

SKYUS 100B Series

Skyus 160 LTE / 160S LTE

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B	Updated Key Features section	8	10/21/2019
	Updated Backup Battery wording	18	
	Updated for Software changes:		
	• Bluetooth Sensors page added	27	
	• Wi-Fi Hotspot (added GHz breakdown)	34	
	• Settings > Mobile Network	49	
	• Added more detailed info to later About tabs	60	
	• Remote Management moved to Settings > Advanced	82	
	• Added Settings > Advanced > VPN	84	
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	Photos of updated hardware	9	
	Bluetooth connection instructions	20	
	Settings > Mobile Network > Carrier Settings - are schedule times local?	51	
	Accessory Part Numbers	86	
	Is the backup battery optional or standard?		
C	Added IC ID	93	10/31/2019

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1

Introduction

Overview
Description
Indicator LEDs

Overview

The compact Skyus 100B Series is a cellular gateway (cloud-enabled cellular modem and router) designed to support numerous Industrial IoT use cases in both fixed and mobile environments. With LTE connectivity, the Skyus 100B Series router provides features that are purpose-built for IoT. Cloud connectivity to IoT Connect™ enables remote device / fleet / deployment management.

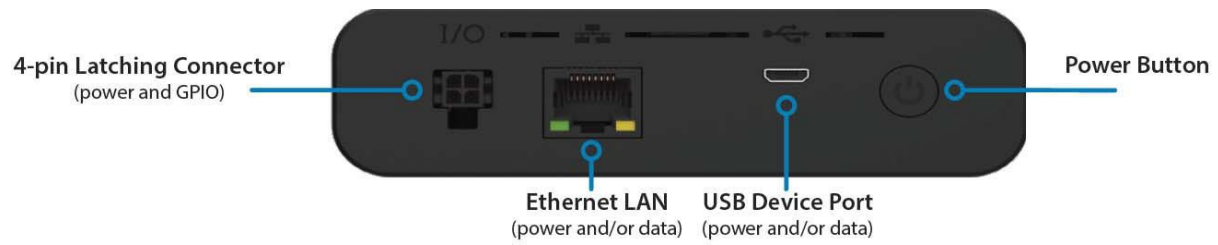


Key Features

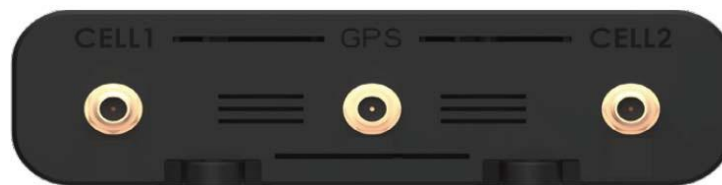
- LTE Cat 6 (up to 300 Mbps)
- Multi-Carrier support
- aGNSS (with active and passive GNSS antenna support)
- Rugged design for continuous operation in harsh environments
- Advanced security encryption and authentication protocols
- Wi-Fi 5 and Bluetooth 5.0
- Standard 4400 mAh backup battery
- Multiple data interfaces: Ethernet, USB, Wi-Fi
- Multiple power interfaces: PoE, USB, or 4 Pin
- Cloud services, FOTA and remote configuration
- On-board memory to support edge processing

Description

Front View



Back View



Bottom View

The battery compartment, SIM sockets, and device labels are located on the bottom of the device.

[photo needed]

Indicator LEDs

The Skyus 100B Series router has three LEDs that verify status, signal, and connectivity.

LED	LED Color	Meaning
Device	Blue	On / Battery Power (High)
	Green	On / External Power
	Yellow	On / Battery Power (Low)
	Red	On / Battery Power (Critical) Error (when blinking)
Cellular	Blue	Great Signal
	Green	Good Signal
	Yellow	Okay Signal
	Magenta	Poor Signal
	Orange	No SIM / Inactive SIM
	Red	Error
Wi-Fi / Bluetooth*	Blue	Bluetooth On - Connected Clients
	Green	Wi-Fi On - Connected Clients
	Blue and Green	Both Bluetooth and Wi-Fi On
	Orange	No Clients
	Red	Error

The Ethernet / LAN connector port also has indicator LEDs.

LED	LED Color	Operation	Meaning
LAN	Green	Solid	Indicates Ethernet connection speed 1000 Mbps (Gigabit)
		Off	10/100 Mbps
	Amber	Solid	Indicates link status Link
		Blinking	Activity
		Off	No link

*Wi-Fi / Bluetooth available only on select models.

2

Installation and Getting Started

- Installation Overview
- System Requirements
- Installing a SIM Card
- Installing the Battery
- Connecting Antennas
- Mounting Precautions and Guidelines
- Mounting the Device
- Powering the Device
- Connecting your Device
- Connecting to the Web UI
- Getting Support

Installation Overview

This chapter provides system requirements and instructions for installing and getting your Skyus 100B Series up and running.

The installation process consists of the following steps:

- Installing a SIM Card
- Installing the Battery
- Connecting Antennas
- Mounting Precautions and Guidelines
- Mounting the Device
- Powering the Device
- Connecting your Device
- Connecting to the Web UI

System Requirements

The Skyus 100B Series router allows you to set up a network and provides both wired and wireless connectivity.

