wi-Fi LED on the TU. Selecting the Wi-Fi Status icon displays the CONNECTED USER COUNT (number of users connected to the ThalesLINK Wi-Fi) and allows an administrator to ENABLE / DISABLE the Wi-Fi connection. Changes will only take effect once SAVE CHANGES is selected.

NOTE

If connected to the terminal through a Wi-Fi connection, disabling the Wi-Fi causes loss of the Wi-Fi signal and removal from the wireless device's Wi-Fi menu. To regain use of the Wi-Fi, connect a computer via supplied Ethernet cable to the TU, open the Management Portal, select the Wi-Fi Status icon and select ENABLE.

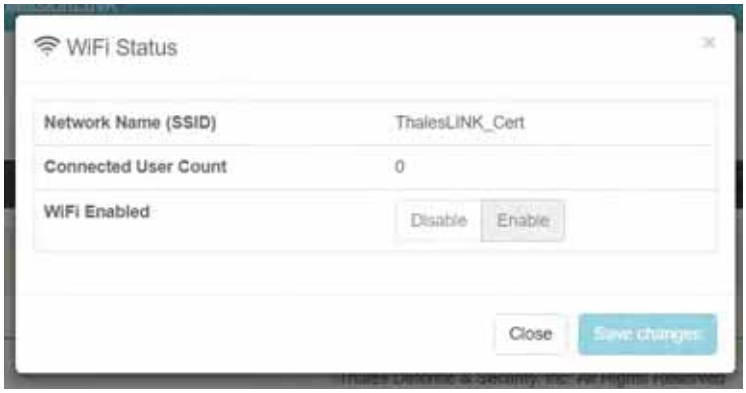

Figure 4-4 Quick Link – Wi-Fi Status

- LAN Status Icons – The LAN Status icons (LAN 1, LAN 2 and LAN 3) provide a quick view of each LAN's Status. Each LAN icon is highlighted in blue when a device is plugged into it. By selecting a LAN icon, the additional information in Figure 4-5 is shown, displaying the "Link Status" and allowing for ENABLE / DISABLE of the Power over Ethernet (PoE) for that LAN. Changes will only take effect once SAVE CHANGES is selected.

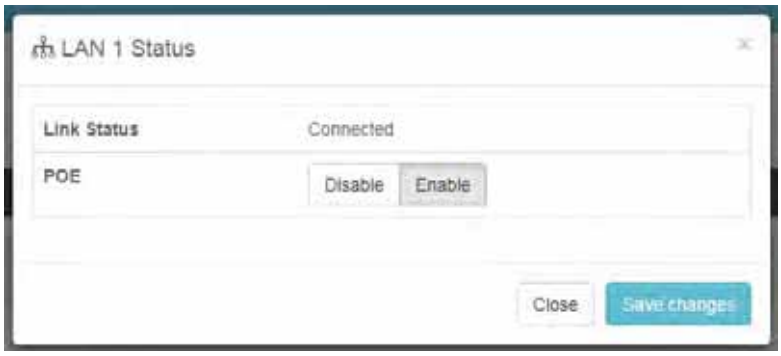

Figure 4-5 Quick Link – LAN 1 Status (LAN 2 and LAN 3 similar)

- WAN Status – The WAN Status icon provides a quick view of the current connection status of the WAN port. The WAN Status icon will be highlighted in blue when an external WAN device is plugged into it. By selecting the WAN icon, the additional information in Figure 4-6 is shown. The details provided on this screen are for information only and include WAN PORT STATE, INTERNET CONNECTION, and CURRENT DATA PATH.

Figure 4-6 Quick Link – WAN Status

- Signal Strength Icon – Displays the satellite signal strength as 5 vertical bars. More bars are highlighted as the signal strength rises.

Main Dashboard

When first accessing the Management Portal by typing in http://portal.thaleslink into a supported web browser, the Dashboard screen comes up by default. The Dashboard can also appear by selecting the top menu item highlighted in blue in Figure 4-7. From the Dashboard, you can see information relating to:

- Current Alerts
- Services

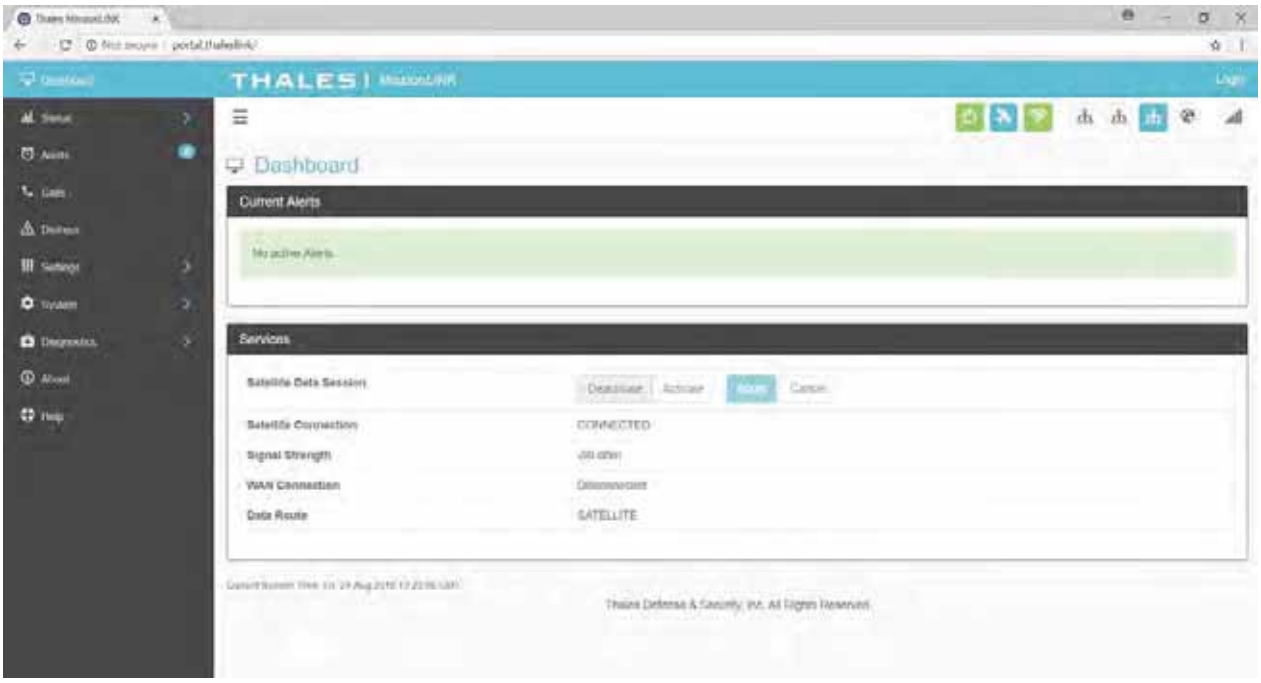

Figure 4-7 Thales MissionLINK™ Dashboard - Main Screen

Table 4-2 Thales MissionLINK™ Dashboard - Main Screen

Section	Value	Description
Current Alerts		
Alert Name	Text	Provides information relating all system issues summarized for easy reporting and debug/troubleshooting. For additional information, refer to Chapter 6 Troubleshooting
Services		
Satellite Data Connection	Deactivate or Activate	Allows the admin to activate or deactivate the Satellite Data Connection.
Satellite Connection	Disconnected, Connected, Access, Acquisition, and Idle	Displays the current status of the system when connected to a satellite.
Signal Strength	Indicates the strength of the signal	Displays the current satellite signal strength in dBm

Section	Value	Description
WAN Connection	Disconnected or Connected	Displays whether or not a WAN device is plugged into the TU and is connected to the internet
Data Route	Satellite or WAN	Displays the data route

Status

NOTE

The STATUS selection screens (CURRENT DEVICE, GPS, LAN, PHONES, SERVICES and SIM) provide information only, and cannot be edited.

Current Devices:

Displays all devices currently connected to the TU, both wired and via Wi-Fi. WI-FI CLIENTS list shows the MAC Address, Hostname and IP Address for the current Wi-Fi connected devices. ALLOCATED IPS list shows the MAC address, Hostname and IP Address for all devices that have recently been connected to the TU.

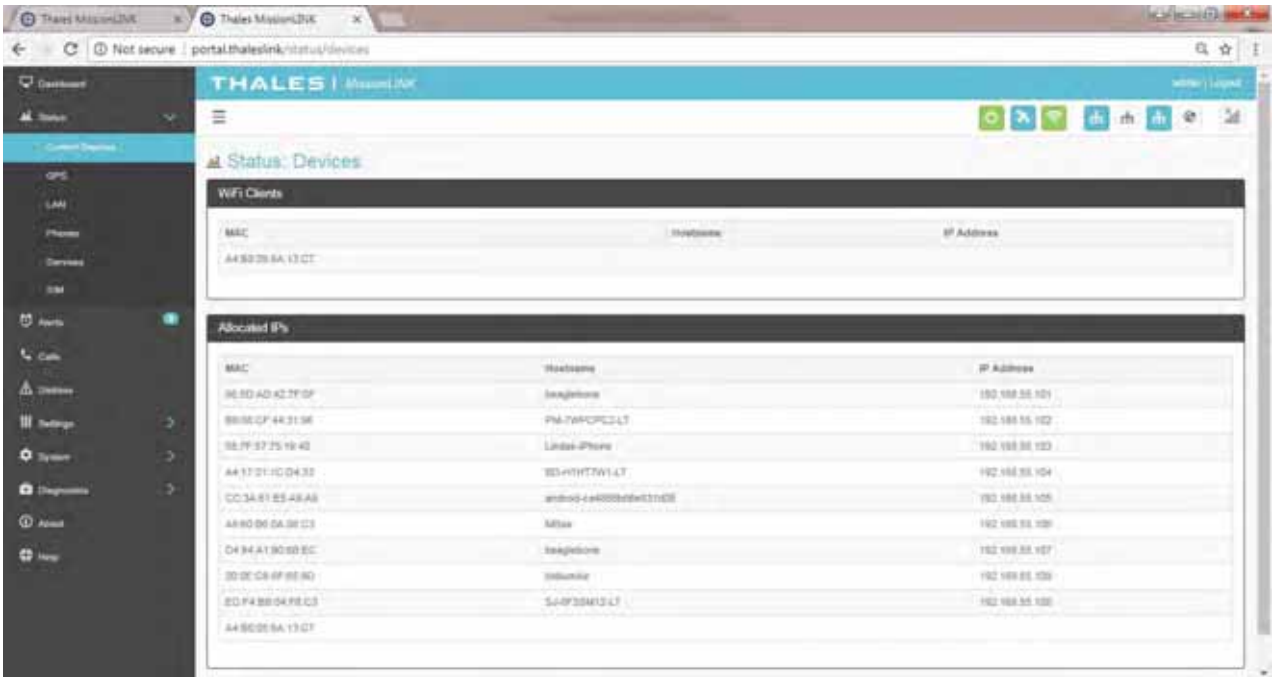

Figure 4-8 Status → Current Devices Screen

GPS

The GPS page, provides detailed GPS information as shown in Figure 4-9.

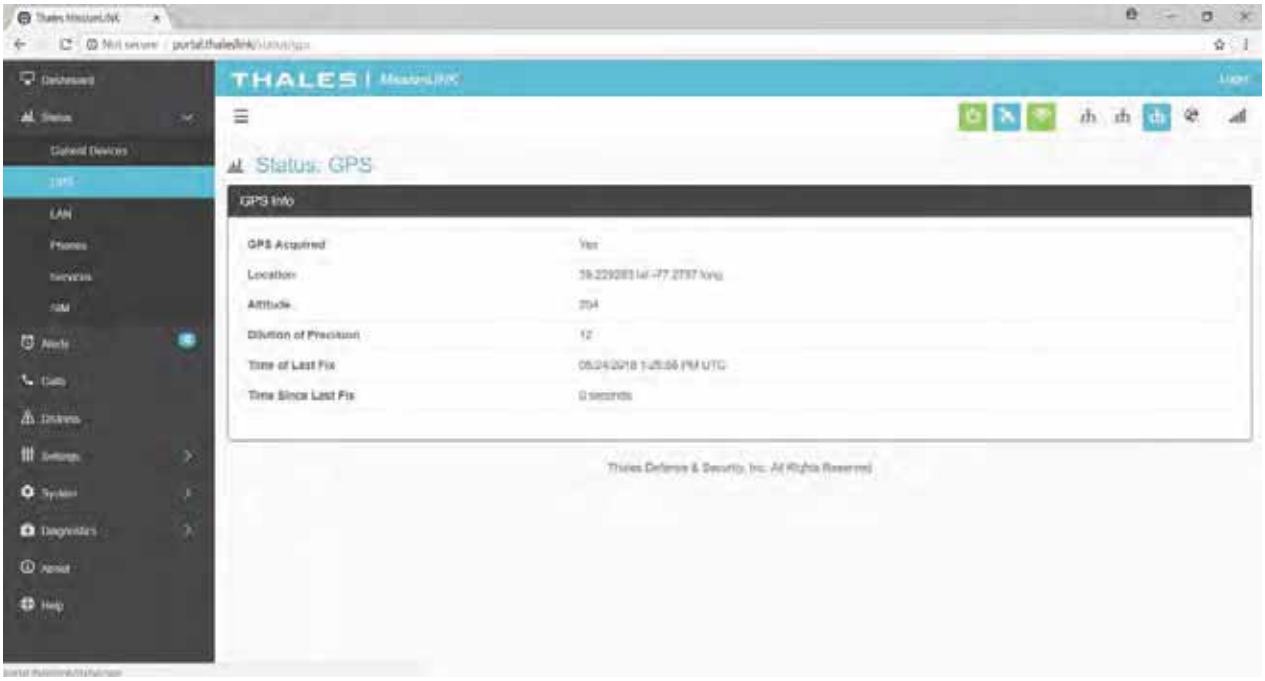

Figure 4-9 Status → GPS Screen

LAN

The LAN page displays the connection status of the built-in Wi-Fi access point and the LAN ports as shown in Figure 4-10.

Figure 4-10 Status → LAN Screen

Phones

The Phone page provides a list of the registered phones that are connected to the system, including the extension that was assigned as shown in Figure 4-11.

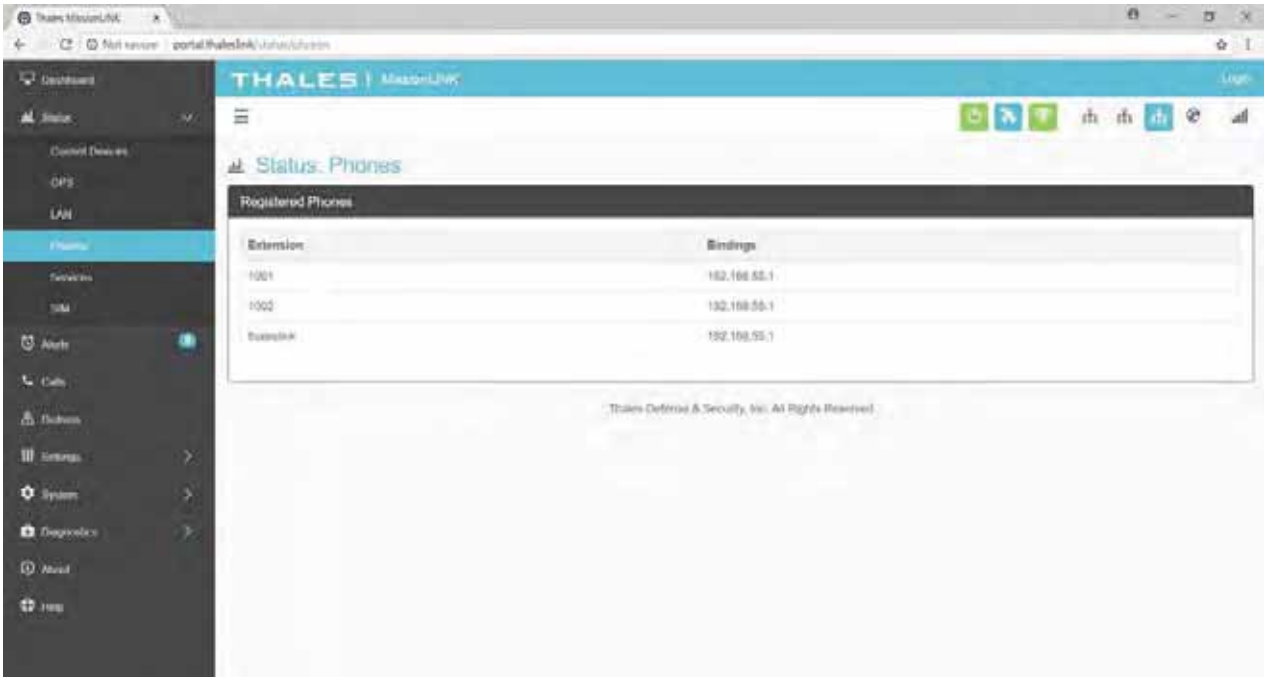

Figure 4-11 Status → PHONES Screen

Services

The Services page provides the status of Satellite and WAN networks, and the current data route as shown in Figure 4-12.

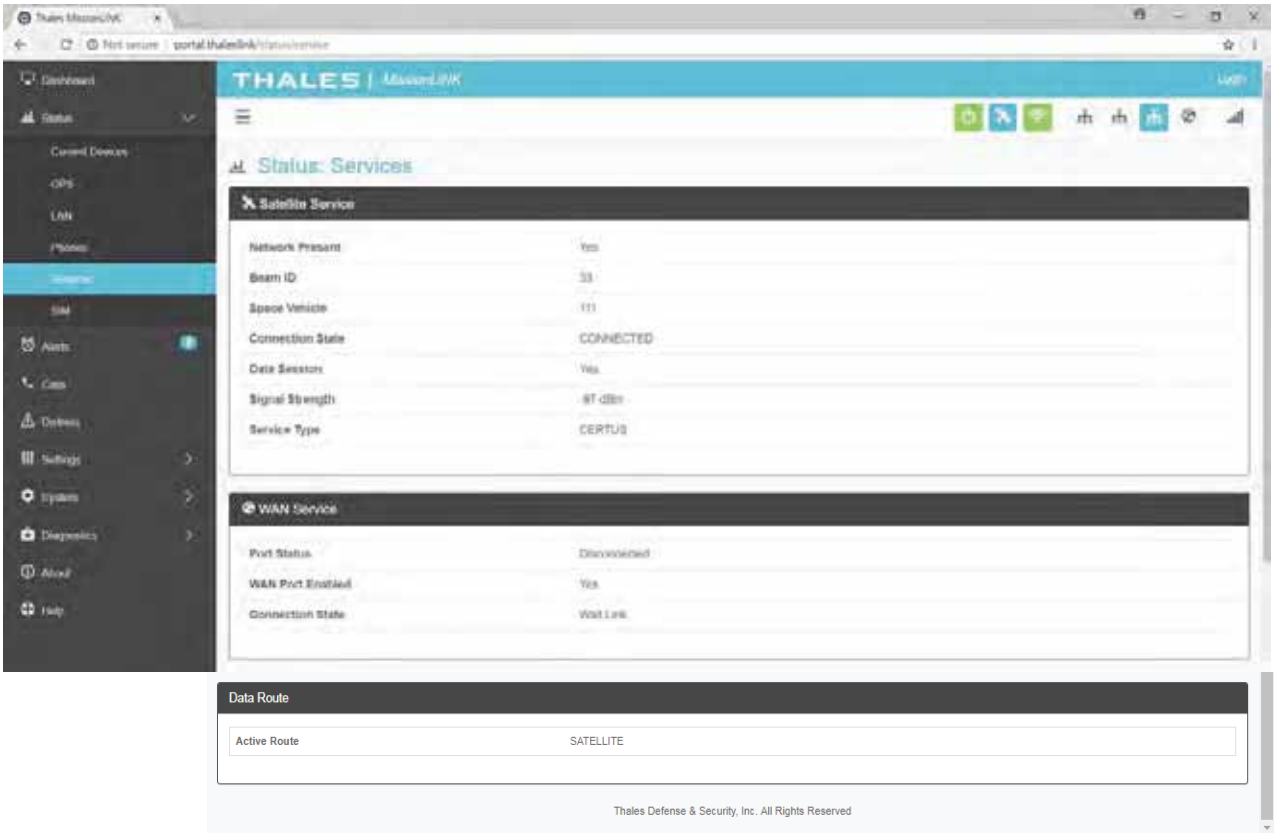

Figure 4-12 Status → SERVICES Screen

SIM

The SIM page (Figure 4-13) provides the following information:

- SIM Info – Status of the SIM card, and its Unique IMSI ID number. The max data rate shows the Certus™ service level that the SIM card is provisioned to.
- Voice Lines – This section lists the dedicated Iridium voice lines (up to three), what type they are and what their MSISDN is.