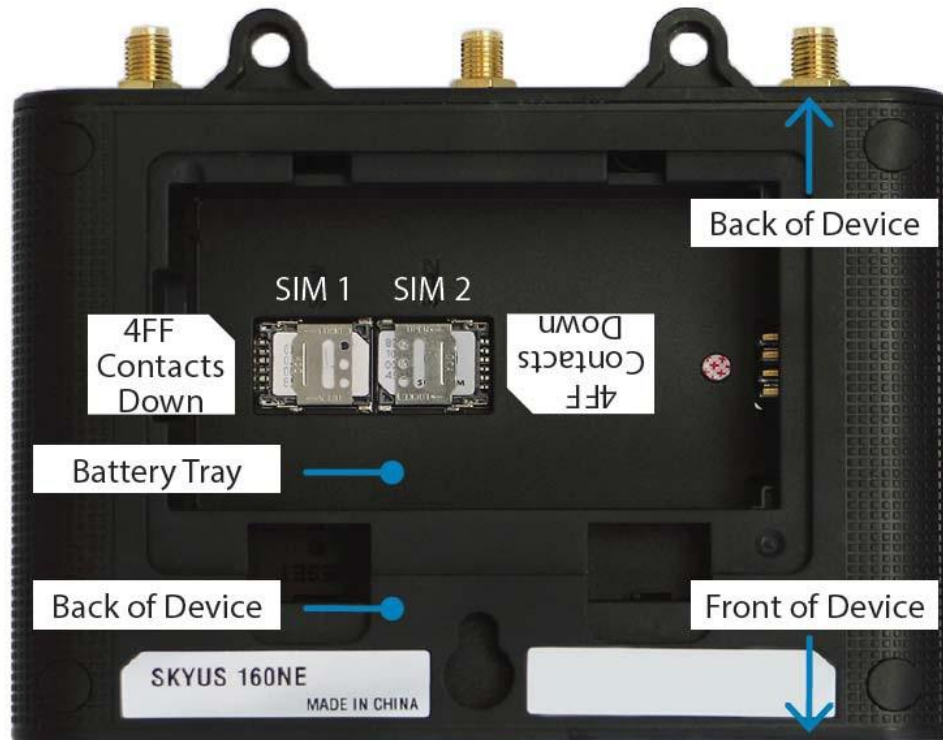
NOTE: This device is recommended for professional installation. Requirements include:

- A computer or computing device supporting Wi-Fi 802.11 b/g/n, Ethernet, or USB 2.0
- Internet browser software, such as Microsoft Internet Explorer 8.0 or higher, Firefox, Safari, Opera, or Chrome

Installing a SIM Card

To insert the SIM card:

1. Open the battery door on the bottom of the device and, if installed, remove the battery.
2. Slide the SIM socket retainer to the unlocked position and lift it.



3. Insert the SIM card into the appropriate slot in the orientation shown.
4. Press the retainer down and move it to the locked position.
5. Replace the battery and the battery door.

Installing the Battery

To install or remove the backup battery:

1. Remove the battery door on the bottom of the device.
2. Install or remove the battery.

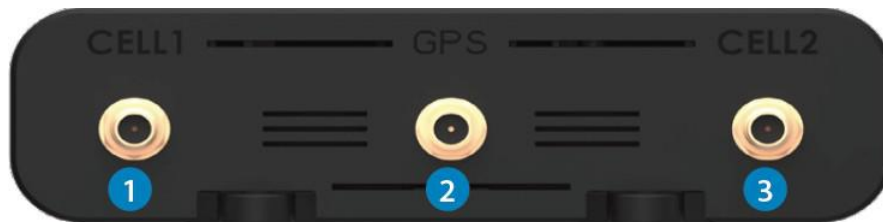
NOTE: The battery will only fit into the device in the correct orientation.

3. Replace the battery door.

Connecting Antennas

Finger tighten the appropriate antennas for your desired configuration. At minimum, connect antennas to CELL 1 and CELL 2 ports.

NOTE: Recommended torque is 5 in-lbs (56 N-cm).



Mobile Configuration

Antenna Ports	Frequency Range	Connector Type
1. CELL 1	690–960 MHz; 1700–2700 MHz	SMA
2. GPS*	1570 - 1580 MHz	SMA
3. CELL 2	690–960 MHz; 1700–2700 MHz	SMA

* Ensure GPS antenna is located with clear access to GNSS satellites.

Mounting Precautions and Guidelines

As you determine the mounting location and prepare to install the device, be sure to heed the following precautions and guidelines:

- Locate the router in an area free from liquids, dust, and extreme temperatures. If it is possible for the device to experience contact with fluids, extreme mechanical shock, or extreme thermal conditions (outside of the thermal specs listed in this User Guide), you run the risk of damaging the device and/or the battery. If the battery is subject to these conditions, the battery may fail and cause significant damage to the device and the surrounding area.
- Store the router back in its box when not in use.
- Do not block any ventilation openings by applying adhesives or labels to the router as this might cause the device to overheat or it might interfere with antenna performance.
- Clean only with a clean, dry cloth.
- Protect the cord from being crushed or pinched.
- Take care to locate and route cords and wires to minimize the risk of damage caused by users or other objects that are located near the device.
- Avoid dropping or shaking the router to reduce the risk of damaging the device or disrupting operation.

Positioning your Device

The size and mounting options available for the Skyus 100B Series router allow you to install the device in the location that best suits your needs. The reception and coverage range depends on where you mount the router. Keep in mind that the placement of furniture, the thickness of walls, and the number of walls a signal must travel through can limit cellular, Wi-Fi, and Bluetooth range.

For best results, place your router:

- Away from interference such as microwaves, ceiling fans, security systems, or cordless phones
- Away from large containers of glass or concrete (fish tanks, mirrors, brick or concrete walls)
- Away from large metal surfaces (cook tops, metal doors, aluminum studs, appliances)
- More than 20 cm away from a person
- Close to a window but out of the way of direct sunlight (great for 4G LTE reception)
- Close to an AC outlet and near Ethernet computer cables
- In an elevated location

- In line-of-sight to wireless devices
- Near the computers or other devices that communicate with the router
- On an upper floor (if applicable)

NOTE: When using multiple points of access, use different radio frequency channels for adjacent access points. We recommend leaving 5 spaces between channels (e.g. 1 and 6, or 3 and 8).

Mounting the Device

You can mount your Skyus 100B Series device using the following methods:

- Mounting with Screws
- Mounting with Double-Sided Tape

WARNING! While mounting your device, do not apply excessive force to the mounting brackets as this may cause the tabs to fail. Installation is recommended to be completed by a professional.

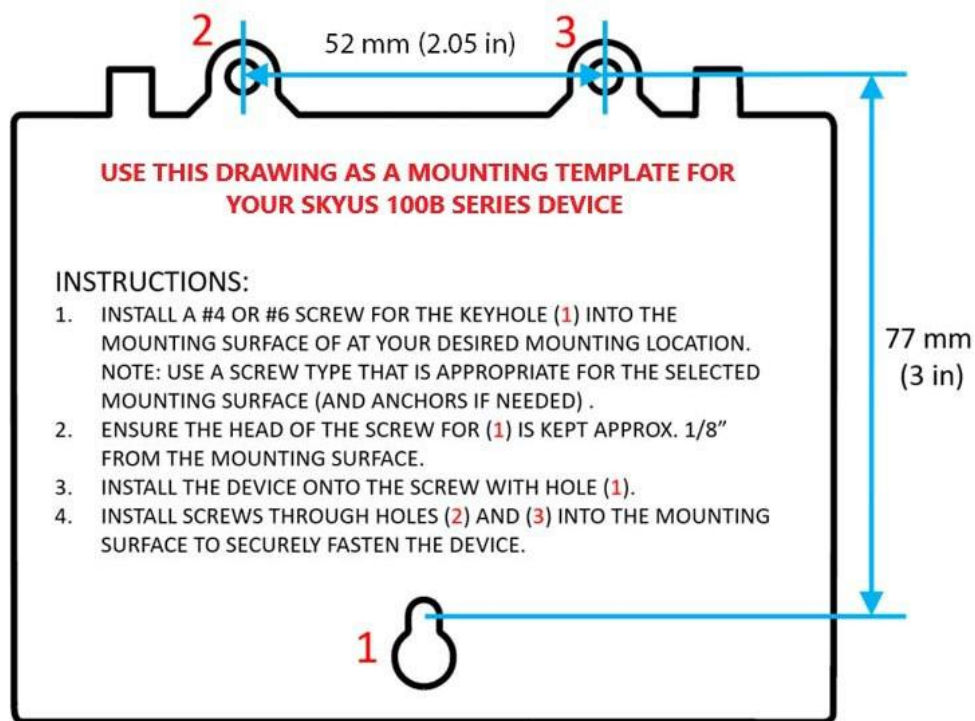


Mounting with Screws

CAUTION! If using rigid mounting hardware, apply pressure only to the ends of the device. Limit the mounting pressure only to the amount needed to secure the device.

To mount your device using screws, follow the directions below, using two #4 or #6 screws.

1. Identify the optimal installation location. Make sure you consider the physical space requirements of the device, any needed connectors, cables, and antennas. In addition, make sure you consider mounting location to optimize cellular coverage.
2. Identify the optimal mounting equipment. Depending on installation location, you may want to select wood screws, metal self-tapping screws, drywall anchors, concrete anchors, or others.
3. Locate and install a screw for Hole 1. Make sure the screw head remains 1/8" (3mm) away from the wall.



4. Install the device onto the screw using Hole 1 and slide the device all the way onto the slot of Hole 1.
5. Install a screw into the mounting surface through Hole 2. Tighten screw to 5 in-lbs. to ensure a snug fit. Take caution to ensure the device will be installed level.
6. Install the final screw into the mounting surface through Hole 3. Tighten screw to 5 in-lbs. to ensure a snug fit.

Mounting with Double-Sided Tape

You can mount your device using double-sided tape. Use 3M VHB or similar tape to install the device.

CAUTION! If securing the device using double-sided tape or a method not described in this manual, note the following precautions:

- Using adhesive tape may cause damage to the device or battery door when removed from its install location.
- Ensure the device and the installation surface is free of debris and is cleaned and allowed to dry using a rubbing alcohol solution prior to application.

Powering the Device

You can power your device using an external power source. When a power source is connected, the Skyus 100B Series powers up automatically. When loaded with an active SIM, **it may take up to two minutes** for the device to power up and register on the cellular network.

To power on the device using an external power source:

Connect the device to a power source. This can be a 4 pin connector, USB, or Ethernet, see [Connecting your Device](#).

The LEDs will all blink white, signaling the device is starting up. When LEDs stabilize with green/yellow/blue/red colors, the device is ready for use. The power button should be green showing the device has sufficient external power.

Using the Backup Battery

The Skyus 100B Series features a rechargeable 3.8 V 4400 mAh 16.7 Wh Li-ion backup battery that provides up to 12 hours of critical power for alerting during power loss in stationary environments and usage in vehicle environments when the vehicle is off. The battery will charge when connected to any external power source.

NOTE: The backup battery is not designed for primary use.

WARNING! The backup battery will charge when external device temperatures are within -20 - 50° C. Outside of this range, the battery charging circuit will be disabled. Li-ion batteries are not safe to use in environments outside of -20- 60C. If it is possible that the device will see temperatures outside of this range, please remove the battery from the device and discontinue use with the battery. Failure to comply with these operating ranges may result in extensive damage to the device and/or the device's surrounding area. If the battery is not needed in your use case or you wish to operate the device outside of this range, please properly store or dispose of the battery according to your local waste management authority.

To power on the device using the backup battery:

1. Press and hold the power button on the front of the device until the LEDs start blinking.



2. The LEDs will all blink white, signaling the device is starting up. When LEDs stabilize with green/yellow/blue/red colors, the device is ready for use. The power button should show blue/yellow/red to indicate battery level status.