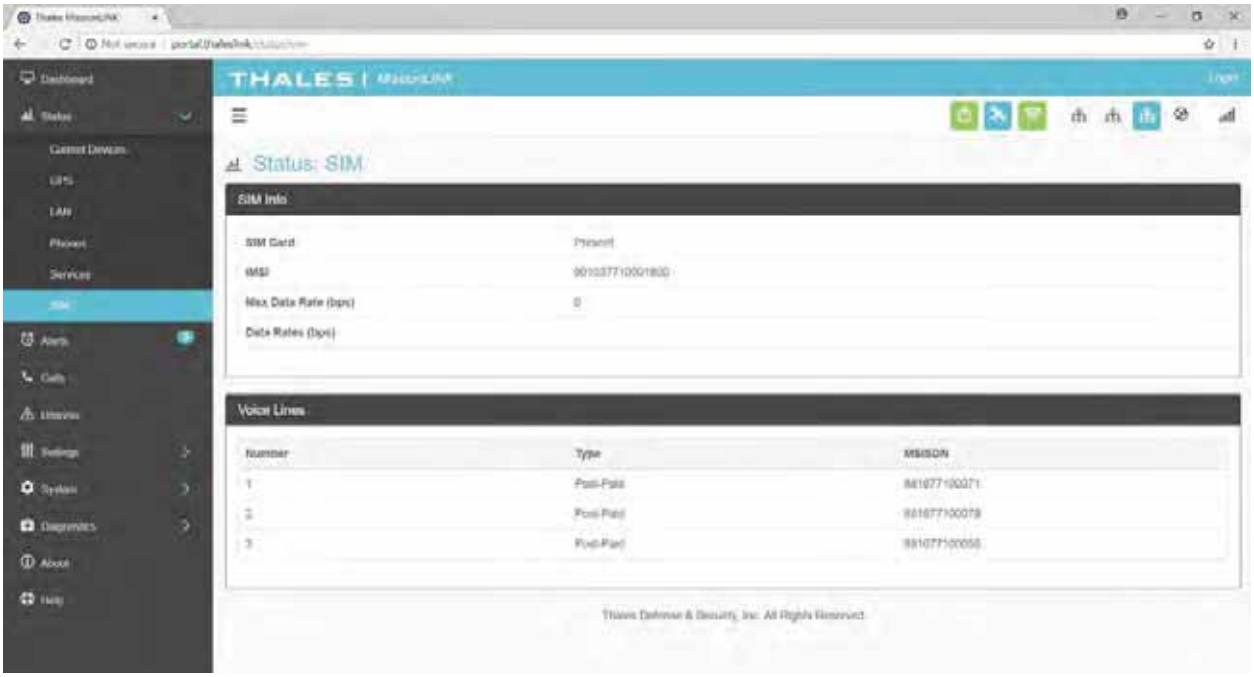

Figure 4-13 Status → SIM Screen

Alerts

The ALERTS screen displays a list of active Alerts from the system. If no alerts exist, the alert screen will indicate that there are no active alerts. (Figure 4-15)

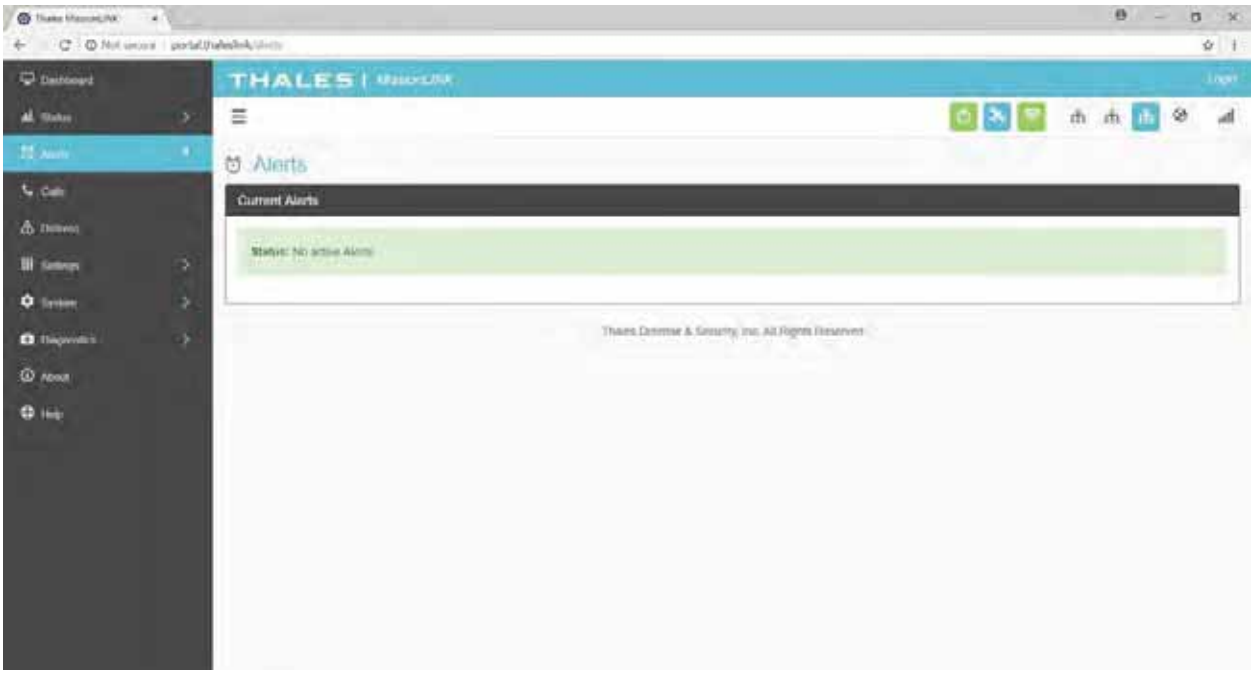

Figure 4-14 ALERTS Screen (Example Shown with No Active Alerts)

Alerts may be generated from a Power-On Self-Test (POST) or during normal operation of the system. (Figure 4-15) The alerts indicate that something may be wrong with the system or network. The alerts will clear if they are no longer affecting the system operation. (When cleared, the SYSTEM STATUS icon will turn GREEN.)

Figure 4-15 ALERTS Screen (Example Shown with Active Alerts)

NOTE

For additional information, refer to Chapter 6 Troubleshooting.

Calls

Selecting the Calls menu item (Figure 4-16) displays the call logs for active and past calls.

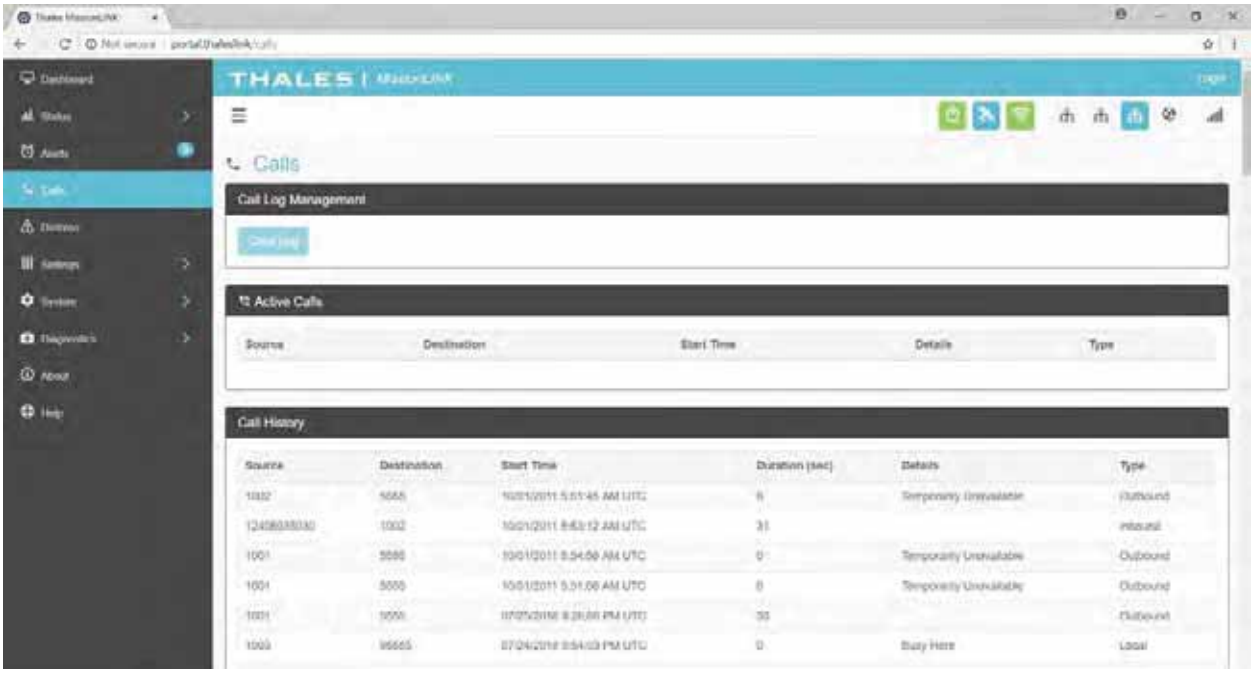

Figure 4-16 Call Log Screen

Under CALL LOG MANAGEMENT (Figure 4-17), the admin can CLEAR the call log by selecting CLEAR LOG and then confirming by selecting YES, CLEAR LOG.

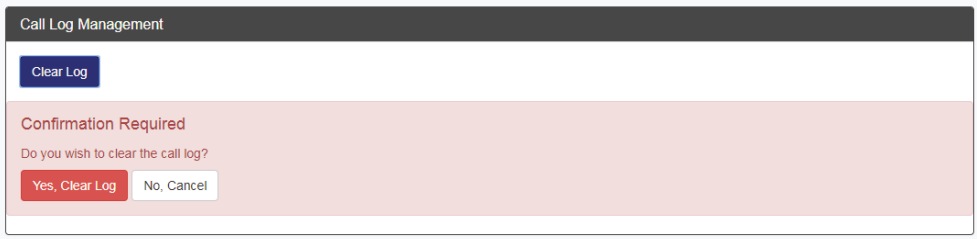

Figure 4-17 Call Log Management - CLEAR Call Log

NOTE

CALL HISTORY displays the last 100 calls that were made.

Distress

NOTE

Distress Messages can only be configured by the administrator. If the user is not logged in as ADMIN and selects MANAGE DISTRESS, the user will see icon, indicating this function is not available.

The Distress Message (Figure 4-18) menu item allows for enabling and sending a distress email message.

Selecting MANAGE DISTRESS will open the SETTING → DISTRESS SIGNAL screen (Figure 4-22). From here, set up the Distress Message by selecting Email from the drop down box. Once the required email information has been entered, including the message to be sent, select APPLY. For additional information, refer to SETTING → DISTRESS SIGNAL.

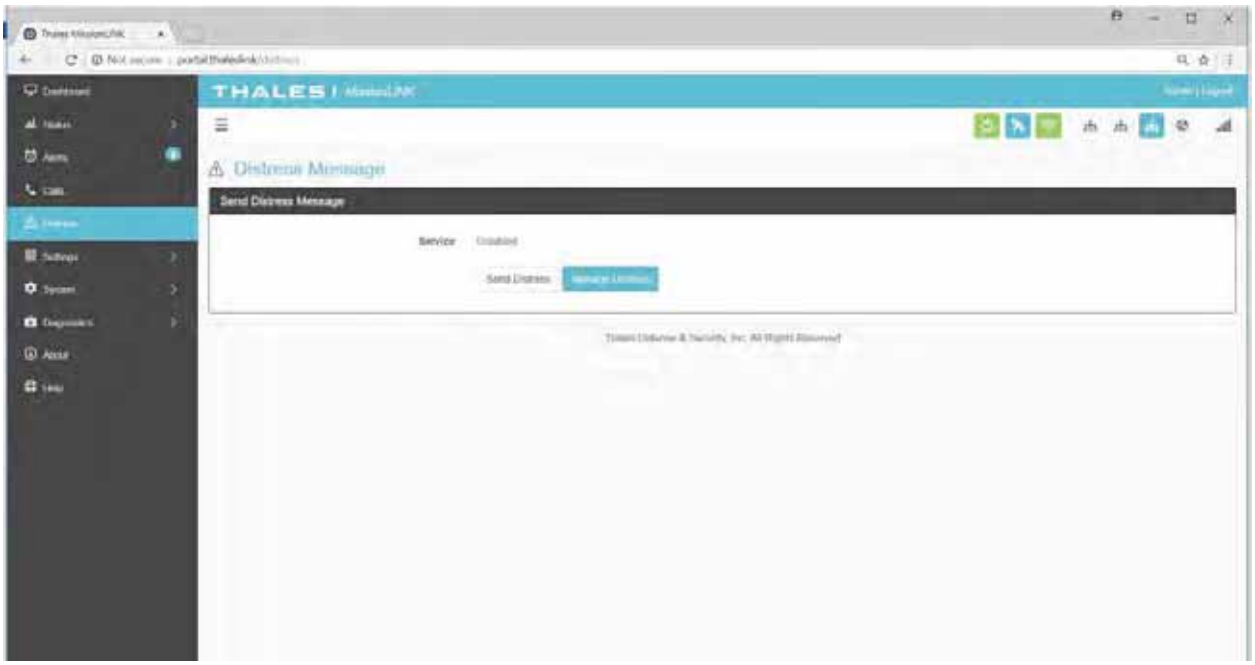

Figure 4-18 DISTRESS (Disabled View)

Figure 4-19 DISTRESS (Enabled View)

Sending a DISTRESS MESSAGE:

To send a DISTRESS MESSAGE, press SEND DISTRESS. A pop-up screen will appear asking you to confirm that you want the message to be sent. Select YES, SEND DISTRESS to send or NO CANCEL to abort the message.

Figure 4-20 Confirmation Required – Send a Distress Message

NOTE

No external indication is given when distress is activated. This discretion is for user safety in an emergency situation. The only indication of distress will be in Management Portal under Distress menu item.

NOTE

A distress phone call can be made by using the optional Thales SureLINK IP Handset. Configuration of the phone number to be called, as well as, the activation and cancellation of the call takes place on the handset itself. Nothing is set up for the phone call through the Management Portal.

Settings

The Settings tab of the portal is the most important section for customizing user configurations and feature settings. It is also advised that only experienced personnel change these settings as they may adversely affect functionality if not set correctly. These settings are under password control to prevent unauthorized personnel from making changes to the system.

General

From the General page, change passwords and enable (or disable) external API access, as shown in Figure 4-21 and Table 4-3.

There are four access levels to the system. Three of them are under password control. The passwords are managed in the Change Password section:

- GUEST: User only account, no password, read only access.
- WAN USER: Password capability, read only access to some API data remotely via WAN port or over the Iridium network.
- WAN ADMIN: Password capability, FULL access to all data and settings remotely via WAN port or over the Iridium network.
- ADMIN: Password capability, FULL access through the Thales Management Portal via local LAN (or wireless) connection.

NOTE

It is always recommended that passwords be changed from defaults for added protection and security.

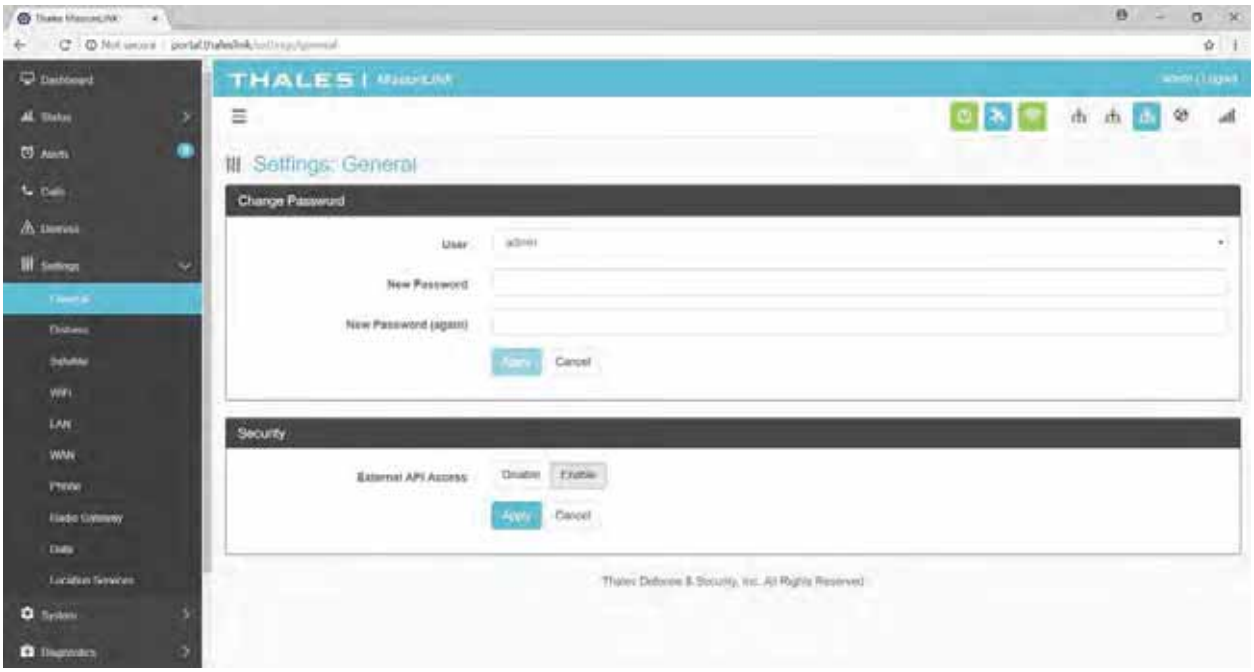

Figure 4-21 Settings → General Screen

Table 4-3 Settings → General Settings

Section	Parameters
Change Password	• Select User, Currently there are 3 choices (Admin, WAN_Admin, and WAN_User) • Enter NEW Password and confirm the new password (Note: maximum length of password is 64 characters, any combination of letters, numbers, and special characters.)
Security	**Enable** / Disable the external API Access. (**Enable** is the default setting)

Distress

NOTE

Distress messages can only be configured by the administrator. If the user is not logged in as ADMIN and selects MANAGE DISTRESS, the user will see this icon, indicating this function is not available. Login in as the ADMIN to continue.

On the Distress page, the admin can set up a Distress message. The Management Portal configuration is restricted to a distress email only. Select EMAIL from the pull down list (Figure 4-22). Enter the required information shown in Table 4-4 (example data shown in Figure 4-23) along with the message to be sent and select APPLY. NOTE: Selecting APPLY does not send a distress message. It saves the settings and message. Sending the distress message is done through the DISTRESS menu item.