Connecting your Device

You can connect your Skyus 100B Series device in multiple ways:

- Connecting via Ethernet
- Connecting via USB
- Connecting via Wi-Fi
- Connecting via Bluetooth

Connecting via Ethernet

To connect using Ethernet:

1. Connect an Ethernet cable from the device to the host system.
2. Connect the device to a power source.
 - If the host system offers PoE or PoE+, the device can be powered by the host system and pass traffic via Ethernet.
 - If PoE or PoE+ is not available from the host system, the device needs to be powered using the 4 Pin power port.
3. When powered and plugged in, the device should automatically turn on and establish a connection.

Connecting via USB

You can connect via USB to connect your router to a host system, or to an external device.

To connect using USB (connecting to a host):

Using the USB A to USB Micro-B cable, connect the Micro-B side to the device and the A side to the host system.

When plugged in to a USB 2.0 port, the device should automatically turn on and be ready for use in Windows-based (8 or later) or Linux-based (kernel 2.6.32 or later; Ubuntu 14.04 or later) environments.

NOTE: If the device is not connected through a powered USB port, the device can still operate via USB while using the 4 Pin power cord to power the device.

To connect using USB (connecting to a device):

Using the appropriate USB cable (Micro-B on the Skyus 100B Series device side), connect to the external device.

With USBOTG, the Skyus 100B Series can power the external device using USB 2.0 (5VDC @ 1A), but the Skyus 100B Series device must be plugged into power using the 4 Pin connector.

This situation is useful when connecting an external USB modem (e.g. Skyus DS, Skyus DS2, or Skyus SC) for failover and/or load balancing.

Connecting via Wi-Fi

NOTE: This method is only available on select models.

To connect using Wi-Fi:

1. Ensure the Skyus 100B Series router is powered on.
2. Connect to the router using the SSID and Password information provided on the label on the bottom of the router.
3. It is strongly recommended to change the SSID and Password from the default for security reasons after initial use. Make sure to save the updated information in a secure location.

Connecting via Bluetooth

NOTE: This method is only available on select models.

[NEED INPUT]

Connecting to the Web UI

On the device connected to your Skyus 100B Series router, open any web browser and go to <http://my.skyus/> or <http://192.168.1.1>.

Select **Sign In** (in the top-right corner of the screen), and enter the password printed on the bottom of your router.

Resetting your Router

You can restart your Skyus 100B Series router, or restore settings to the factory defaults. You can do this using the Web UI at **Settings > Backup and Restore**, or by clicking the Sign Out drop-down in the top-right corner of any Web Interface page and selecting **Restart**.

Alternately, you can use the **RESET** button on the device, located inside a corner of the battery compartment. The button is a small hole about 1.5mm in diameter, with the word **RESET** below it. Use a small pointed object, such as a paperclip, to push the **RESET** Button.

To restart the router: Press the **RESET** button quickly (less than one second). This turns your router off and on again and does not affect settings.

To restore the router to factory default settings: Press and hold the **RESET** button for three seconds or longer. This resets all settings to their factory default values.

CAUTION: This initiates a restart and may change the current Wi-Fi settings, breaking all existing connections to this router and disconnecting you from the Web UI.

Getting Support

Documentation for your Skyus 100B Series router is available online. Go to www.inseego.com/support-documentation.

For additional information and technical support, email Technical Support at technicalsupportus@inseego.com or call Customer Support (Toll Free) at 1-877-698-6481.

3

Software Configuration

Logging In

Home Page

Managing Bluetooth Sensors

Managing Connected Devices

Configuring GPS

Managing Settings

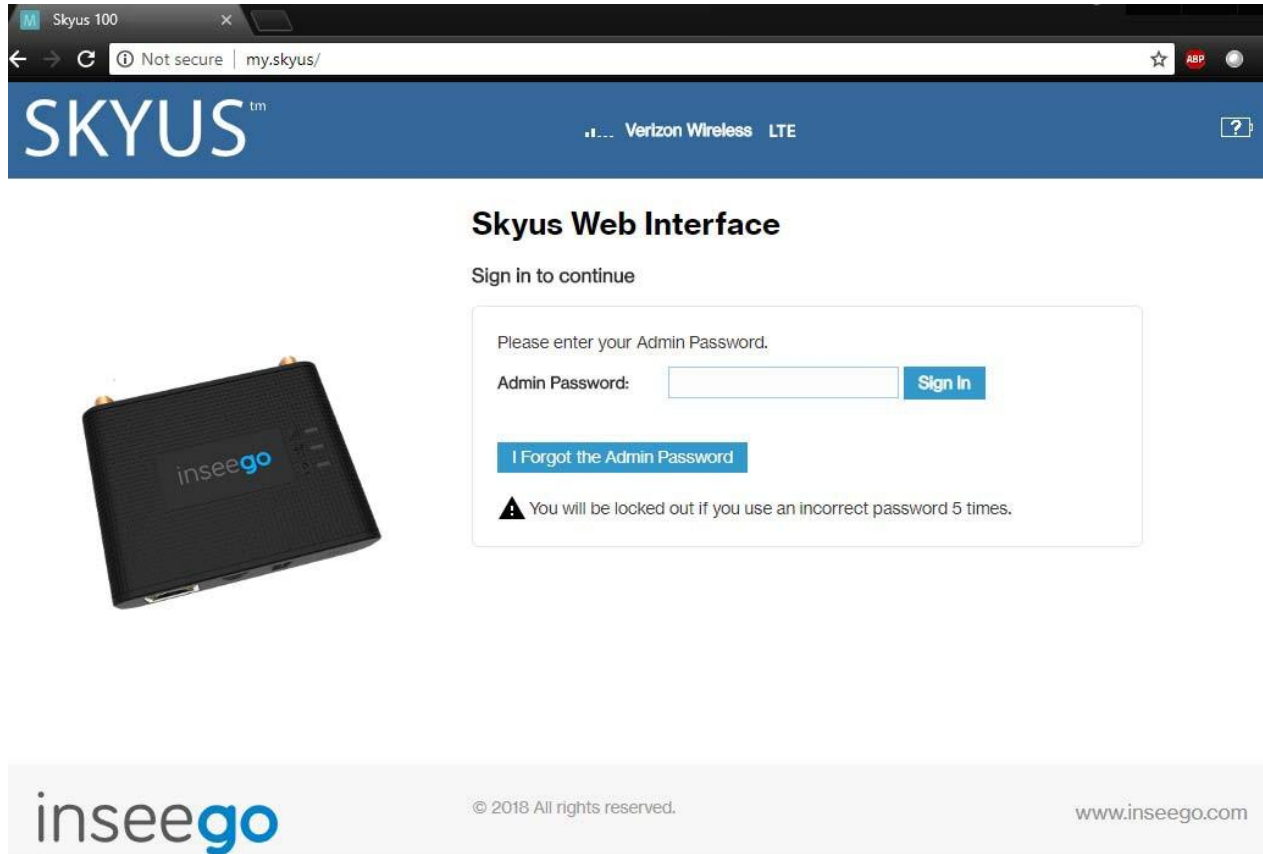
Accessing Messages

Viewing Info About the Router

Getting Help

Logging In

1. On the device connected to your Skyus 100B Series router, open any web browser and go to <http://my.skyus/> or <http://192.168.1.1>. The sign in screen appears.



2. Enter the Admin password. By default, this is the password printed on the label on the bottom of the router. The Home page appears.

NOTE: You can set up a separate Wi-Fi password in **Settings > Wi-Fi Hotspot** (see Wi-Fi Hotspot Tab), but that is different from the Admin password, which is for this Web Interface.

Important: It is critical that you change the Admin password from the default to keep the device and your network secure. To change the Admin password, go to **Settings > Device > Admin Password**, see Admin Password Sub Tab.

Home Page

The Skyus 100B Series Home page is the local gateway to configuring and managing your router. It displays current router and mobile network status, lists currently connected devices, provides an event log, and offers links to other pages with option settings.

After logging in, you will automatically be taken to the Home page.

From any other page, click on the Home icon from the navigation pane on the left of the screen to return to the Home page.

SKYUS tm	Verizon Wireless LTE	100%	Sign Out
----------------------------	----------------------	------	----------

Skyus
by InseeGo

Telephone: 541 520 9605
IMEI: 9900 0636 8014 618
Software version: 1.0.1.001
Agent (RSC) Version: 2.0

Mobile Network

Status: Connected
Network Name: Verizon Wireless
Technology: LTE
Time Connected: 00:02:41:21 (dd:hh:mm:ss)
Received: 21.92 MB
Transmitted: 13.44 MB
IPv4 Address: 166.248.205.187
IPv6 Address: =

Event Log

Jul 6 16:04:42 (none) dmdbd: [DMDB]:[notice] - DMDBDM: {mifios_sysevent}:New IP client: mac=f4:8c:50:7c:33:19, ifc=WIFI 1, type=DHCP, ip=192.168.1.5, host=eug-000635
Jul 6 16:04:42 (none) ansd: [ANS]:[notice] - {mifios_sysevent}: Generating Alert Notification deviceJoinWiFi, title notification_device_join_wifi_title, label notification_device_join_wifi_label
Jul 6 16:05:16 (none) webui.cgi: [WEBUI]:[notice] - {mifios_sysevent}: WebUI authenticate admin session started 192.168.1.5

Connected Devices

eug-000635 IPv4: 192.168.1.5

Top Banner

The top banner of the Skyus 100B Series Web Interface provides battery and signal strength information at a glance.



Signal Strength: The relative signal strength

Network: The cellular carrier (for example, Verizon or AT&T)

Technology: The cellular technology being used (for example, LTE or 3G)

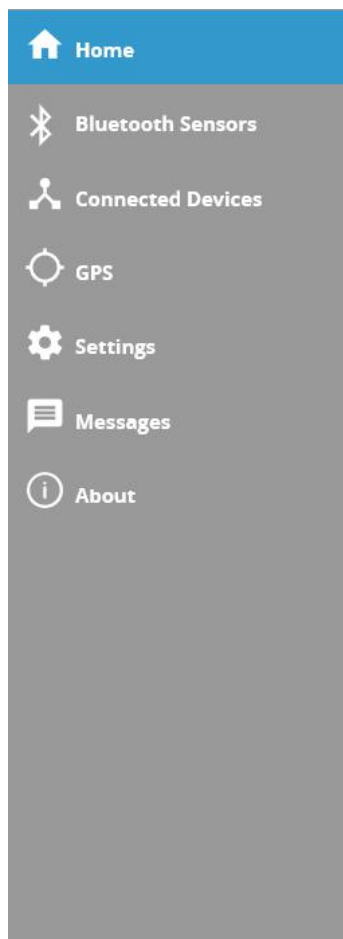
DL/UL Icons: The current activity to/from the device

Battery: The percent of battery life and charging status

Sign Out: The Sign Out drop-down.

Side Menu

Each page in the Skyus 100B Series Web Interface includes a menu on the left, which you can use to return to the Home page or jump to other screens. The current screen is indicated by a blue bar.



Skyus Device

Telephone: The phone number (PTN) of active SIM

IMEI: The unique number used in LTE networks to identify the device

Software version: The radio module SW version

Agent (RSC) version: The Remote Services Client version (IoT Connect agent)

Mobile Network

Status: The current connection status (Connected, Disconnected)

Network Name: The cellular carrier network (for example, Verizon Wireless or AT&T)

Technology: The cellular technology (for example, LTE or 3G)

Time Connected: The cumulative time connected

Received: The cumulative amount of data received for the current 24 hr period

Transmitted: The cumulative amount of data transmitted for the current 24 hr period

IPv4 Address: The Internet IP address assigned to the router

IPv6 Address: The global IPv6 address for the router (blank if IPv6 is turned off or is not supported by the current network connection or carrier).