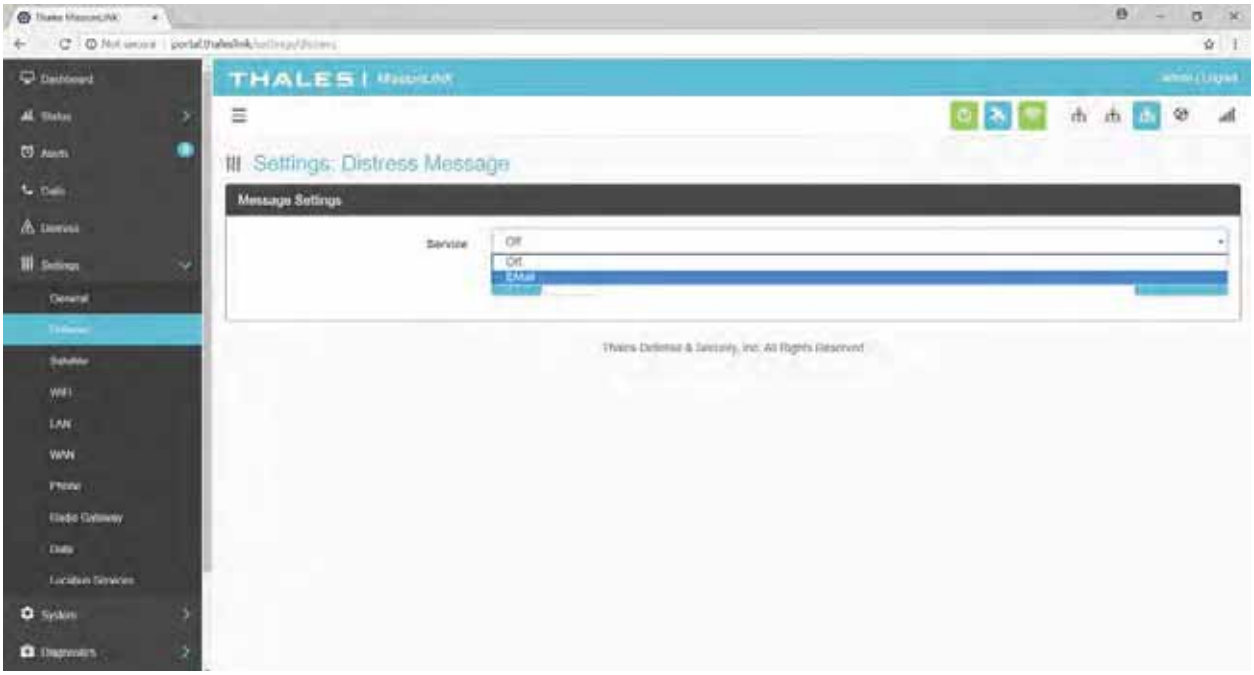

Figure 4-22 Settings → Distress (Initial Screen)

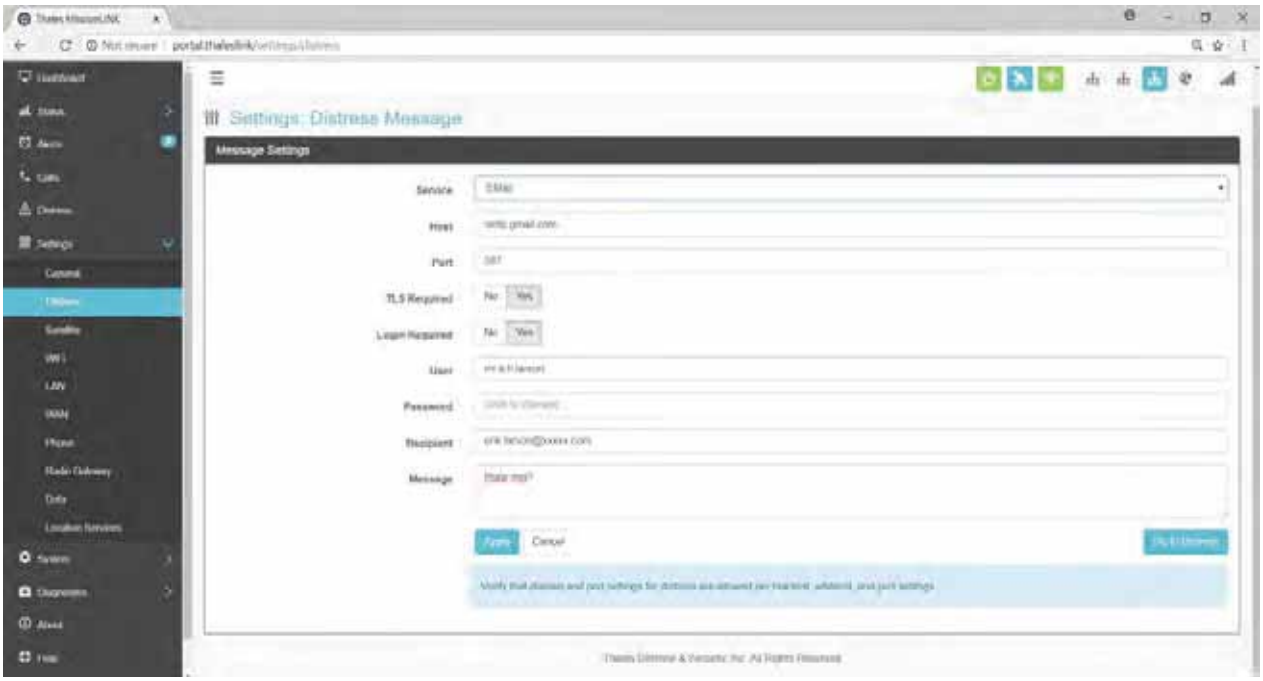

Figure 4-23 Settings → Distress

Table 4-4 Settings → Distress

Section	Parameters
Service	Select either Email or **OFF** (**OFF** is the default settings)
Host	Enter the host name (example: smtp.gmail.com)
Port	Enter the port number (example: 587)
TLS Required	Select either **YES** or NO (Default setting is **YES**)
Login Required	Select either **YES** or NO (Default setting is **YES**)
User	Enter the user email address
Password	Enter the user name password
Recipient	Enter the recipient's email address
Message	Enter the Distress message to be sent.

Satellite

The Satellite page, shown in Figure 4-24, allows configuration of the data service. The configuration includes configuring whitelists and blacklists for domains, configuring port blocking and port whitelists, setting data limits for information purposes, and enabling and disabling network compression.

When adding a Domain to a Blacklist / Whitelist it is always necessary to first select the + button BEFORE selecting the Apply button. After selecting the + button, the domain can always be edited or deleted using the buttons BEFORE selecting the Apply button to save. If the Apply button is not selected before leaving the Satellite menu item, the data will not be saved.

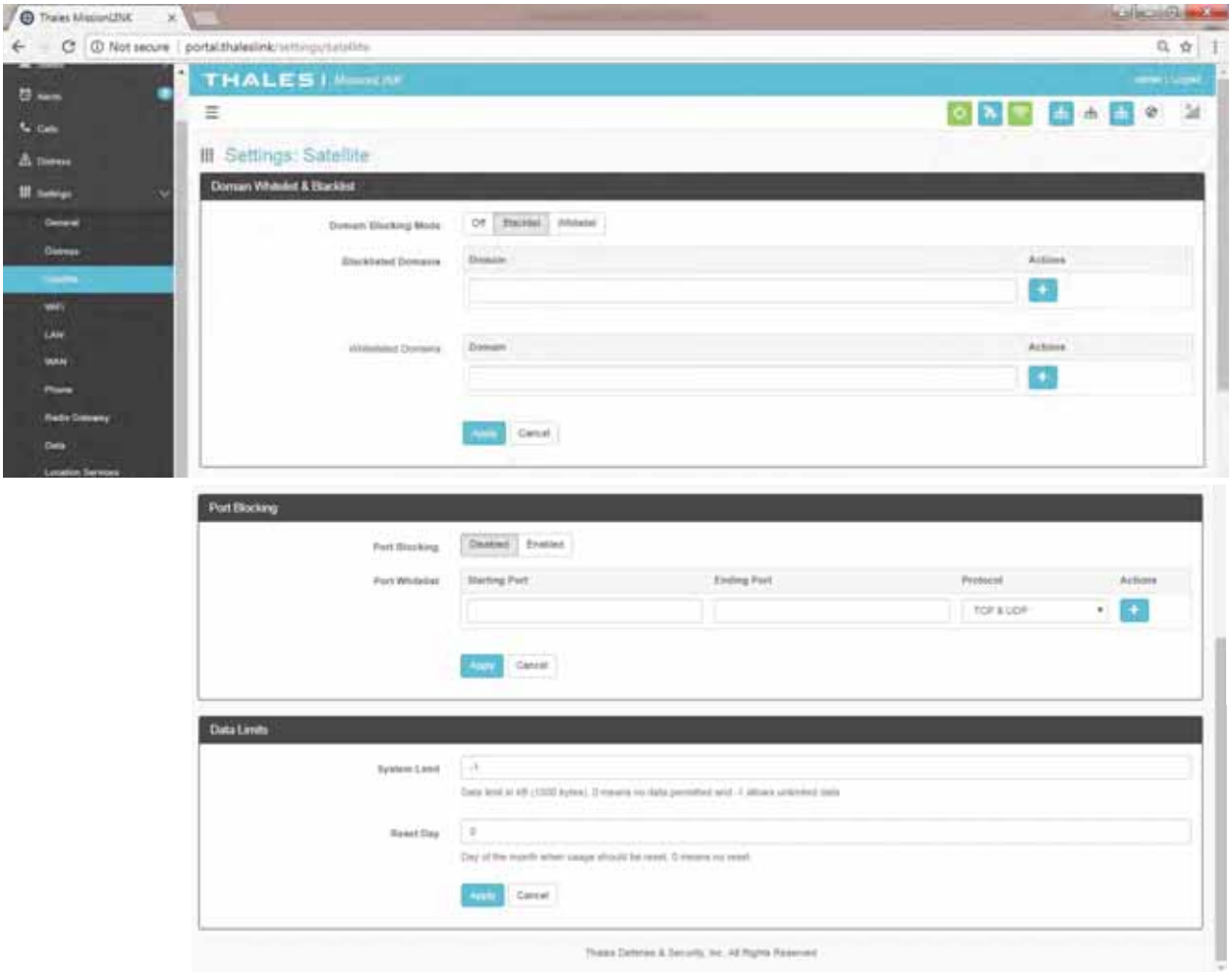

Figure 4-24 Settings → Satellite Screen

Table 4-5 Settings → Satellite

Section	Value
Domain Whitelist & BlackList	
Domain Blocking Mode	**OFF** / Blacklist / Whitelist (**OFF** is the default setting)
Blacklisting	Enabling allows ALL websites EXCEPT those listed (very little restriction)
Whitelisting	Enabling blocks ALL websites EXCEPT those listed (the most restriction)
Port Blocking	
Port Blocking	**Disabled** / Enabled (**Disabled** is the default setting)
Port Whitelist	Enter the Starting Port and Ending Port number.
	Select the applicable protocol (**TCP & UDP** or TCP only or UDP only) **(TCP & UDP** is the default setting)
Data Limits	
System Limit	Data limit in kB (1000 bytes), 0 means no data and -1 means unlimited data. Setting data limits is for information purposes only. No data restrictions will occur by setting limits.
Reset Day	Enter the day of the month when usage should be reset, 0 means no reset

NOTE

Setting data limits is for information purposes only. Data figures are an approximation of data usage. Actual data usage should be provided by the service provider. Data will not be restricted if the limit is reached or exceeded. An alert will be generated saying that the limit has been reached.

Wi-Fi

The Wi-Fi page shown in Figure 4-25 allows setup of the Wi-Fi service.

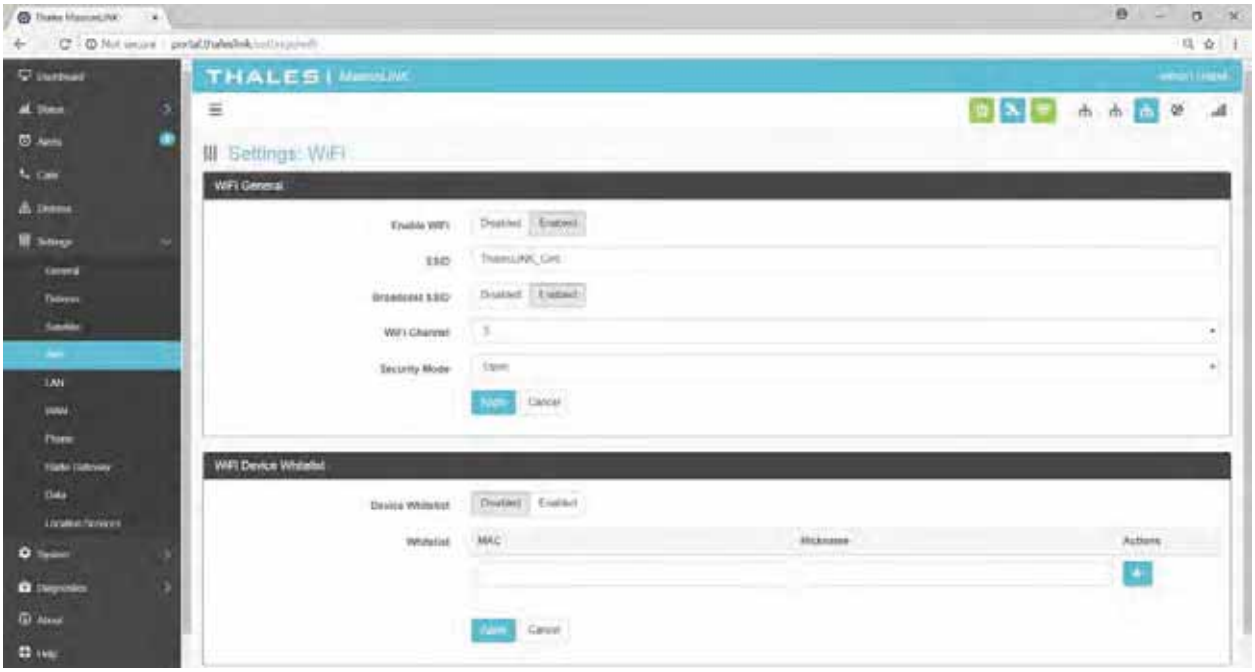

Figure 4-25 Settings → Wi-Fi Screen

Table 4-6 Settings → Wi-Fi

Section	Value
Wi-Fi General	
Enable Wi-Fi	Disabled / **Enabled** (**Enabled** is the default setting)
SSID	Enter the name of the SSID. ThalesLINK is default.
Broadcast SSID	Disabled / **Enabled** (**Enabled** is the default setting)
Wi-Fi Channel	Set the Wi-Fi Channel 1 – 11
Security Mode	Set the security mode for the channel – **OPEN** or WPA2. **OPEN** is default and does not require a Security Key (password).
Security Key	When WPA2 is selected as the security mode, a security key must be entered. The password must be at least 8 characters in length and can be any combination of characters, numbers, etc. Once enabled, any device accessing the ThalesLINK (or new SSID name) Wi-Fi will have to enter the password.
Wi-Fi Device Whitelist	
Device Whitelist	**Disabled** / Enabled (**Disabled** is the default setting)
Whitelist	This allows specific devices to access the system's Wi-Fi. If Enabled, only the devices entered in the Whitelist are allowed on the Wi-Fi network. This is done by entering the MAC address of the device (example: 01:23:45:67:89:ab). All others are prevented from accessing it. See below note for finding a device's MAC address
	Assign a Nickname to the MAC Address

NOTE

Once the initial Wi-Fi WPA2 Security Key is entered, it can be changed at any time by just overwriting the current Security Key in the SETTINGS → Wi-Fi →WIRELESS GENERAL area.

NOTE

To identify a device's MAC address for whitelisting, you should be able to find it in your device's Settings menu. Sometimes it is called the Wi-Fi Address. If it can't be found, a simple way is that while the Device Whitelist is DISABLED, connect the device to be whitelisted to the Wi-Fi system by selecting the correct Wi-Fi Network (SSID) and typing in the Security Code if WPA2 is enabled. Once connected, go to STATUS → CURRENT DEVICES menu item and find the device Hostname in the list of Allocated IPs. The MAC address will be in the left column.

LAN

NOTE

This is an ADMIN functional only. If the user sees this icon, login as the ADMIN to continue. Otherwise this is a view only screen.

The LAN page, shown in Figure 4-26, allows PoE to be enabled or disabled on the three LAN ports and DHCP to be enabled and configured or disabled. Each LAN port PoE is Class 2 and capable of providing up to 6.5 watts of power to the connected device. See Table 4-7 for more information on the information that is entered.

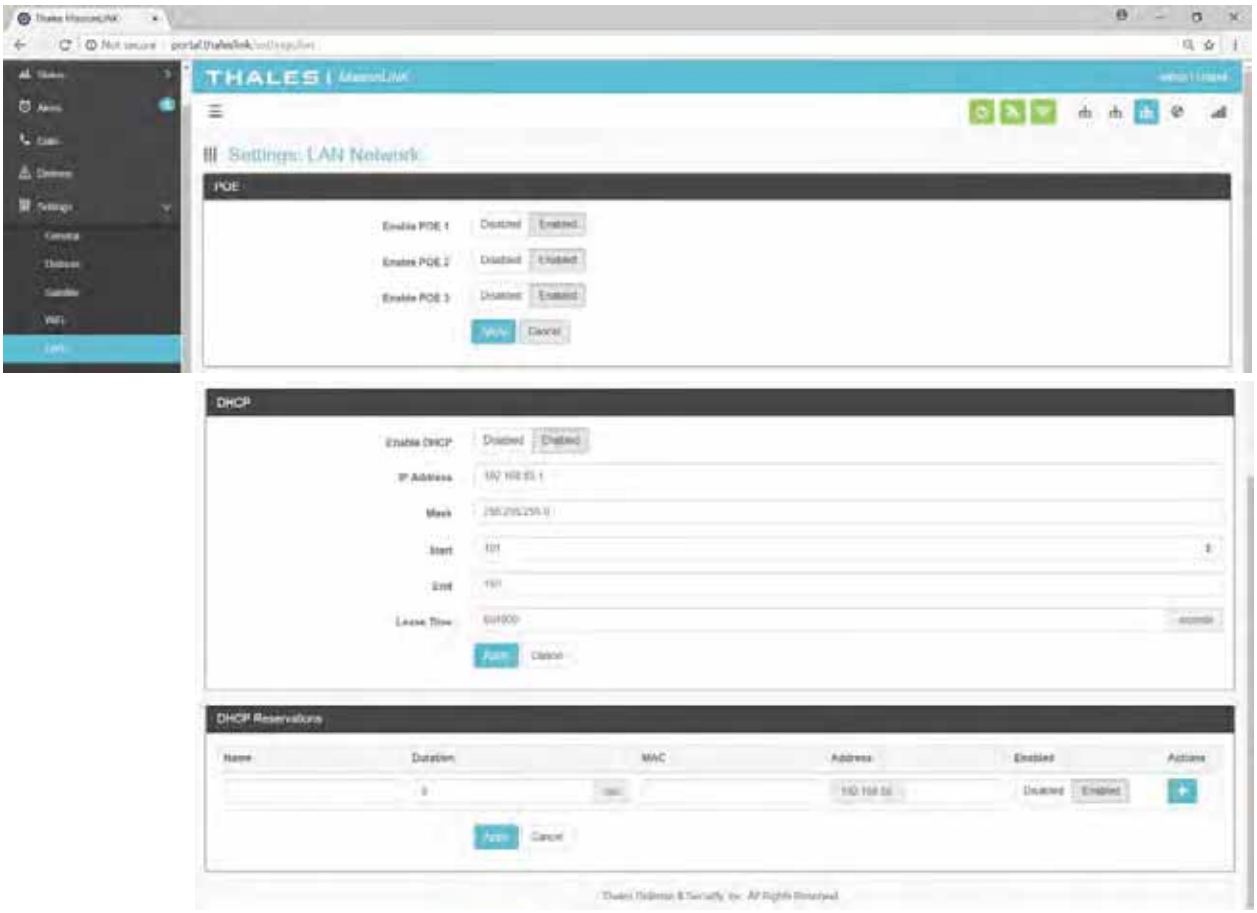

Figure 4-26 Settings → LAN Screen

Table 4-7 Settings → LAN

Section	Value
PoE	
Enable PoE 1	Disabled / **Enabled** (**Enabled** is the default setting)
Enable PoE 2	Disabled / **Enabled** (**Enabled** is the default setting)
Enable PoE 3	Disabled / **Enabled** (**Enabled** is the default setting)
DHCP	
Enable DHCP	Disabled / **Enabled** (**Enabled** is the default setting)
IP Address	Enter the IP Address
Mask	Enter the Mask Number
Start	Enter the starting value for the octet
End	Enter the ending value for the octet
Lease Time	Enter the Lease Time being allotted (in seconds)
DHCP Reservations	
Name	Enter the name of the DHCP Reservation
Duration	Enter the length of time (in seconds)
MAC	Enter the MAC address
Address	Enter the last digits of the IP Address
Enabled/Disabled	Disabled / **Enabled** (Enabled is the default setting)

WAN

NOTE

This is an ADMIN function only. If the user sees this icon, login as the ADMIN to continue. Otherwise this is a view only screen.

The WAN page, shown in Figure 4-26, allows configuration of the WAN data service. The settings include configuring whitelists and blacklists for domains, configuring port blocking and port whitelists.

When adding a Domain to a Blacklist/Whitelist it is always necessary to first select the + button BEFORE selecting the Apply button. After selecting the + button, the domain can always be edited or deleted using the buttons BEFORE selecting the Apply button to save. If the Apply button is not selected before leaving the WAN menu item, the data will not be saved.

NOTE

Caches local to the computer connected to the ThalesLINK terminal will continue to allow data access to blacklisted domains until their DNS cache entry expires. To help this take effect sooner, clear the local DNS and web browser caches after switching between the WAN and Satellite connections or adding new entries to the blacklist.

Additional details about these settings are described in Table 4-8.

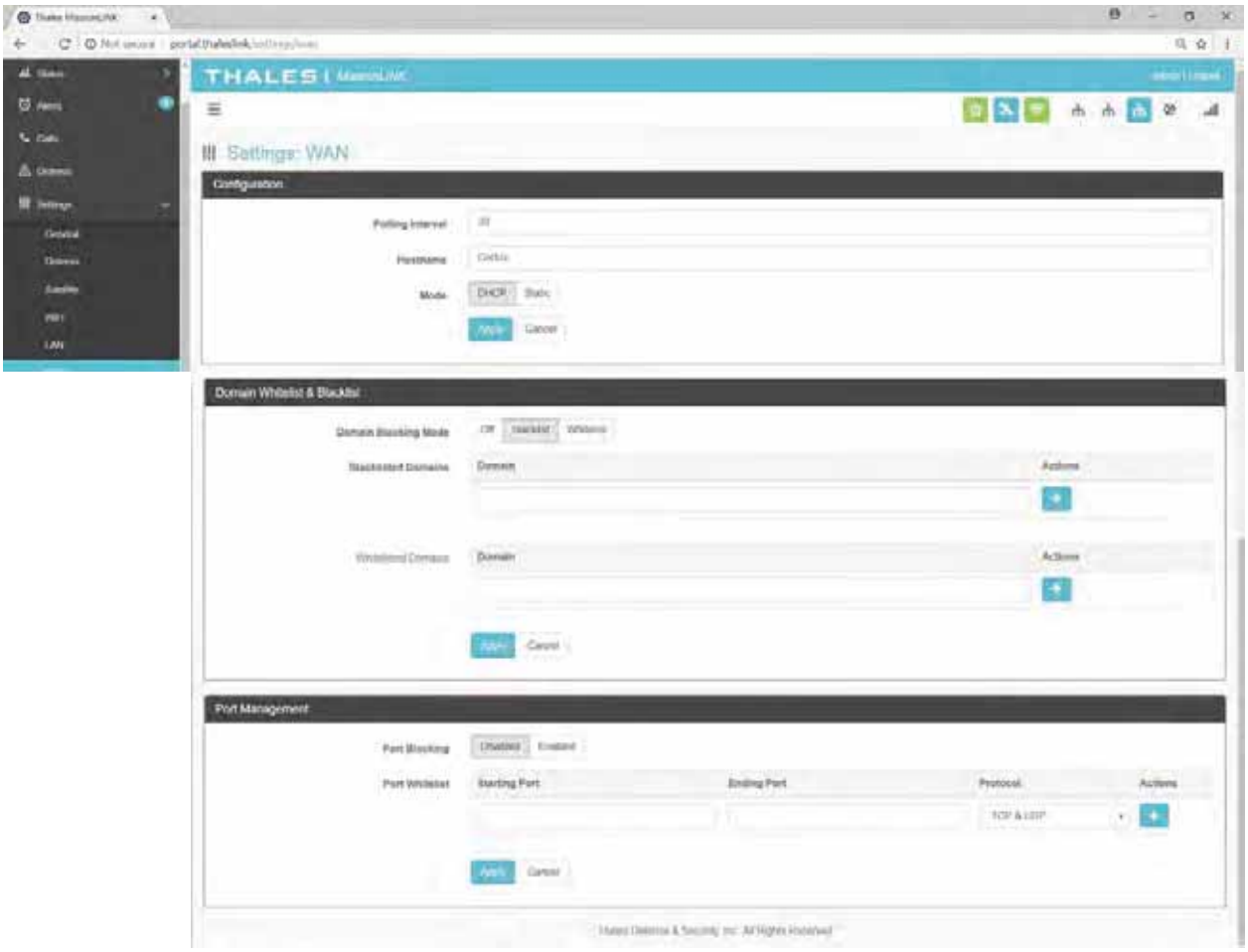

Figure 4-27 Settings → WAN Screen

Table 4-8 Settings → WAN

Section	Value
Configuration	
Polling Intervals	Sets the length of polling intervals, 30 is the default setting
Hostname	Lists the Hostname. Certus™ is the default setting.
Mode	Select **DHCP** or Static. (**DHCP** is the default setting.)
Domain Whitelist & Black List	
Domain Blocking Mode	**OFF** / Blacklist / Whitelist (**OFF** is the default setting)
Blacklisting	Enabling allows ALL websites EXCEPT those listed (very little restriction)
Whitelisting	Enabling blocks ALL websites EXCEPT those listed (the most restriction)

Section	Value
Port Management	
Port Blocking	**Disabled** / Enabled (**Disabled** is the default setting)
Port Whitelist	Enter the Starting Port and Ending Port number.
	Select the applicable protocol (**TCP & UDP** or TCP only or UDP only) (**TCP & UDP** is the default setting)

Phone

NOTE This is an ADMIN functional only. If the user sees this icon, login as the ADMIN to continue. Otherwise this is a view only screen.

The Phone Settings page, shown in Figure 4-28, allows configuration of phone extensions and mapping of those extensions to the outbound Iridium phone lines as well as which extension rings for each inbound Iridium line. There are up to three (3) high quality Iridium phone lines. Each extension can be mapped to one, two, three or none of the Iridium phone lines for outbound calls by checking the box next to the corresponding Line in the Outbound Lines column. By selecting the icon, a password can be entered for each extension if desired. An extension can be deleted by selecting the icon. All changes are saved only after the APPLY button is selected.

Each of the three Iridium phone lines (Inbound) can be mapped to ring only one extension. The extension is selected from the pull-down menu. Configuration of analog devices such as the POTS phones and the Radio Gateway are configured on this page. Each of these devices can be mapped to an extension.

Finally, in the Phone Configuration area, call logs can be enabled or disabled and the POTS phone impedance can be selected for optimal performance.

When adding an extension, it is always necessary to first select the button BEFORE selecting the Apply button. Several extensions can be added by selecting the button multiple times, and then selecting the Apply button. After selecting the button, the extension can always be edited or deleted selecting the buttons BEFORE selecting the Apply button to save. If the Apply button is not selected before leaving the Phone menu item, the data will not be saved. Table 4-9 describes the settings in more detail.

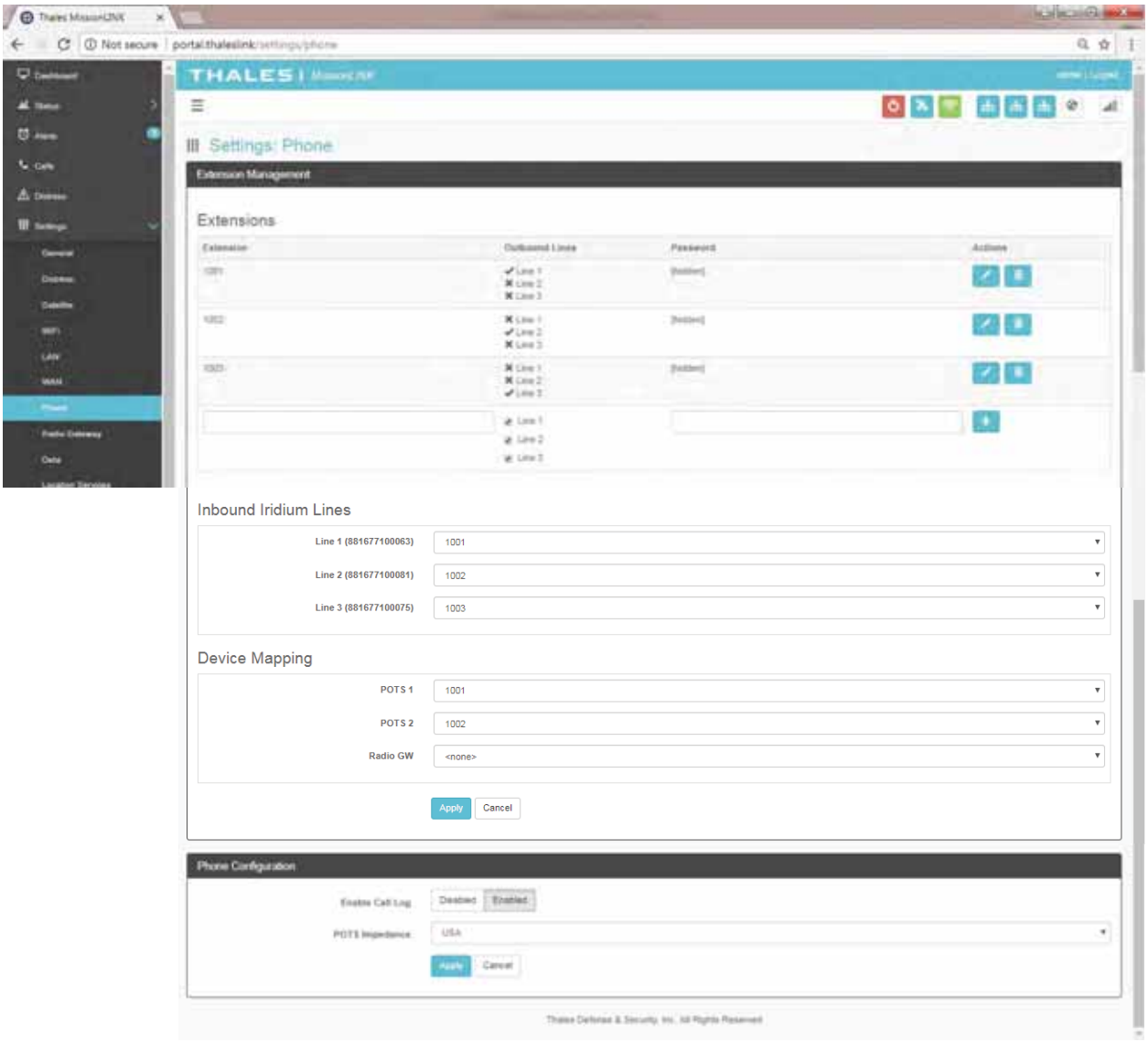

Figure 4-28 Settings → Phone Screen

Table 4-9 Settings → Phone

Section	Value
Extension Mapping	
1-8	Additional custom extensions of varying lengths can be added. Extension numbers must start with a digit 1-8.
1001	Default extensions that receives and makes calls on the first Iridium line. Connected to the first POTS line.
1002	Default extensions that receives and makes calls on the second Iridium line. Connected to the second POTS line.
1003	Default extensions that receives and makes calls on the third Iridium line.

Section	Value
Inbound Iridium Lines	
1-8	Maps each inbound Iridium line to a single extension previously set up.
1001 - 1003	Default extensions 1001, 1002 and 1003 are mapped to Line 1, Line 2 and Line 3 respectively
Device Mapping	
POTS	Assigns extensions to POTS 1 and POTS 2 phones (Note: 2 POTS phones can be attached with a splitter to the POTS connector.
Radio GW	Assigns extension to the Radio Gateway
Phone Configuration	
Enable Call Log	Disabled / **Enabled** (**Enabled** is the default setting). Call logs display Active Calls and Call History when the Calls menu item is selected.
POTS Impedance	Sets the dynamic output of the POTS system to match regional Phone types (**USA**, Australia, Europe, UK, USA-Loaded) (**USA** is the default setting)

Radio Gateway

NOTE

This is an ADMIN function only. If the user sees this  icon, login as the ADMIN to continue. Otherwise this is a view only screen.

Figure 4-29 Settings → Radio Gateway

Table 4-10 Settings → Radio Gateway

Section	Value
Configuration	
Transmit VoIP Gateway	
Mode	DTMF or Voice Activated Dialing (**VAD**) (**VAD** is the default setting). This configuration determines how the telephony user of the radio gateway PTTs in order to speak on the radio network. VAD means the telephone user simply needs to speak in order to transmit. DTMF requires the telephone user to press a digit to begin transmitting and a digit to stop transmitting.
DTMF: ON Digit	Valid DTMF digits range from "0" thru "9", "*", "#". (The default digit is "*".) Dialing the selected digit will cause the radio to start transmitting
DTMF: OFF Digit	Valid DTMF digits range from "0" thru "9", "*", "#". (The default digit is "#".) Dialing the selected digit will cause the radio to stop transmitting.
VAD: Voice Hang Time	VAD Voice Hang Time determines how long the telephone user's voice transmission will continue after the voice is no longer present. Acceptable value range is 0 to 5000 msec. (Default setting is **500** msec).
Transmit Audio	
Delay	Sets the delay being applied to the transmit audio (when VoIP is VAD). Acceptable values range from 0 to 500 seconds. (Default setting is **300** msec).
Analog Gain	Sets the gain (in dB) applied to the hardware in the radio to transmit audio. Acceptable values -20 to 20 dB. (Default setting is **-20** dB).
Digital Gain	Sets the gain (in dB) applied to the software in the radio to transmit audio. Acceptable values -40 to 20 dB. (Default setting is **0** dB).
VAD: Threshold	For VAD mode, controls the sensitivity of voice detection on outgoing telephone user's audio. Acceptable values -40 to 20 dBFS. (Default setting is **-35** dBFS)
Transmit / Radio PTT	
Active Level	**Enabled** / Disabled, (**Enabled** is the default setting). This setting should be adjusted to match the connected radio, depending on if the connected radio has external PTT as ENABLED or DISABLED in order to transmit.
Timeout	The maximum amount of time, in seconds, that PTT to the radio will be continuously asserted. After this timeout expires, the radio will be de-keyed until the telephony user causes it to begin transmitting again.
Receive Activity	
Mode	The mechanism used to detect receive activity from the radio (a.k.a., channel busy or COR)—either via the presence of voice or the assertion of the hardware COR input pin (GPIO). Select **VAD** or GPIO (Default setting is **VAD**).

Section	Value
VAD: Hang Time	If Receive Activity Mode is set to "VAD", the Hang Time determines how long the voice transmission will continue to be received after the voice is no longer present. Acceptable value range is 0 to 5000 msec. (Default setting is **500** msec).
GPIO: Active Low	If Receive Activity Mode is set to "GPIO", set the GPIO Active Level to either High or Low (Default setting is **Low**).
Receive Audio	
DTMF: Threshold	For DTMF mode, controls the sensitivity of tone detection on incoming DTMF. Acceptable values -35 to 0 dBFS. (Default setting is **-20** dBFS)
VAD: Threshold	For VAD mode, controls the sensitivity of voice detection on incoming audio. Acceptable values -40 to 20 dBFS. (Default setting is **-35** dBFS)
Analog Gain	Sets the gain (in dB) applied to the hardware in the radio to receive audio. Acceptable values -20 to 20 dB. (Default setting is **0** dB).
Digital Gain	Sets the gain (in dB) applied to the software in the radio to receive audio. Acceptable values -40 to 20 dB. (Default setting is **0** dB).
Calling	
DTMF Dialing Phrase	Phrase of DTMF digits which, when received from the radio, will cause the RGW to enter dialing mode. Subsequent digits will be accumulated into a phone number buffer, and a call will be placed to that number once the user stops dialing. Acceptable values are any string of valid DTMF digits (0-9, *, #) (Default setting is "**")
DTMF Disconnect Phrase	Phrase of DTMF digits which, when received from the radio, will cause any ongoing call or operation to terminate. Acceptable values are any string of valid DTMF digits (0-9, *, #) (Default setting is "##")
Digit Timeout	When the radio user is entering a number in dialing mode, how long to wait, in seconds, after receiving a DTMF digit before concluding that the user is done entering the target number. After this timeout elapses, a call is attempted to the target number. Acceptable values $\geq$ 0 sec. (Default setting is **3 sec**)
Max Digits	The maximum length of a phone number that may be entered by a radio user in dialing mode, including any prefixes such as country code and external calling access digit. The phrase used to initiate dialing (e.g., "**") does **not** count towards the maximum number of digits. Acceptable values $\geq$ 0. (Default setting is **20**)
Dialing Duration	When a radio-initiated outbound call is being placed, a burst of ringback tone is transmitted to the radio user for this amount of time as confirmation. Acceptable values $\geq$ 0 msec. (Default value is **1000** msec).
Disconnect Duration	When an active call is hung up, a burst of busy tone is transmitted to the radio user for this amount of time. Acceptable values $\geq$ 0 msec. (Default value is **2000** msec)

Section	Value
Error Duration	When an outbound call fails or an active call ends prematurely due to an error, a burst of fast-busy tone (a.k.a. congestion tone) is transmitted to the radio user for this amount of time. Acceptable values are ≥ 0 msec. (Default value is **2000** msec).
Answer Timeout	After an outbound call has been placed, how long to wait for the peer to answer before giving up and terminating the call. Note that the call attempt may terminate before this timeout is reached if an error is encountered. Acceptable values are ≥ 0 sec. (Default value is **60** sec).

Data

NOTE

This is an ADMIN function only. If the user sees this icon, login as the ADMIN to continue. Otherwise this is a view only screen.

From the Data page, shown in Figure 4-30, data is enabled or disabled and the routing is configured. The data can be configured to always go through the Iridium satellite system, always go through the WAN port or go through both, depending on availability of the WAN network.

- For the automatic data routing feature, the WAN network takes precedence over the Iridium satellite network.
- When the Data Route is set to ANY, and with a WAN device attached (i.e. cellular modem), the system automatically switches to the WAN attached network when signal is available. The system will ping the internet to determine if the WAN device is in range, and if so switches the data path from Satellite to WAN. If the signal drops out, the data path switches back to Satellite.
- Selecting ANY will cause all data to go through the Iridium satellite network if no WAN device is attached or if the WAN device is not powered.

NOTE

The WAN port does not have Power of Ethernet (PoE) capability, so any device plugged into the WAN port needs to provide its own power source.

NOTE

The automatic data routing feature does not apply to voice calls. All voice calls are routed through the Iridium satellite system 100% of the time. The WAN port is only for data.

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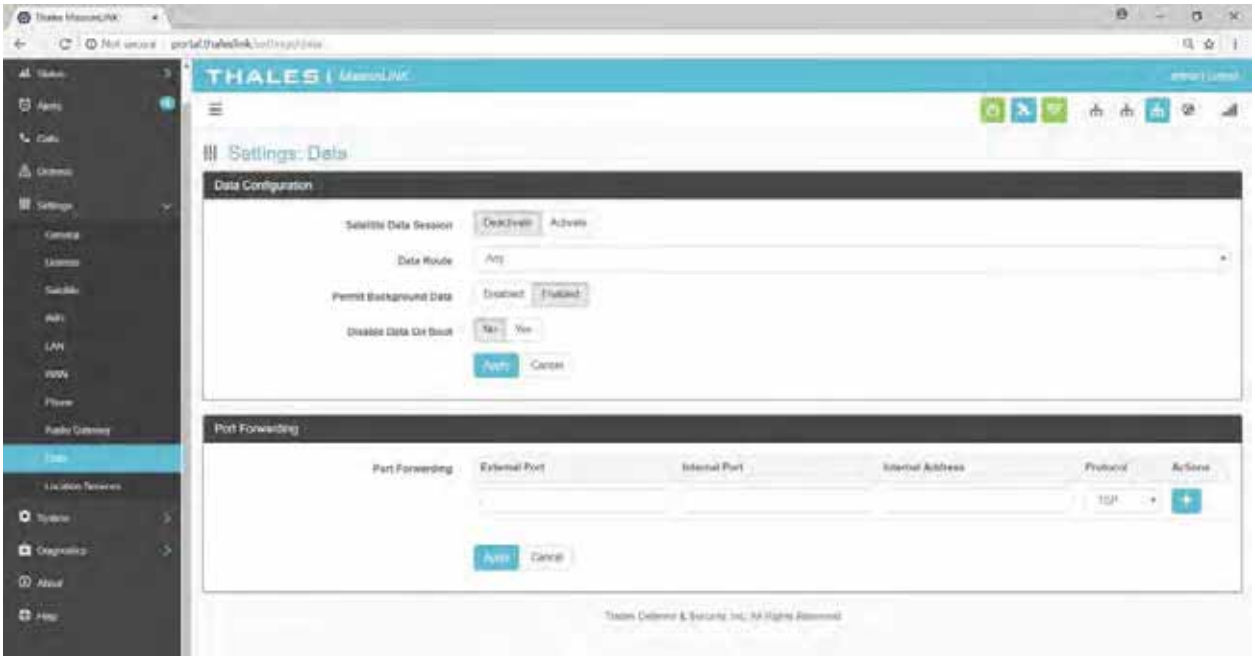


Figure 4-30 Settings → Data Screen

Table 4-11 Settings → Data

Section	Value
Data Configuration	
Satellite Data Session	Deactivate / **Activate** (**Activate** is the default setting)
Data Route	Select the desired data route (**Any**, Satellite, or WAN Port) (**Any** is the default setting). The automatic data routing feature requires **Any** be set.
Permit Background Data	Disabled / **Enabled** (**Enabled** is the default setting). If Enabled, this setting allows for GPS location information to be transmitted even when data is disabled. This is valuable if location services are being used.
Disable Data on Boot	**NO** / YES (**NO** is the default setting). Determines the default data operations state when the system is restarted.
Port Forwarding	
Port Forwarding	Enter the External Port, Internal Port, Internal IP Address, and Protocol.

NOTE

Since the system default for "Satellite Data Sessions" is OFF, the "Disable Data on Boot" configuration has been added so that when the system is turned off and on frequently, it comes up in a known state each time for data. This allows the unit to start up with data sessions turned on each time or to be off.

Location Services

From the Location Services page, shown in Figure 4-31, Location Services are enabled and disabled and the settings are configured (when enabled). Thales offers ClearSIGHT as the preferred tracking service. This requires an account and service subscription. More information can be found at www.clrSight.com.