Connected Devices

This section lists all devices currently connected to your Skyus 100B Series router and the IP Address of each device. An icon indicates the connection type for each connected device. You can hover over the icon to read the type of connection they are using (USB, Ethernet, Wi-Fi, or Bluetooth).

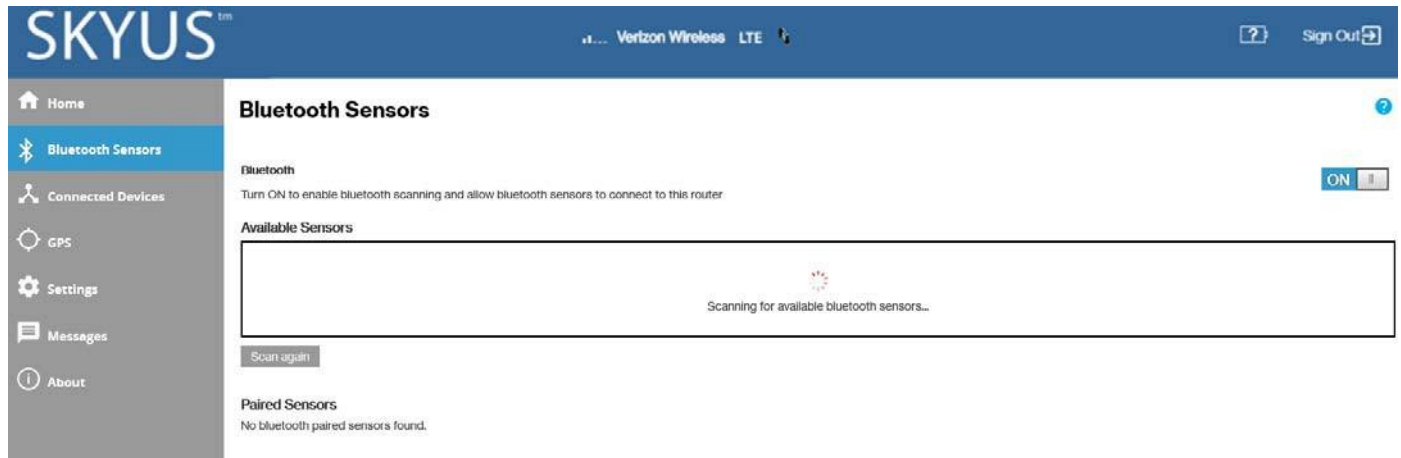
Event Log

This section provides a log of each recent event and action of the Skyus 100B Series device.

Managing Bluetooth Sensors

To manage Bluetooth sensors, select **Bluetooth Sensors** from the Web UI side menu. The Bluetooth Sensors page appears.

NOTE: This feature is only available for Bluetooth enabled models.



Bluetooth Sensors Page

Use this page to enable Bluetooth scanning and allow Bluetooth sensors to connect to your Skyus 100B Series router.

Bluetooth

Use the **ON/OFF** slider to enable or disable Bluetooth. Details in the Bluetooth page are hidden when turned off; all details are displayed when turned on. Bluetooth scanning starts immediately when turned on.

Available Sensors

Lists all of the available Bluetooth sensors. Use the **Pair** button to pair a sensor with your Skyus device.

Click **Scan again** to restart the scan for available sensors. It may take a few seconds to complete the scan and update the available sensors list.

Paired Sensors

Lists all of the Bluetooth sensors that are paired with your Skyus device.

Use the **View** button view the following details of paired sensors.

Name: The name of the sensor.

Serial Number: The serial number of the sensor.

Model: The model number of the sensor.

Type: The type of the sensor.

Battery: The battery charge level of the sensor.

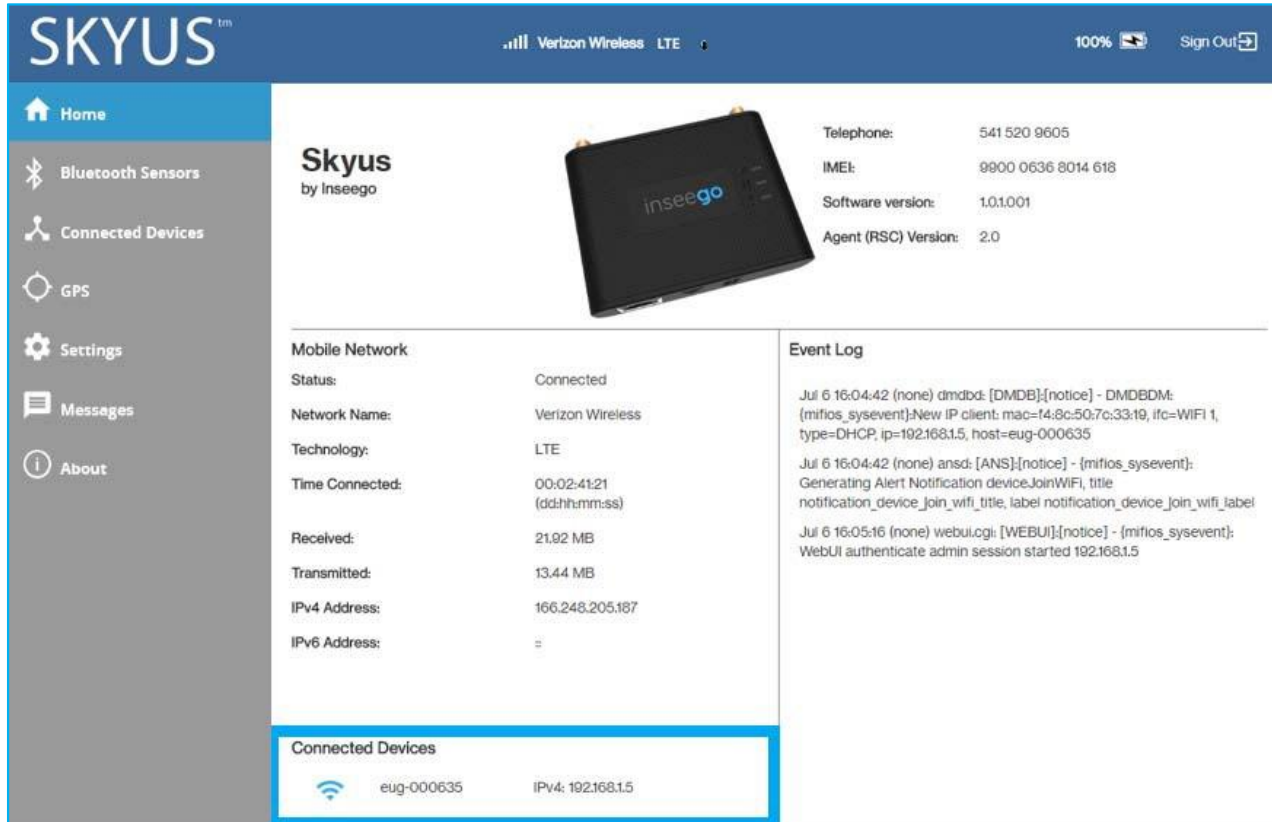
Signal Strength: The signal strength of the sensor.

Use the **Edit** button to update editable details of paired sensors, such as Name and Type.

Use the **Unpair** button to unpair the sensor from your Skyus device.

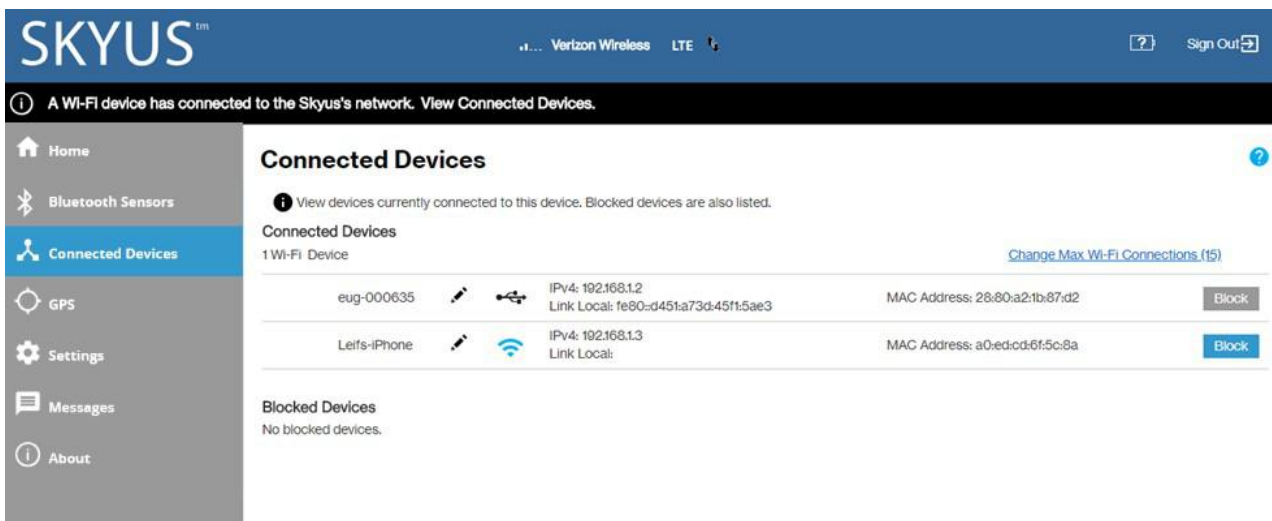
Managing Connected Devices

On the Web UI Home page, the Connected Devices section lists all devices currently connected to your Skyus 100B Series router, along with the connection type they are using and their IP Address.



The screenshot shows the SKYUS Web UI Home page. The top navigation bar includes the SKYUS logo, signal strength, Verizon Wireless LTE, 100% battery, and a Sign Out button. The left sidebar contains menu items: Home, Bluetooth Sensors, Connected Devices, GPS, Settings, Messages, and About. The main content area features a 'Skyus by Inseego' header with a product image and technical details: Telephone: 541 520 9605, IMEI: 9900 0636 8014 618, Software version: 1.01.001, and Agent (RSC) Version: 2.0. Below this is a 'Mobile Network' section with fields for Status (Connected), Network Name (Verizon Wireless), Technology (LTE), Time Connected (00:02:41:21), Received (21.02 MB), Transmitted (13.44 MB), IPv4 Address (166.248.205.187), and IPv6 Address (empty). To the right is an 'Event Log' with three entries. At the bottom, a 'Connected Devices' section is highlighted, showing one device: 'eug-000635' with IPv4: 192.168.1.5.

To manage connected devices, select **Connected Devices** from the Web UI side menu. The Connected Devices page appears.



The screenshot shows the SKYUS Web UI Connected Devices page. The top navigation bar is identical to the Home page. A notification banner at the top states: 'A Wi-Fi device has connected to the Skyus's network. View Connected Devices.' The left sidebar is the same. The main content area is titled 'Connected Devices' and includes an information icon and the text: 'View devices currently connected to this device. Blocked devices are also listed.' Below this is a 'Connected Devices' section with a link to 'Change Max Wi-Fi Connections (15)'. It lists one Wi-Fi device: 'eug-000635' with edit and delete icons, IPv4: 192.168.1.2, Link Local: fe80::d451a73d:45f1:5ae3, and MAC Address: 28:80:a21b:87:d2, with a 'Block' button. Below that is another device: 'Leifs-iPhone' with edit and delete icons, IPv4: 192.168.1.3, Link Local: (empty), and MAC Address: a0:ed:cd:6f:5c:8a, with a 'Block' button. At the bottom is a 'Blocked Devices' section with the text: 'No blocked devices.'