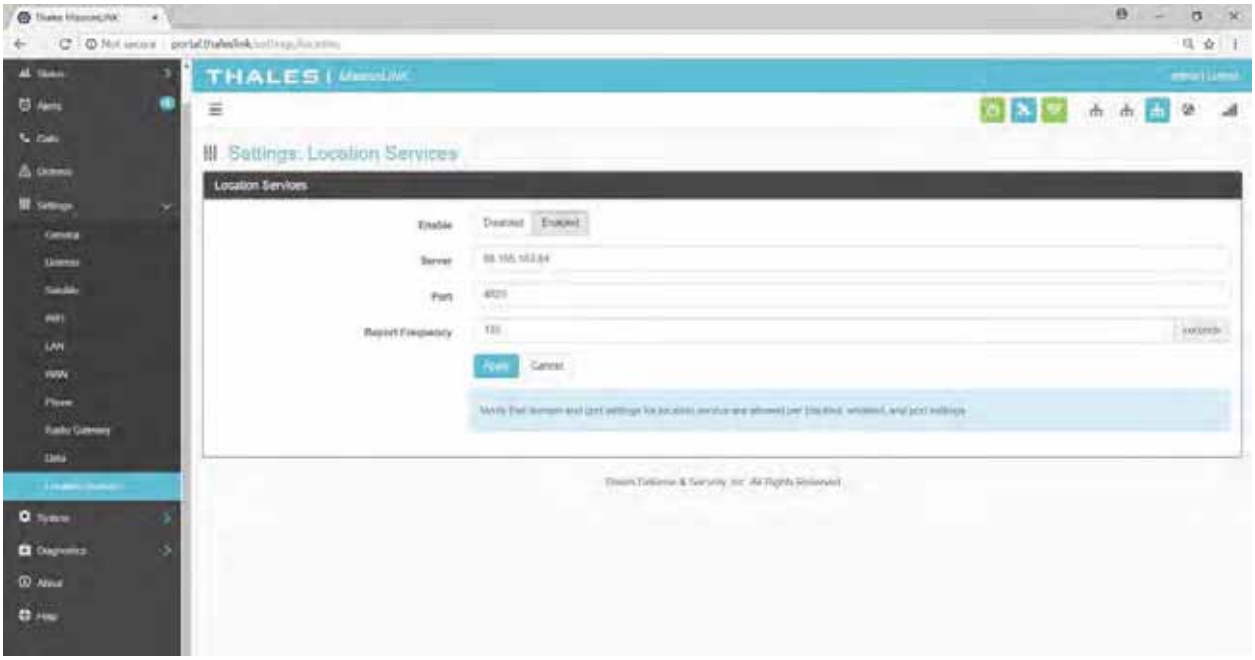


Figure 4-31 Settings → Location Services Screen

Table 4-12 Settings → Location Services

Section	Value
Data Configuration	
Enable	**Disabled** / Enabled (**Disabled** is the default setting)
Server	Enter the name of server. Get this information from www.clrSight.com
Port	Enter the port number of the service from www.clrSight.com
Report Frequency	Default setting is 120 seconds. When DISTRESS is set to enabled, frequency will be every 5 minutes.

System

The System menu item allows for backing up a configuration and restoring it, monitoring of system data usage (estimate for informational purposes only), performing a system reboot, restoring factory default settings, and provides information on the system firmware versions.

Backup

NOTE

This is an ADMIN function only. If the user sees this icon, login as the ADMIN to continue. Otherwise this is a view only screen.

NOTE

File download cannot be done on a phone or tablet using iOS operating system. If a configuration file needs to be saved, use a device with a browser other than iOS.

Refer to Figure 4-32. Before performing a firmware update, replace a TU, cloning information for multiple systems or just as good practice periodically, the system configuration file should be backed up to prevent loss of custom configuration settings in the event that an issue should occur. Backup can occur on devices that have a file system where the configuration file can be downloaded and saved (personal computer, laptop, Android). Backing up the current configuration is a simple process detailed below.

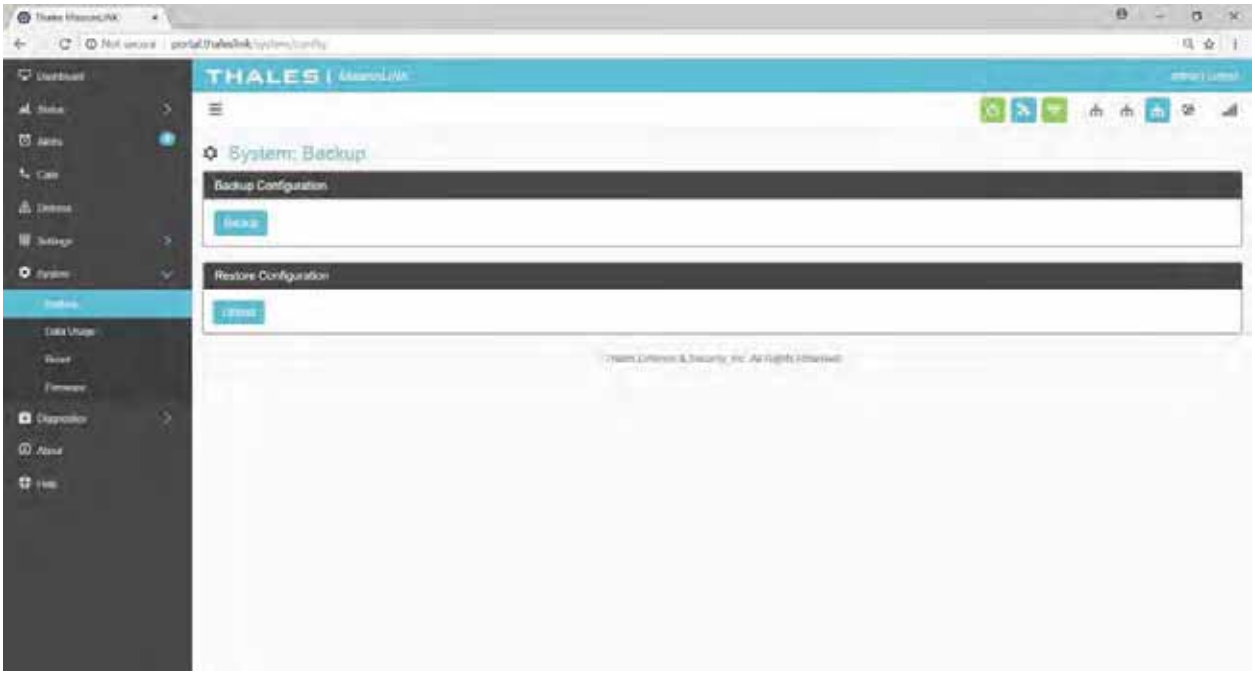


Figure 4-32 System → Backup Screen

- Backup Configuration
  - Connect a computer to the TU either through Ethernet or Wi-Fi
  - Select BACKUP, will automatically backup the data contained in the Management Portal.
  - The backup file can be renamed as long as the file extension is ".json" NOTE: This is very useful for restoring settings to a replacement unit or cloning setup for multi-units.

- Restore Configuration
  - In the event the configuration file needs to be reloaded, RESTORE CONFIGURATION will enable you to reload a previous saved configuration file.
  - Select RESTORE CONFIGURATION
  - Navigate to the file that was saved.
  - Open the file to Upload

Data Usage

NOTE

This is an ADMIN functional only. If the user sees this icon, login as the ADMIN to continue. Otherwise this is a view only screen.

Refer to Figure 4-33. Data usage is shown for information purposes only. If there is a data limit set, this information will be provided on this screen. The system data usage can be reset to restart the data count. Select RESET and then YES, RESET to confirm. Otherwise, select NO, CANCEL (Figure 4-34). For Satellite Data Limits – pressing the VIEW SATELLITE LIMITS button, will bring up the SETTINGS → SATELLITE Screen (Figure 4-24).

NOTE

This is an estimate of data used and does not accurately represent the billable data total. It also does not limit or restrict data usage even if the Data Usage exceeds the Data Cap. To get accurate data usage, please contact your service provider.

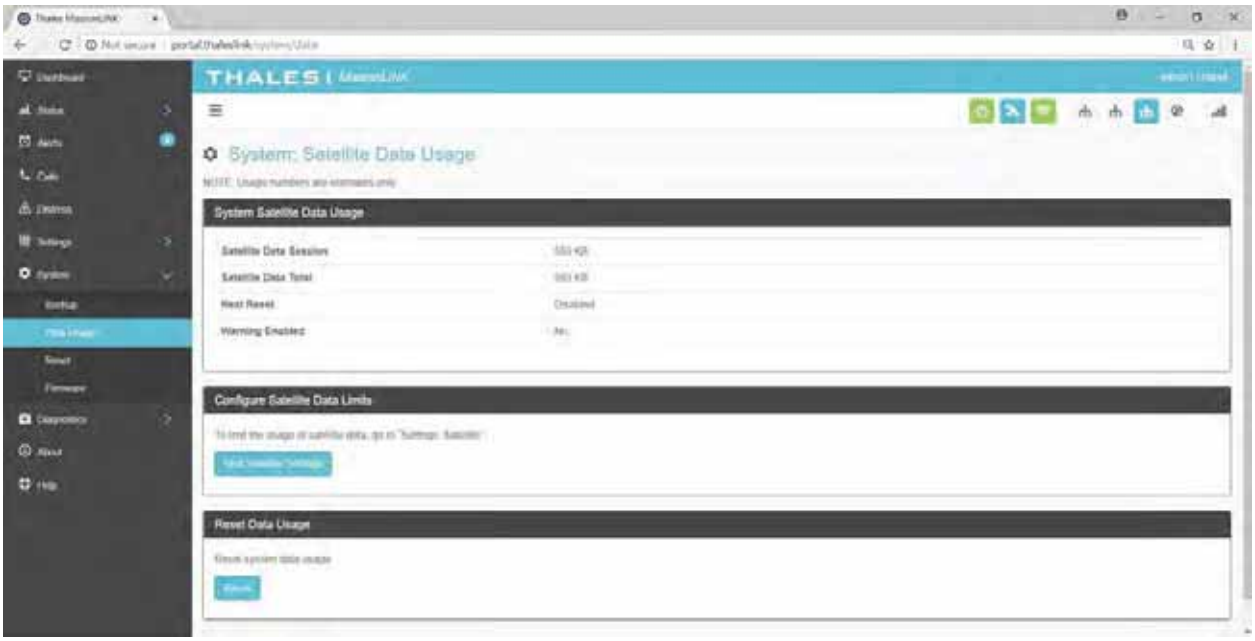


Figure 4-33 System → Data Usage Screen

Figure 4-34 Reset Data Usage Screen

Reset

NOTE

This is an ADMIN function only. If the user sees this icon, login as the ADMIN to continue. Otherwise this is a view only screen.

Refer to Figure 4-35. In the event the system is not responding correctly, a system reboot can be performed. Select REBOOT to restart the system.

If there is a larger issue such as a corruption or if configuration settings have made the system non-operational, a Factory Reset can be performed. Select FACTORY RESET. This resets all the configuration settings to the default settings.

Backup Version will revert the system to the previous software version.

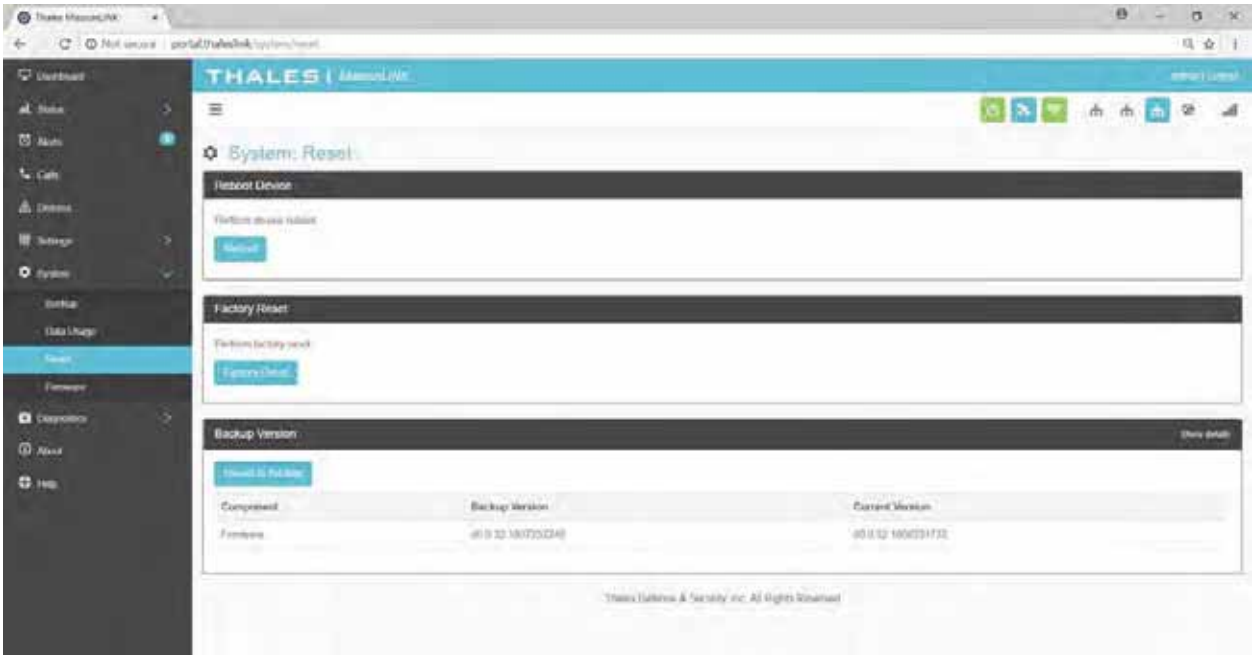


Figure 4-35 System → RESET

NOTE

Factory Rest will restore factory defaults and all users' customized settings will be lost.

Firmware

Refer to Figure 4-36. The Firmware page displays the current firmware version numbers. These may be helpful if customer service is contacted to resolve an issue.

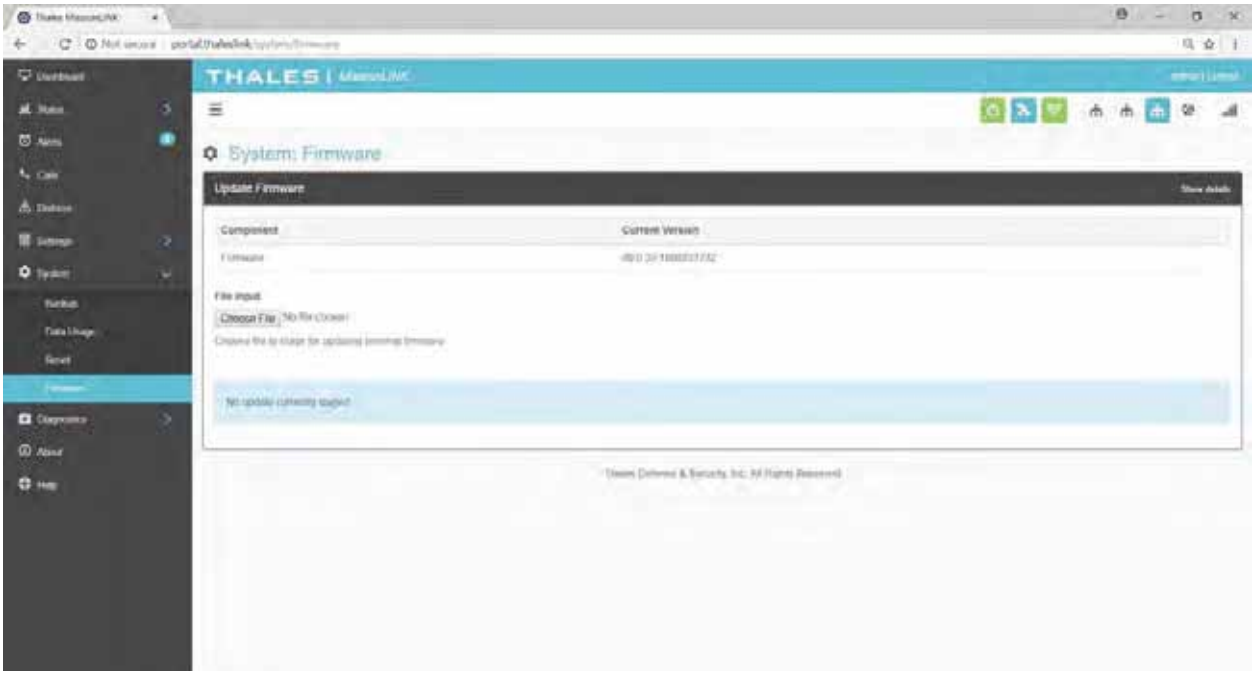


Figure 4-36 System → Firmware Screen

Selecting the SHOW DETAILS will display system level information (Figure 4-37).

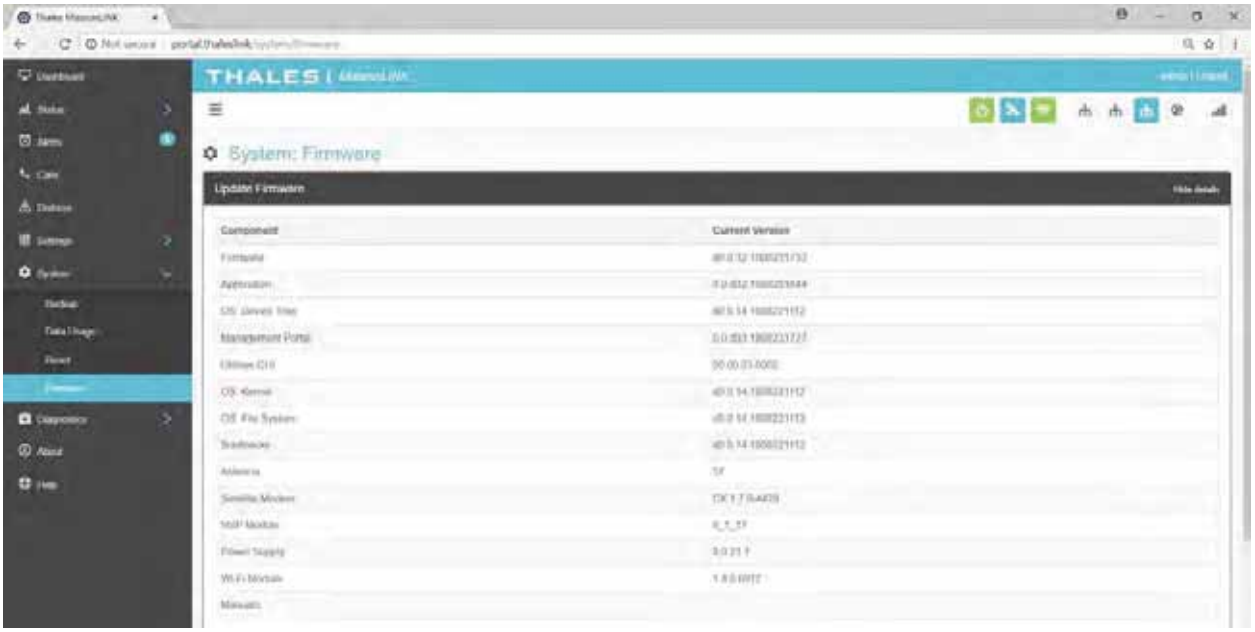


Figure 4-37 Firmware Screen – Show Detail

NOTE

For detailed instructions on updating Firmware on the TU please reference chapter 5 of this manual.

Diagnostics

Self-Test

NOTE

This is an ADMIN function only. If the user sees this icon, login as the ADMIN to continue. Otherwise this is a view only screen.

The Self-Test diagnostics page (Figure 4-38), users will be able to run a diagnostic test of the system and results will be available in the diagnostic logs page for debug.

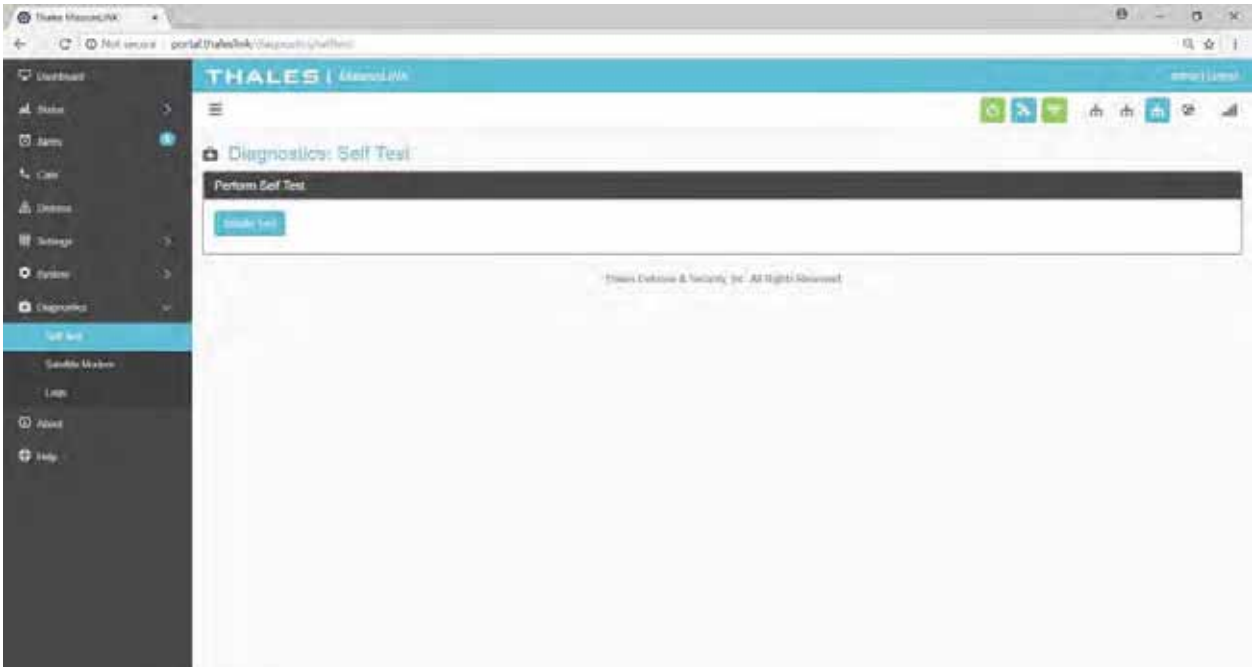


Figure 4-38 Diagnostics → Self-Test Screen

Refer to Figure 4-39. Select INITIATE TEST and then confirm by selecting YES, TEST to perform the self-diagnostics test.

NOTE

Running the Built-in-Test will render the unit unusable for several minutes. Any on-going calls or data sessions will be dropped.

Figure 4-39 Perform Self-Test Confirmation

Once the Self-Test is complete, you will be directed to refer to the system logs (Figure 4-42) for results of the test (Figure 4-40).

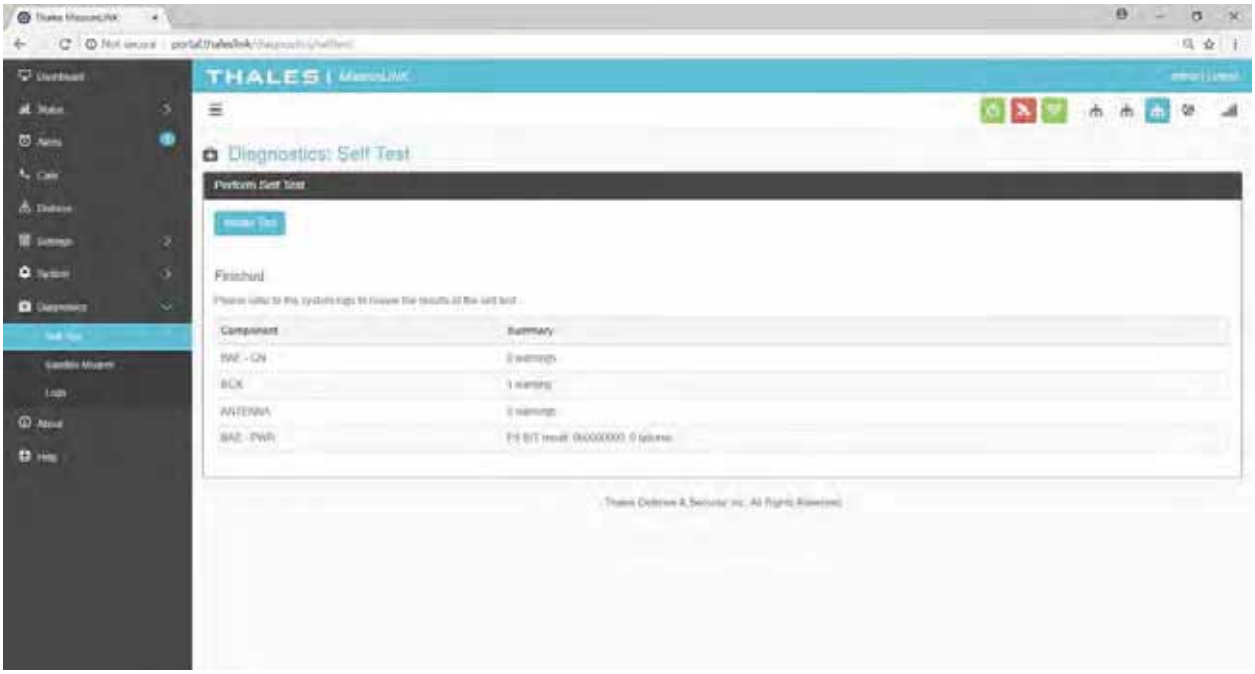


Figure 4-40 Perform Self-Test Completed Screen

Satellite Modem

NOTE

This is a view only page.

The Satellite Modem diagnostics page provides information that will aide in the debugging of the system.

The Satellite Modem page is divided into the following sections as shown in Figure 4-41:

- System Status
- Constellation Status
- Static Config
- System Diagnostics

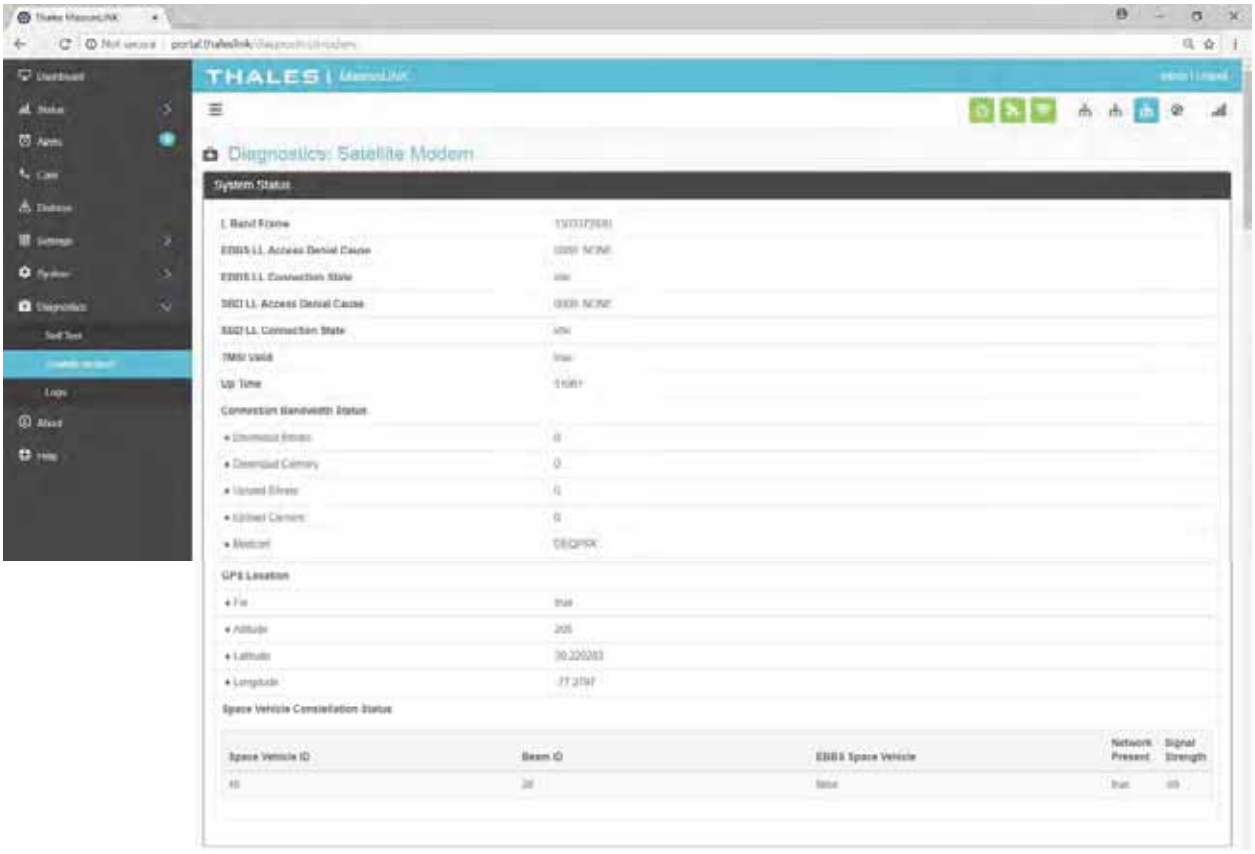


Figure 4-41 Diagnostics → Satellite Modem Screen (Sheet 1 of 2)

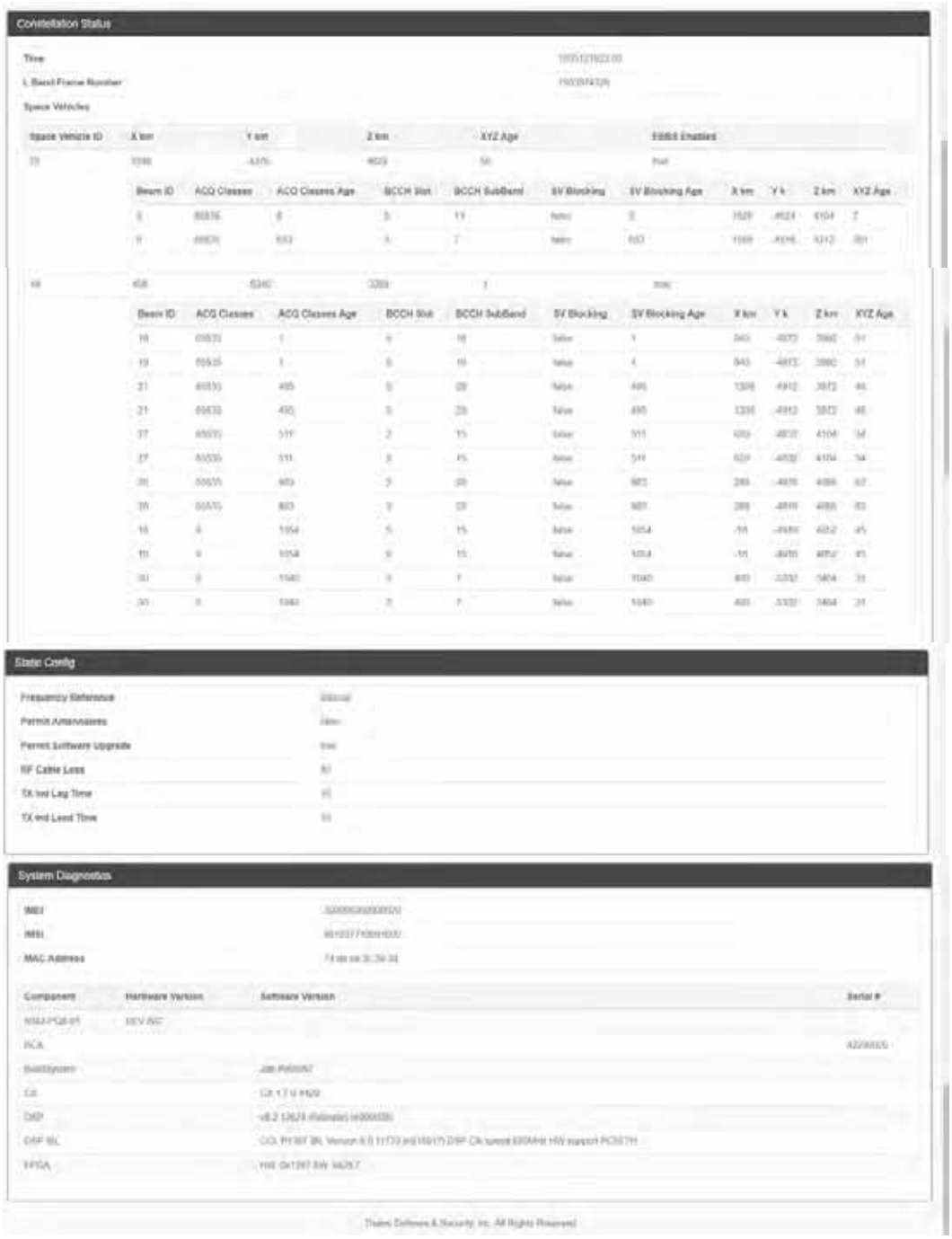


Figure 4-41 Diagnostics → Satellite Modem Screen (Sheet 2 of 2)

Diagnostics Logs

Refer to Figure 4-42. The Diagnostics Logs provide the operator with the results of all recent diagnostic tests. This information can be used in debugging / troubleshooting the system. A limited number of logs can be viewed on the screen or detailed logs can be downloaded by selecting DOWNLOAD LOGS. Logs can be erased by selecting DELETE LOGS.

Figure 4-42 Diagnostics → Logs Screen

NOTE

The "Most Recent Log Entries" only shows the last 100 log entries. For additional information, select DOWNLOAD LOGS (.zip) for additional information.

About

Refer to Figure 4-43. This page provides detailed information relating to the equipment, including unique HW information and its current software version.
This includes,

- System
- Antenna
- Satellite Modem
- Power Supply
- VoIP Module
- Wi-Fi

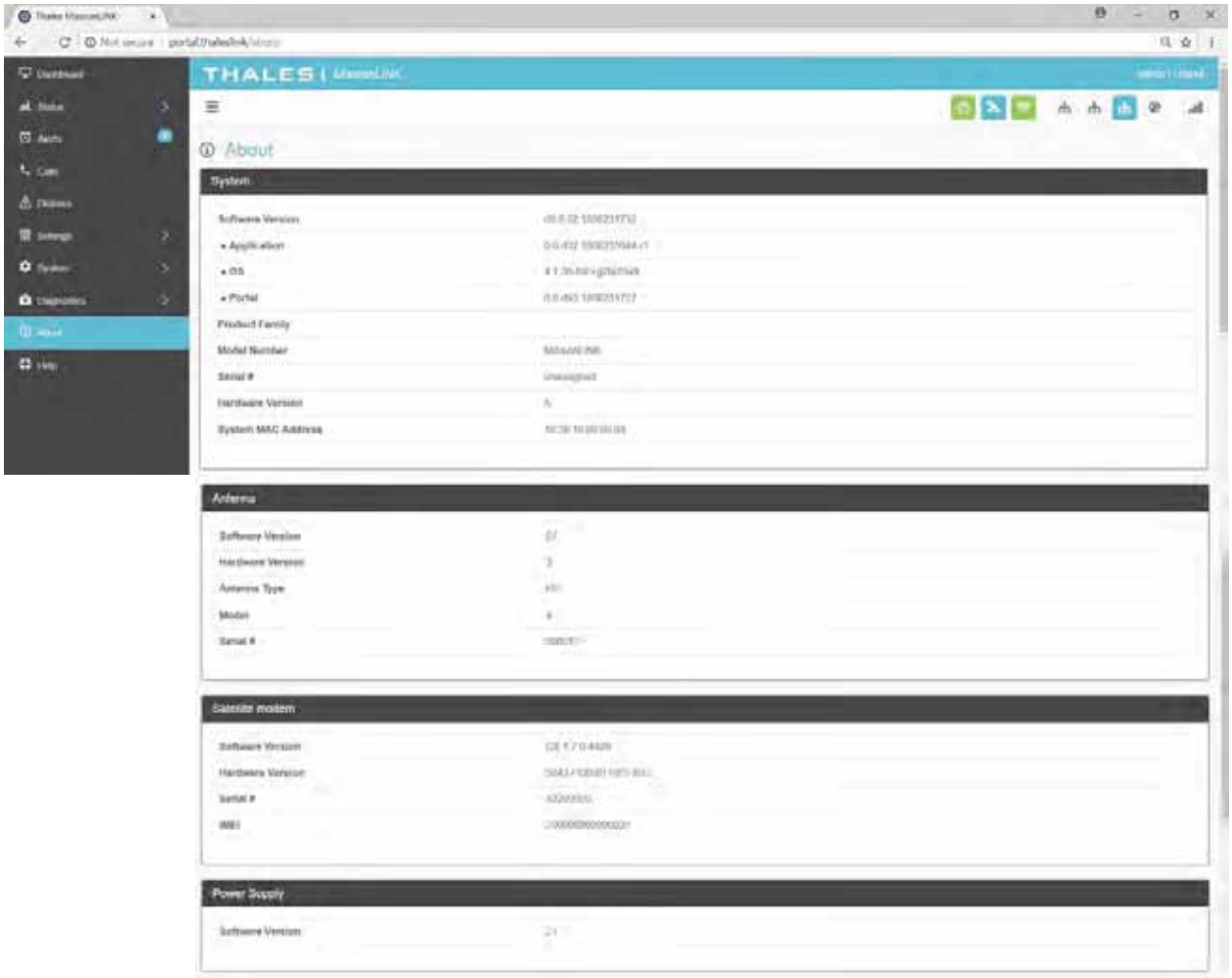


Figure 4-43 About Screen (Sheet 1 of 2)

Figure 4-43 About Screen (Sheet 2 of 2)

Help

This Help page, shown in Figure 4-44, provides access to all manuals and links to customer support.

This section includes:

- User Manual
- Quick Start Guide
- Installation Manual

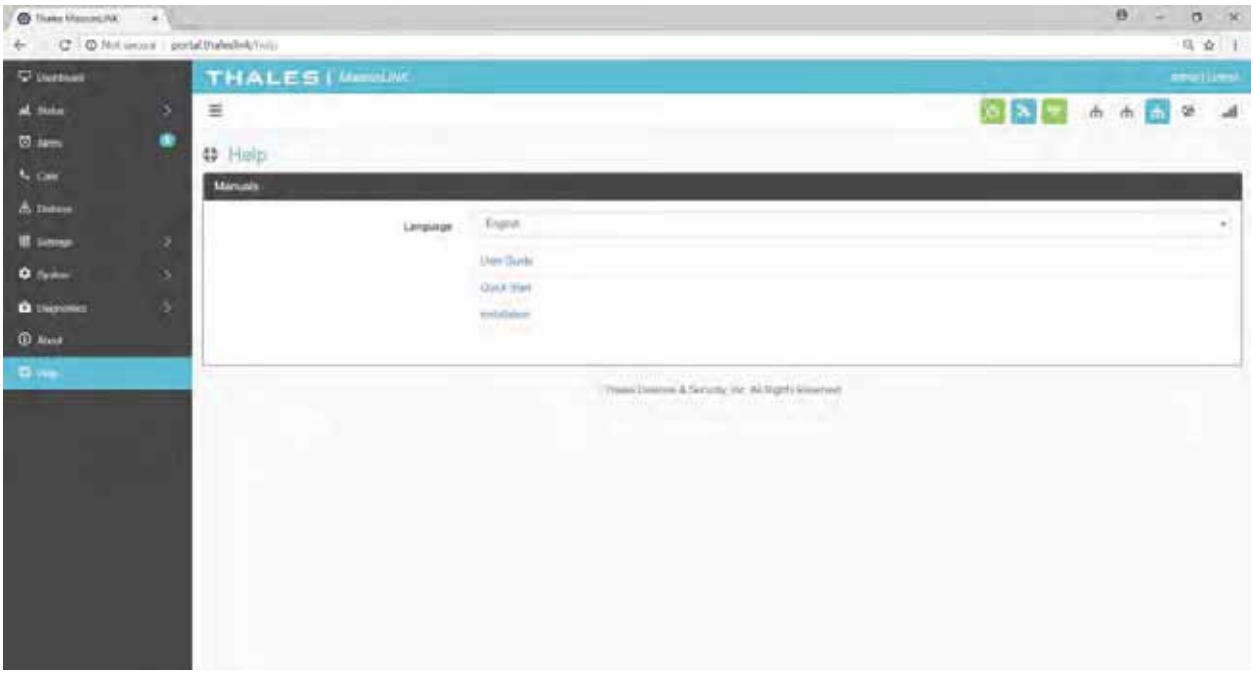


Figure 4-44 Help Screen (Example)

CHAPTER 5 FIRMWARE UPGRADE

On occasion it may be necessary to update MissionLINK™ software to add features or fix issues found in the software. This section will step through the process of those updates. The firmware file will contain updates for both the TU and the antenna if needed, so a single load automatically updates both. It is important to make sure the system is connected, powered up, and operational before attempting a firmware update. ***Do not remove power from the TU or remove the antenna connection while an update is in process.*** This may cause a corruption to occur and force reverting to the previous software version.

NOTE

For SW reset or returning to factory defaults please refer to Chapter 6 → RESETS.

INSTALLING THE FIRMWARE ON MISSIONLINK™

Via Computer or Mobile device.

1. With PC or Mobile Device connect to "ThalesLINK" on Wi-Fi or via Ethernet (RJ-45) port.

2. Open a web browser and type: http://portal.thaleslink (do not type .com or any other extension)

3. Once prompted enter Username and Password.

4. Navigate to the SYSTEM→ Firmware (Figure 5-1)

Figure 5-1 System → Firmware

5. Select CHOOSE FILE.

6. Go to File Input and select the Browse button.

7. Navigate to location of downloaded file. This file should have the firmware version and ".swu" as the file extension

   - Example: thaleslink_0.0.22.1.swu

8. Select the "SELECT" button

9. After file has been selected return to the Firmware page.

10. Select "UPLOAD FIRMWARE" button. This may take a few seconds as a progress bar moves across the page (see Figure 5-2).

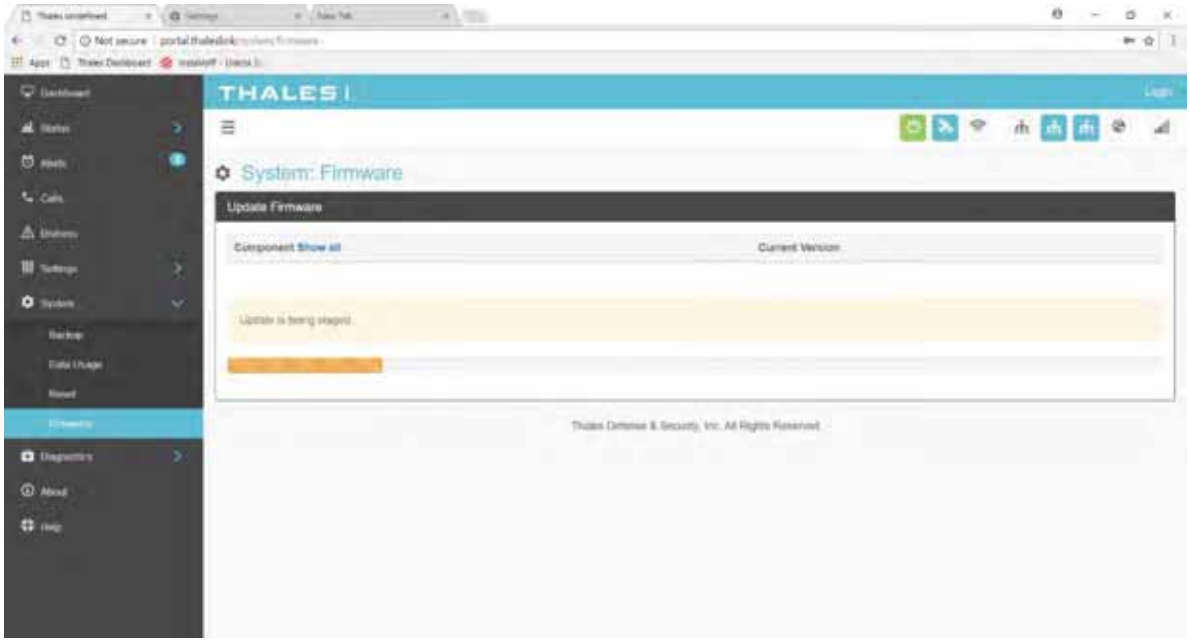


Figure 5-2 Firmware Being Staged

11. Once staged the Firmware page will display "UPDATE STAGED" (At this point user will be able to see Current and New Versions side by side on the Firmware page)

12. Select "Yes, Update".

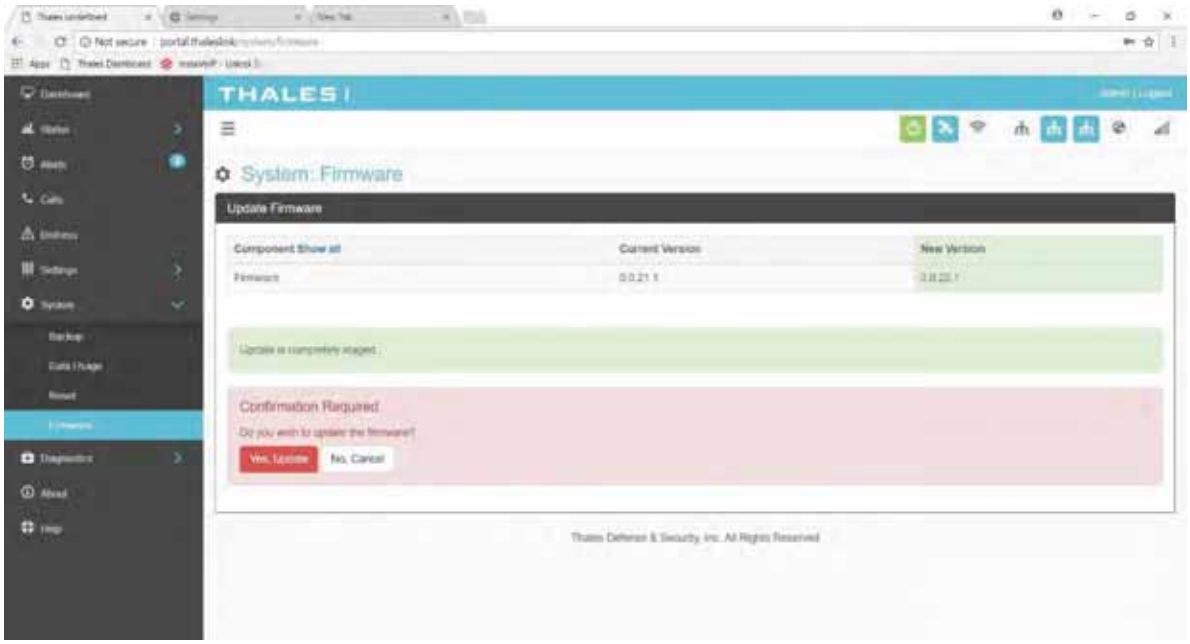


Figure 5-3 System → Firmware Update Confirm

13. Once YES, UPDATE is selected, the process to Update Firmware has begun and will take approximately 10 to 15 minutes to complete. *DO NOT REMOVE POWER DURING THIS PHASE*

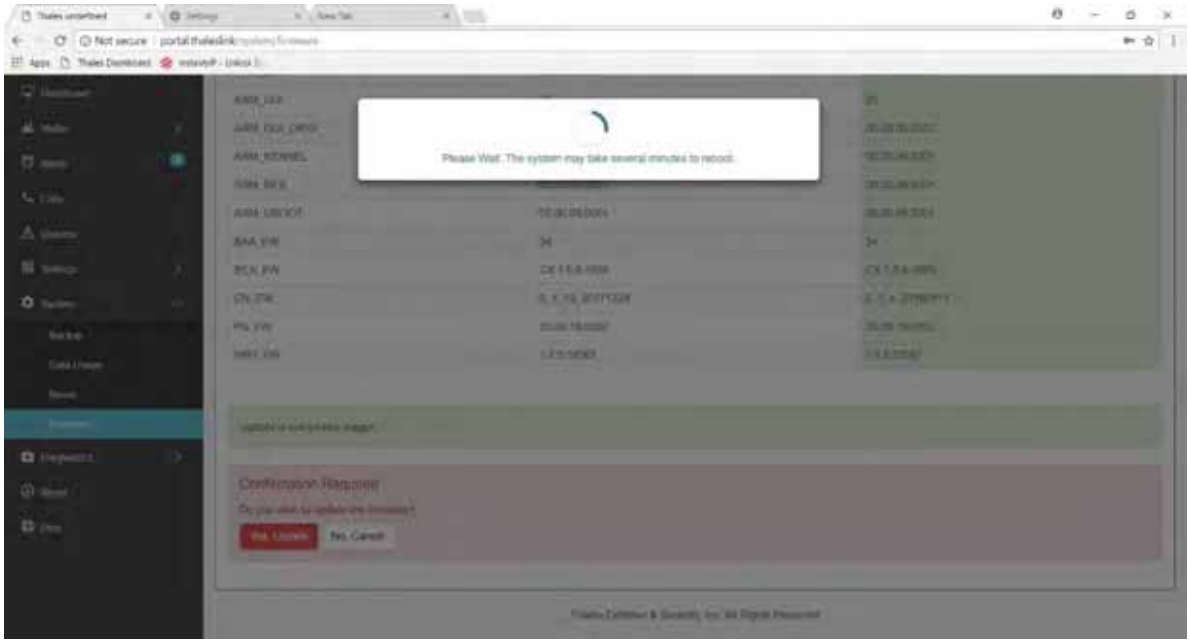


Figure 5-4 Firmware Update in Process

14. Once completed and the system reboots, wait for all the Status LEDs to go Solid Green and/or Blue. This may take a few more minutes.

15. Verify Firmware Update by connecting to “ThalesLINK” (or SSID set in MissionLINK™) on Wi-Fi or Ethernet port.

16. Open a web browser and type: http://portal.thaleslink (do not type .com or any other extension).

17. Once prompted enter the admin Password (this will not change from before the firmware update).

18. Navigate to the SYSTEM→ Firmware to view updates. (Software version can also be found in the ABOUT menu item.)

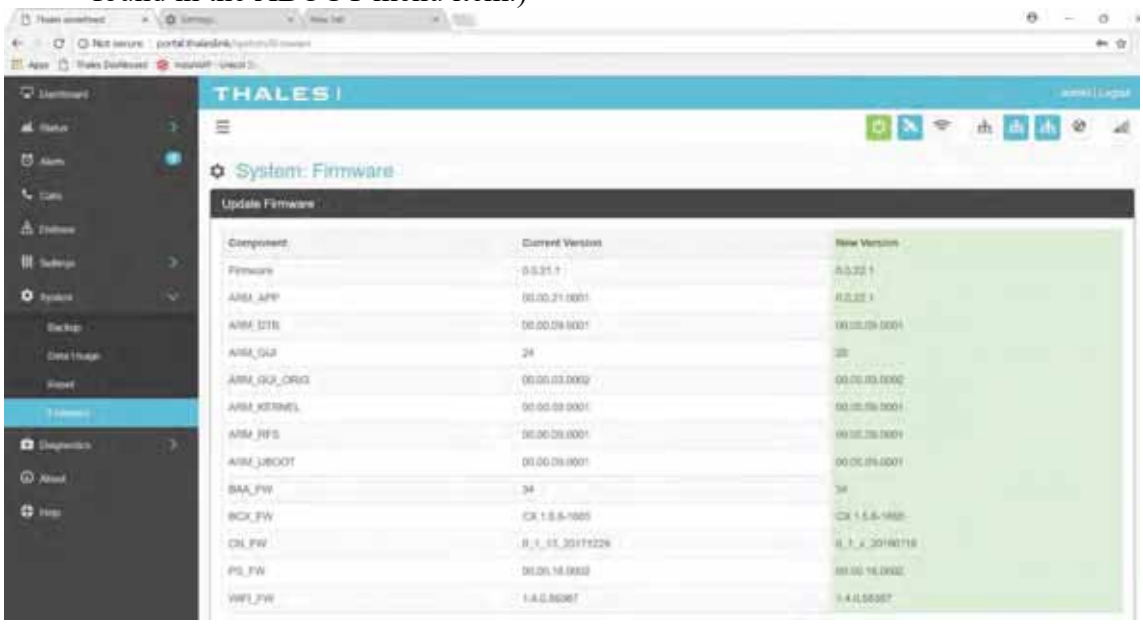


Figure 5-5 System→Firmware Update Completed

CHAPTER 6 MAINTENANCE

GENERAL

This chapter provides operator maintenance instructions for the TU and BAA. This includes, preventive maintenance and troubleshooting procedures.

PREVENTATIVE MAINTENANCE

Inspection and Cleaning

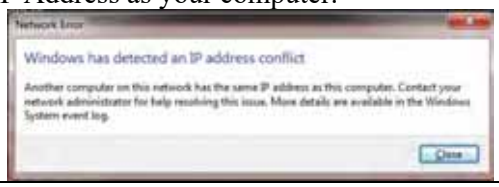
The equipment should be occasionally inspected for external damage, such as bent connectors and wear items, such as loose attaching hardware. The equipment should be cleaned periodically, particularly after exposure to salt water, sand, or mud. With the TU turned off, use a slightly damp rag (water only) to clean the TU and/or BAA. If water ingress is detected, air dry (or dry with low pressure air (if available)) to allow the unit to dry prior to applying power.

TROUBLESHOOTING

Table 6-1 Troubleshooting

PROBLEM	SOLUTION
Satellite LED Flashing GREEN	• Flashing GREEN light indicates that it is acquiring the satellite. If it continues to flash for more than 5 minutes, check that the antenna has a clear view of the sky. • Reboot TU.
Satellite LED Flashing RED	• Critical Fault Detected. Open Management Portal http://portal.thaleslink and check Alerts. Make any adjustments. (For example: check antenna connection, or GPS not acquired.) • Turn unit off and on again. If same result, contact your service provider.
System LED Flashing Green	• Start-up in progress. Wait until unit has run diagnostics and completed start procedure. This may take more time than usual when acquiring satellites for the first time • Switch power off and back on if the light doesn't turn solid green after 5 minutes.
System LED Flashing RED	Fault Detected. Open Management Portal http://portal.thaleslink and check for alerts. Make any adjustments. (For example: Common alerts include, but not limited to, are the SIM Card not installed, SIM Card not provisioned. Power-Up Test (POST) failure.) • Turn unit off and on again. If same result, contact your service provider.

PROBLEM	SOLUTION
 Wi-Fi LED	OFF – Turn Wi-Fi ON using the Management Portal through a hardwired, PoE connection. ThalesLINK > Settings > Wi-Fi Solid RED – Wi-Fi may need to turned off and back on again from the Management Portal. If the LED does not turn to GREEN within a minute, reboot the TU. Flashing GREEN – If this continues for more than a minute or two, check for NO OR WEAK Wi-Fi
Call Logs are not appearing	Call logs must be enabled. Verify call logs are enabled (SETTING → PHONE → PHONE CONFIGURATION)
Cannot connect to the internet	Data sessions default is OFF. Check to make Satellite Data Sessions is ACTIVATED on Dashboard. If not, select ACTIVATE and apply.
Cannot connect to the Management Portal	• Ensure Terminal Unit is powered ON • Ensure Wi-Fi is enabled and connected to ThalesLINK (or renamed SSID). If using a Wi-Fi enabled device, the Wi-Fi LED on the TU should be solid GREEN. If not using Wi-Fi, ensure Cat 5 cable is connected to one of the three Ethernet ports (NOT WAN or POTS Port). If Ethernet connection, replace the cable and re-check connection • Open web browser and type http://portal.thaleslink/#. Ensure network settings are correct on the connected device. • Device's browser may be incompatible. Update or try different browser. • You may need to reconnect via Ethernet or Wi-Fi to the TU. • Check to make sure the correct address is typed in http://portal.thaleslink • You may need to clear your browser cache. • If system LED is flashing GREEN, wait until it turns solid GREEN, then try reconnecting to the portal.
Cannot connect to Wi-Fi service	• Check that the Wi-Fi antenna is attached and tightly screwed in. • Check that the TU's Wi-Fi LED is solid GREEN. • Check to see if there's an available connection by checking the devices that are connected in Status → Current Devices page. • Only 3 simultaneous devices can connect to the Wi-Fi. Any additional connection attempts are blocked. • Remove one or more devices from the Wi-Fi and try again to connect. • Use the Wi-Fi Device Whitelist to limit access to specific wireless devices.

PROBLEM	SOLUTION
Network Error	If you receive a message similar to this, another user is attempting to use the same IP Address as your computer. 
No or Weak Wi-Fi Signal	• Connect Wi-Fi antenna and ensure it is secured tightly • If walls or metal obstructions are between the TU and the Wi-Fi device, move closer to the TU or move the TU to a better location with less obstructions • Check to make sure Wi-Fi device is connected to the TU's Wi-Fi and verify that you are connected to the ThalesLINK. • Check the Management Portal to make sure the Wi-Fi device is registered as a user.
ThalesLINK is not obtaining a satellite signal (Satellite LED is red)	• Check signal bars at the top of the Management Portal. If no bars are highlighted, the satellite is not being detected. Wait a few minutes to see if the signal strength improves as another satellite comes into view. • Check antenna connection at the TU and antenna. Make sure no corrosion has occurred on the cable connections to the antenna and that the connectors are screwed in tightly. • Check antenna for a clear view of the sky with no obstructions. Relocate antenna if needed. • Check for interferers in the area that could be affecting the signal such as active radars, VSAT systems and other radio antennas. Turn those off and retest. • Move vehicle to a new location and retest if other interfering vehicles are in the area • Reboot TU and check the Alerts. • Call Service Provider if the satellite connection is still not working.
Terminal Unit does not Power-ON	• Check TU for Green lights, If green light is on Unit has Power • Push power button on front of TU. • Check that the power source is providing 10-32V and is not current limited. • Check connection of the 10-32V DC cable has correct polarity. • Check to ensure Ignition line is connected to switched line or connected to Red (Positive line) for continuous operation. • Check that ignition or remote switch is turned on if ignition line is connected. • If using AC/DC converter (optional), make sure the AC outlet has power and that the plug is securely in the AC outlet and the other end is securely connected to the TU.

PROBLEM	SOLUTION
Terminal Unit has power but accessories not working	• Remove power from accessories and disconnect from TU. Restart TU using the power button or remove power from TU for 10 seconds. After TU has rebooted re-attach accessories • If PoE accessory not receiving power, make sure PoE is enabled for that port. • PoE is not available on WAN port. Any device on WAN port needs its own power source. • Check VoIP phone manuals for proper configuration. Each phone may have a different configuration method.
Terminal Unit is not responding	• Check LED status on TU or on Management Portal. Make sure there are no RED LEDs. Check for Alerts in Management Portal by selecting the Alerts menu item. • Reboot the system and recheck for any Alerts that may have been generated. • Call Service Provider if the TU is still not responding. • As a last resort, use the manual reset button, located below Wi-Fi antenna port, using a straightened paper clip or similar sized article insert into port and push reset button. NOTE: This is not recommended as a routine troubleshooting measure. All user data and debug information will be lost and factory defaults returned.

System Resets

In a rare situation where the MissionLINK™ system is not responding or operating properly, it may be necessary to reset the system. There are varying levels of system resets that are explained below:

Power Cycle

There are three (3) ways to power cycle the system:

- If power is already on (LEDs are illuminated), press and release the Power Button on the unit to power the unit off. Again, press and release the Power Button to power the unit on. It will take a few minutes before the boot-up cycle completes.

Figure 6-1 Location of Power Button on Terminal Unit (TU)

- From the Management Portal, select SYSTEM → RESET→ REBOOT DEVICE. Press REBOOT. It will take a few minutes before the boot-up cycle completes.

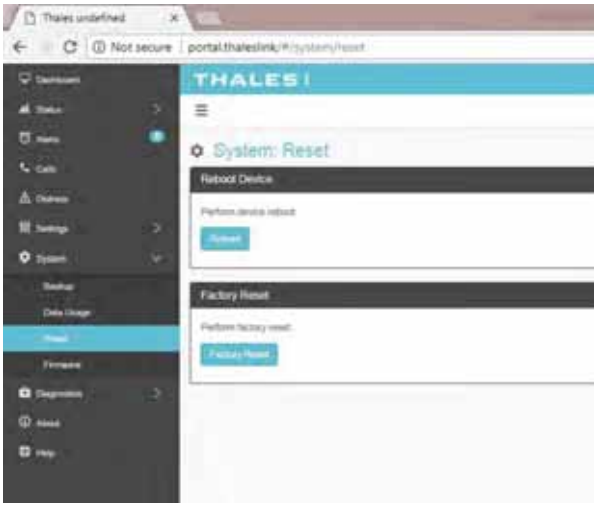


Figure 6-2 Management Portal - SYSTEM → RESET

- If neither of these work, then unplugging the system from the power source may be necessary. Note: Always wait at least 20 seconds for power inside the unit to dissipate before reconnecting the input power.

Factory Reset

As its name implies, this restores the factory defaults (passwords will return to "admin"). This is particularly helpful when a system has been wrongly configured and starting over is the easiest option. If an admin password is customized and is forgotten, the only way to reset it is to use the factory reset option. After clearing all the user configuration, it will reboot the terminal a couple of times to reset the internal components correctly. This may take several minutes. Once it is complete, the System Status LED will be solid green. You can then log into the Management Portal using the default password and change settings as desired.

Factory Reset can be accomplished by either of these two actions:

- Remove the SIM card cover exposing the reset hole. Power up the TU and wait until the System LED stops blinking green. Using a straightened paperclip, insert it into the round hole just to left of the SIM card as shown in Figure 6-3. Push straight in **gently** until the paperclip causes the switch to click. A factory reset will occur.

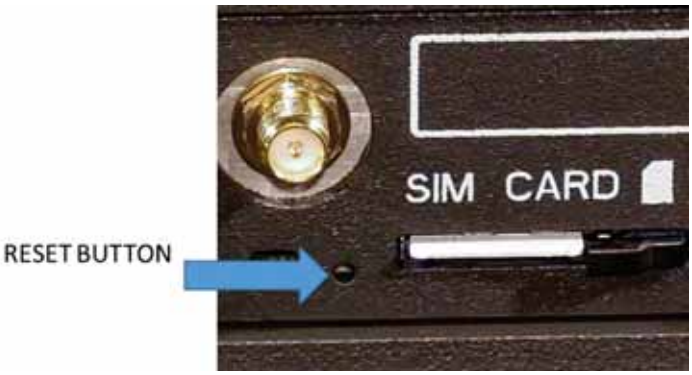


Figure 6-3 Reset Button

- From the Management Portal select SYSTEM → RESET→ FACTORY RESET. Confirm by selecting YES, FACTORY RESET. A factory reset will occur.

Firmware Revert

NOTE

FIRMWARE REVERT should only be used when a system has a serious issue and all other troubleshooting tips have been tried. Call your Service Provider before doing a firmware revert to make sure all other troubleshooting steps have been exhausted.

This restores the previous version FIRMWARE used on the system.

This can be accomplished by following these steps:

- Remove the SIM card cover exposing the reset hole. Using a straightened paperclip, insert it into the round hole just to left of the SIM card as shown in *Figure 6-3*.
- Push straight in **gently** until the paperclip causes the switch to click. At the same time turn the unit ON by pressing the power button. Hold the paperclip in until the LEDs blink and then release.

Alerts

Table 6-2 Alerts / Error Messages

Alert Name	Description	Level	Additional Information	Corrective Action
ANT_CABLE	Cable loss excessive; check system; performance maybe degraded.	Critical	Cable loss may exceed the system spec of 9 dB	Check Antenna cable for damage or loose connections. Replace if necessary.
ANT_MISSING	Unable to detect antenna	Fault		Check Antenna for damage. Check for loose connections. Remove and reinstall the antenna. If problem continues, the antenna may need to be replaced.
ANTENNA_POST_FAILURE	The antenna has failed POWER ON SELF TEST	Fault		Check Antenna for damage. Check for loose connections. Remove and reinstall the antenna. If problem continues, the antenna may need to replaced.
BCX-denial	Failed to connect to pass data, reason – location	Fault		Restart TU. Contact representative if problem persists for more than 4 hours.
BCX_IBIT_FAILURE	The BCX has failed “Initiated Built In Self-Test” View Logs for details.	Fault		Open http://portal.thaleslink and review Self-Test logs. Restart the Terminal Unit. If problem persists, contact representative.

Alert Name	Description	Level	Additional Information	Corrective Action
BCX_SIM	Modem failed to read SIM card	Warning		Remove, clean and re-insert SIM. Contact service provider if problem persists.
CN_OFF	Core Node is powered off, restart required	Critical	Core Node is noticed to be unexpectedly off.	Restart TU. Contact representative if problem persists.
CN_REBOOT	Core Node Reboot has occurred, full system restart is required.	Critical	Core Node Module restarts while the system is up and running.	Restart TU. Contact representative if problem persists.
MODEM_ACT	Modem returned an unknown error – cannot activate	Fault		Restart TU. Contact representative if problem persists.
MUX_PLL_UNLOCKED	Antenna mux out-of-lock with the modem.	Critical	PLL failed to acquire	Restart TU. Contact representative if problem persists.
PWR_IBIT_FAILURE	The power has failed “Initiated Built In Self-Test” View Logs for details.	Fault		Open http://portal.thaleslink and review Self-Test logs. Contact representative.
PWR_POST_FAILURE	The power has failed “Power On Self-Test”. View logs for details.	Fault		Open http://portal.thaleslink and review Self-Test Logs. Contact representative.
SIM_MISSING	SIM card not detected	Fault	SIM Card is physically missing	Insert or replace SIM card

CHAPTER 7 TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Table 7-1 Technical Specifications

Description		Parameters
Technical		
Frequency of Operation	Uplink (TX)	1616 to 1626.5 MHz
	Downlink (RX)	1616 to 1626.5 MHz
Channelization	FDMA spacing	41.667 KHz
	TDMA Timing	8.3 mS Slot in a 90 mS window
	Channels Available	240 channels
EIRP (Weighted Average)	Voice	9 dBW
	Data (Block 1)	11.7 dBW
	Data Certus™ 1xC8 16 APSK	15.2 dBW
	Data Certus™ 2xC8 16 APSK	18.2 dBW
Modulation	Block 1 Voice/Data	DQPSK
	Certus™ C1, C8 Voice/Data	QPSK
	Certus™ C8 APSK Data	16 APSK
Antenna	Type	Electronically steered phased array
	Polarization	RHCP
	Gain	9.5 dBi
	Beam Width	31° typical per beam
	MissionLINK™ coverage	8° to 90 elevation
Power		
DC Input 10-32 VDC	Voltage	10-32 VDC
	Max Current	12 Amps (10V) – 3.75 Amps (32V)
	Max Power	120 Watts
DC Input 12 VDC	Voltage	12 VDC (+10%/-5%)
	Max Current	10 Amps
	Max Power	120 Watts
Ethernet	3x PoE	PSE Class 2 (6.5 Watts each)
Environmental		
Broadband Active Antenna	IP Rating	IP66
Terminal Unit	IP Rating	IP31

TEMPERATURE

Table 7-2 Operating and Storage Temperatures

Description		Temperature Range
Broadband Active Antenna	Operating Temp	-30°C to +55°C
	Storage Temperature	-40°C to +85°C
Terminal Unit	Operating Temp	-30°C to +55°C
	Storage Temperature	-40°C to +85°C

PHYSICAL CHARACTERISTICS

Table 7-3 Physical Characteristics

Description		Parameters
Broadband Active Antenna	Dimensions	14" D x 4" H (35.6 cm x 10.2 cm)
	Weight	7 lbs (3.2 kg)
Terminal Unit	Dimensions	12” L x 9” W x 3” H (30.5 cm x 23 cm x 7.6 cm)
	Weight	< 7.5 lbs (3.4 kg)

CONNECTOR DETAILS

General Purpose Inputs / Outputs (GPIO)

Refer to Figure 7-2 for the connector and its pinout. The connector is located on the back of the TU and is labeled I/O. The GPIO has 4 main functions. Some of the functions are reserved for this connector are not yet implemented (they are reserved for future use.) Refer to Table 7-2 for the pin descriptions of the GPIO connector.

1. **1-Wire SOS/Distress→** This is activated when Pin 5 has been connected to GND signal (ANY of the pins, 1, 8, or 12) for more than 3 seconds.

   Once set, it sends an automated message stating SOS has been triggered. This message contains Latitude, Longitude, Altitude and predefined user message (setup in Management Portal) to a message recipient.

   If Location Services are turned, it will increase frequency of transmission to every 10 seconds.

   NOTE: THERE IS NO LOCAL INDICATION OF DISTRESS BEING SENT

   This security feature is for user protection. **The ONLY way to remove active Distress is to enter Management Portal under DISTRESS TAB**

2. **Radio Gateway** → Advanced users can connect Land Mobile Radio I/O to send and receive voice and Push-To-Talk (PTT) calls over the MissionLINK™. This feature is for advanced users familiar with Land Mobile Radio systems and requires a custom cable connections between the GPIO connector (DB-15) and the target Radio (cables not offered by TDSI). Because each radio system will require a unique setup, it is highly recommended that you contact your TDSI representative for help in setup of this advanced user feature. See pinout (Figure 7-2) for creating the custom Radio Gateway cable. Refer to Table 4-10 for settings related to the Radio Gateway.

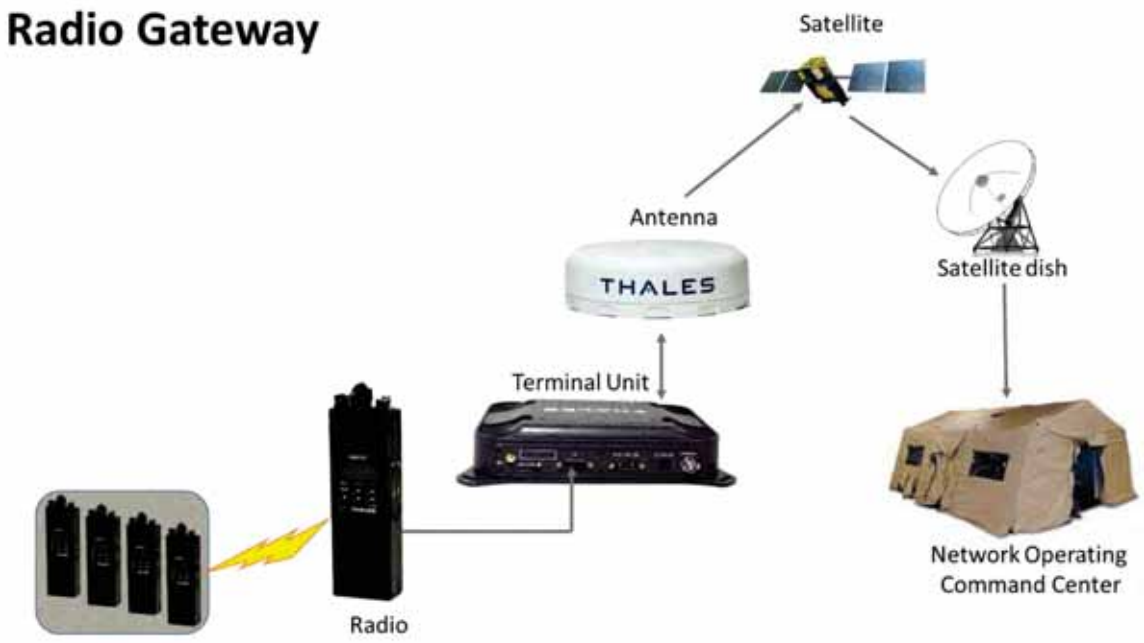


Figure 7-1 Radio Gateway for Advanced Land Mobile Services

3. **2- Wire RS232**→ Reserved for future use.
   Contact your service provider or Thales Customer Service for help in setting up of this advanced user feature.

4. **User defined GPIO**→ Reserved for future use.
   Contact your service provider or Thales Customer Service for help in setting up of this advanced user feature.

Connector Location
The DB-15 connector with Pin out shown in Figure 7-2.

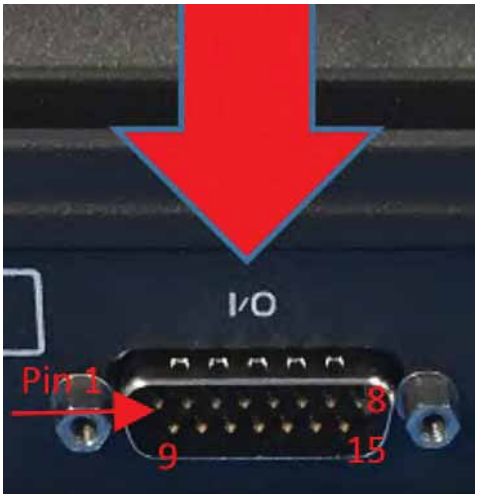


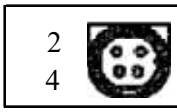
Figure 7-2 GPIO Connector Pin Detail

Table 7-4 GPIO Connector Pin Definition

Pin No	Name	Description
1	GND1	Ground
2	Audio_In +	Radio Gateway functionality, differential (+) Hi-Z Audio Input from external Radio
3	Audio_Out +	Radio Gateway functionality, Differential (+) Low-Z Audio Output to external radio (mic input)
4	RadioCOR	Radio Gateway functionality, Radio initiated voice into terminal (optional)
5	SOS_IN	SOS remote functionality, Ground pin to activate internal SOS
6	GPI01	Software configurable GPIO pin #1 (future)
7	RS232_TD	RS232 Output (future)
8	GND2	Ground
9	Audio_In -	Radio Gateway functionality, differential (-) Hi-Z Audio Input from external Radio
10	Audio_Out -	Radio Gateway functionality, Differential (-) Low-Z Audio Output to external radio (mic input)
11	RadioPTT	Radio Gateway functionality, Output PTT from terminal to external radio, short to ground for PTT enabled, Open drain requires external 10k pullup resistor
12	GND3	Ground
13	GPI02	Software configurable GPIO pin #2 (future)
14	RS232_RD	RS232 Input (future)
15	12V	+12V output, 100mA

TU 12V Connection Detail

Type: KPPX-4x connector (or similar) shown in Figure 7-3.



PIN NO	OUTPUT
2, 4	+V
1, 3	-V

VIEW INTO END OF MATING CONNECTOR

Figure 7-3 12V Input and Mating Connector Detail

TU 10-32VDC Connection Detail

Type: 684M7W2103L201 connector (or similar) shown in Figure 7-4.

A1 = V+ /10-32VDC
A2 =V- /GND
Pin 5 = Ignition

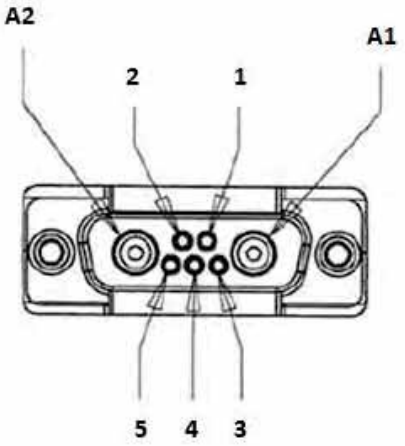


Figure 7-4 10-32 VDC and Mating Connector Detail

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CHAPTER 8 ACRONYMS / GLOSSARY

ACRONYMS / GLOSSARY

Table 8-1 List of Acronyms

Acronym	Description
AC	Alternating Current
API	Application Programming Interface
BAA	Broadband Active Antenna
BAE	Broadband Application Electronics
BCX	Broadband Core Transceiver
BIT	Built In Test
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
DTMF	Dual Tone Multi-Frequency
EBB	Enhanced Broadband
ETSI	European Telecommunications Standards Institute
GPIO	General Purpose Inputs/Outputs
GPS	Global Positioning System
HGA	High Gain Antenna
HRLP	High Speed Radio Link Protocol
HTTP	Hypertext Transfer Protocol
ICMP	Internet Control Message Protocol
IP	Internet Protocol
ITU	International Telecommunications Union
LAN	Local Area Network
LED	Light Emitting Diode
LEO	Low Earth Orbiting
LGA	Low Gain Antenna
LOS	Line of Site
MO	Mobile Originated
msec	Milliseconds
MT	Mobile Terminated
NAS	Network Attached Storage
PBX	Private Branch Exchange
PCM	Pulse Code Modulation
PoE	Power Over Ethernet
POST	Power On Self-Test
POTS	Plain Old Telephone Service
PSTN	Public Switched Telephone Network
PTT	Push To Talk
QSG	Quick Start Guide
R/W	Read/Write
RF	Radio Frequency

Acronym	Description
RGW	Radio Gate Way
SBC	Smart Battery Charger
SIM	Subscriber Identity Module
SIP	Session Initiation Protocol
SMBus	System Management Bus
SV	Satellite Vehicle
TCP	Transmission Control Protocol
TDSI	Thales Defense & Security, Inc.
TLS	Transport Layer Security
TU	Terminal Unit
UDP	User Datagram Protocol
UL/DL	Uplink/Downlink
VAD	Voice Activity Detection
VLAN	Virtual Local Area Network
VoIP	Voice of Internet Protocol
WAN	Wide Area Network
Wi-Fi	Wireless Network
WPA2-PSK	Wi-Fi Protected Access 2 – Pre-Shared Key

Table 8-2 List of Definitions

Acronym	Description	
API	Application Programming Interface	The Management Portal provides API to allow for the connection to the terminal remotely.
BAA	Broadband Active Antenna	The antenna and supporting electronics that interface an Iridium satellite terminal with the Iridium constellation
BAE	Broadband Application Electronics	Hardware and software platform resident in the TU that interfaces with the BCX, BAA and user devices
BCX	Broadband Core Transceiver	Hardware designed for an Iridium satellite terminal to interface end-user equipment with an Iridium BAA
BIT	Built In Test	Diagnostic testing for system integrity check and error reporting
DHCP	Dynamic Host Configuration Protocol	The Dynamic Host Configuration Protocol (DHCP) is a system used in computer networking to automatically assign networking information to a client.
DTMF	Dual Tone Multi-Frequency	Signals generated from phone keypad
EBB	Enhanced Broadband	EBB Mode is Iridium NEXT phase 1 EBBS (Enhanced Broadband Service)
ETSI	European Telecommunications Standards Institute	Organization that maintains standards for Information and Communications applicable to fixed and mobile radio platforms
GPIO	General Purpose Inputs/Outputs	General use pins

Acronym	Description	
HGA	High Gain Antenna	External antenna that connects to the TU via a coaxial cable. The HGA2 (also called BAA-H2) provides 352 kbps uplink and downlink capability
HRLP	High Speed Radio Link Protocol	Management of In-band signaling on broadband channels
HTTP	Hypertext Transfer Protocol	Protocol to exchange or transfer hypertext
ICMP	Internet Control Message Protocol	Protocol by network devices that typically send error messages and is used for diagnostics
ITU	International Telecommunications Union	Agency of the United Nations responsible for issues concerning information and communications technologies
LED	Light Emitting Diode	Semiconductor that emits colored light
LGA	Low Gain Antenna	External antenna that connects to the TU via a coaxial cable. The LGA1 and LGA2 support the future Certus™ 100 and Certus™200 capabilities
Management Portal		Management Portal: A web page served from the Terminal Unit that brings together the diverse status and configuration information of the TU in one place.
MO	Mobile Originated	Calls originating from the terminal
MT	Mobile Terminated	Calls terminating at the terminal
NAS	Network Attached Storage	Ability to store and retrieve files to/from a physical memory storage device attached to the network
PBX	Private Branch Exchange	Telephone connection between local users not requiring external phone connection
POST	Power On Self-Test	BIT Test performed at the turn-on of the TU
POTS	Plain Old Telephone Service	A voice-grade telephone service that utilizes analog signal transmission over copper loops
PSTN	Public Switched Telephone Network	The world's collection of interconnected voice-orientable public telephone networks, both commercial and government owned.
PTT	Push To Talk	Two way radio term indicating the pressing of a button to initiate transmit before speaking
R/W	Read / Write	Read / Write Capability
RGW	Radio Gateway	Radio Gateway feature enables communication between telephone users and users of ground radios.
SIM	Subscriber Identification Module	Iridium provided method to authenticate and identify subscriber
SIP	Session Initiation Protocol	An Internet Engineering Task Force (IETF) standard protocol for initiating an interactive user session that involves multimedia elements such as video, voice, and chat
SMBus	System Management Bus	Two-wire bus for communications between devices such as a Terminal and a Smart Battery
SV	Satellite Vehicle	Iridium Satellite
TCP	Transmission Control Protocol	Core internet protocol that provides reliable delivery and error-checking
TLS	Transport Layer Security	TLS is on the standard way that computers on the internet transmit information over an encrypted channel.

Acronym	Description	
TU	Terminal Unit	Electronic equipment that contains the BCX and the BAE
UDP	User Datagram Protocol	Connectionless transmission model with minimum , no-handshaking protocol
UL/DL	Uplink/Downlink	To and from satellite communications
VLAN	Virtual Local Area Network	For context within this document, VLAN more specifically designates an Ethernet VLAN. A VLAN is establishes a broadcast domain that is partitioned
WPA2-PSK	Wi-Fi Protected Access 2 – Pre-Shared Key	Method of securing a Wi-Fi network

CHAPTER 9 SPARE PARTS

SPARE PARTS

The following list of equipment can be purchased as a kit and accessories and spares can be purchased separately, depending on your requirements and/or needs.

Table 9-1 Standard Kit, List of Equipment

Part Number			Description
MF350BV			Kit, MissionLINK™ Vehicular High Gain 350**
	Qty	**Part Number**	**Description**
✓	1	1100789-501	Kit, Terminal Unit, Mounting Hardware
✓	1	1100790-501	Kit, Antenna Magnetic Mount
✓	1	1100792-501	Kit, Antenna Mounting Hardware Land
✓	1	1600899-1	Broadband Active Antenna (BAA)
✓	1	3402174-1	Quick Start Guide (QSG) MissionLINK™
✓	1	3900011-1	Mounting Template, Terminal Unit
✓	1	3900013-1	Mounting Template, BAA
✓	1	4102947-502	Terminal Unit 350, IRIDIUM CERTUS™ Land
✓	1	855021-010	RF Cable, 10 ft LMR240
✓	1	855024-020	Cable, Vehicle DC Power Harness 20 ft
✓	1	855026-010	Cable, RJ-45 Ethernet, 10 ft
✓	1	85728-001	Wi-Fi Antenna, 2.4 GHz Dipole 2 dBi

** The MF350BV is capable of up to 350 kbps uplink and downlink speeds.
Note: The SIM card is provided by the airtime service provider and may be packaged separately from this kit.

Table 9-2 Available MissionLINK™ Accessories

Description	Part Number	Qty
Thales SureLINK IP Handset Kit	1100818-501	1
Power Supply, AC/DC 12V – 160W	84670-001	1
Cable AC Power with USA Plug Type B IEC 60320-C13 Connect Blk 6 ft	854024-001	1
Cable AC Power with Euro Plug Type E IEC 320-C14 Connect Blk 6 ft	854025-001	1
Cable AC Power with AUS Plug Type 1 IEC 320-C14 Connect Blk 6 ft	854026-001	1
Cable AC Power with UK Plug Type G IEC 320-C13 Connect Blk 6 ft	854027-001	1
RF Cable: 10 ft LMR240 Cable TNCM-TNCM Coax TWS (LMR) 240 Mat 10Ft	855021-010	1
RF Cable: 20 ft, LMR240	855021-020	1
RF Cable: 30 ft LMR240RF Cable TNCM-TNCM COAX TWS (LMR) 240 MAT 30FT	855021-030	1
RF Cable 50 ft LMR240	855021-050	1
RF Cable 100 ft TNCM-TNCM COAX TWS (LMR) 400 MAT 100FT (Fixed Locations)	855022-100	1
Cable, Vehicle DC Power Harness 20 ft Cable, Vehicle Power Harness 20Ft	855024-020	1
Cable, RJ-45 Ethernet, 10 ft Cable Cat-5e Patch RJ45M-RJ-45M Blue 10ft	855026-010	1
Wi-Fi Antenna, 2.4 GHz Dipole 2 dBi Antenna 2.4 GHz Dipole 2dBi Rev Pol SMA 50 OHM	85728-001	1

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