Connected Devices Page

This page provides details about each device connected to the Skyus 100B Series and allows you to edit how device names appear in the Web UI. You can also block or unblock a device from Internet access.

Connected Devices

This table lists all devices connected to the Skyus 100B Series:

Device: This is usually the hostname set on the connected device. In rare cases, the hostname may be unavailable.

Edit: Click on the Edit icon to change the name of a device as it appears in the Skyus 100B Series Web UI. **NOTE:** This only changes the how the device name appears in the Web UI.

Connection: An icon indicates the connection type (Wi-Fi, Ethernet, USB, or Bluetooth) for each device. (You can hover over the icon to read the type of connection.)

IPv4: The IP address of the connected device.

Link Local: The Link-Local IPv6 address if the connected device supports IPv6.

MAC Address: The MAC Address (unique network identifier for this connected device).

Block: Select this box to disconnect a device and prevent it from reconnecting. Select **Save Changes**. The device is removed from the **Connected Devices** list and appears in the **Blocked Devices** list below.

NOTE: The Block option is available for each device connected through Wi-Fi, but is not available for your own device or devices connected via Ethernet.

Change MAX Wi-Fi Connections: This link takes you to **Settings > Wi-Fi Hotspot** where you can change the number of connections that can use Wi-Fi.

Blocked Devices

This section lists all devices blocked from connecting to the Skyus 100B Series router.

NOTE: Since blocked devices are not currently connected, they do not have an IP address. Instead, they are identified by their name and MAC address.

To unblock a blocked device, click the **Unblock** button and select **Save Changes**. The device is removed from the **Blocked Devices** list and appears in the **Connected Devices** list above.

Configuring GPS

The Skyus 100B Series router incorporates a GPS receiver. The GPS receiver can determine your current location, often even indoors. Current location information can be shared with connected devices by using the Local Streaming feature on the Local tab.

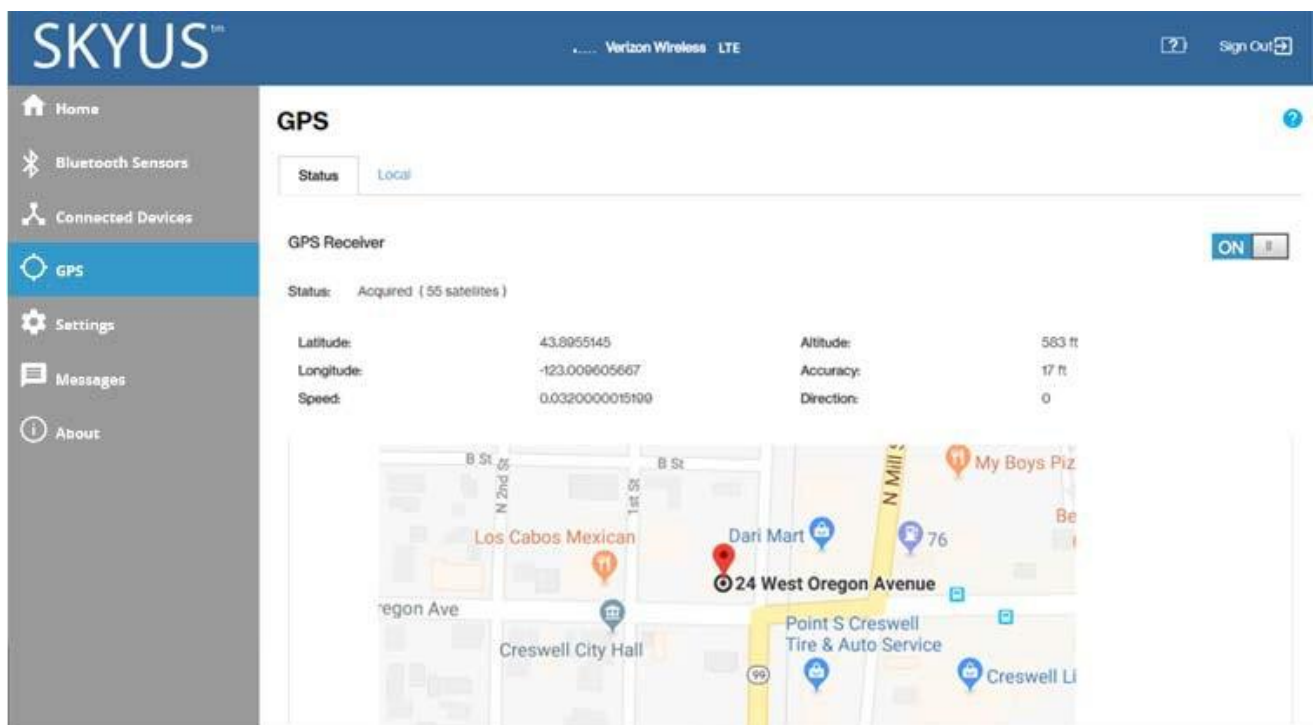
To configure GPS, select **GPS** from the Web UI side menu.

The GPS page includes two tabs:

- Status Tab
- Local Tab

Status Tab

Use settings on this tab to enable or disable GPS and to view current location and the current status of your GPS connection.



GPS receiver

This setting enables or disables the GPS radio on your device. When the **ON/OFF** slider is **ON**, the device acquires GPS and makes the data available to applications running on the device. A GPS Agreement appears, click **Confirm** to proceed. When **OFF**, no GPS data is available.

NOTE: For fixed location models (SK160XXX- ACR), the GPS will be **OFF** by default. For mobile location models (SK160XXX- DCR), GPS will be **ON** by default.

When turning on the GPS for the first time, it may take up to several minutes to acquire a signal lock.

Status

The current status of your GPS connection. If the GPS receiver has not yet obtained a fix (locations), a Searching status appears. When searching, the device is making the connection to satellites in order to populate GPS data. Once a fix has been obtained, the following information is displayed and a Google map appears to visually indicate the current location.

Latitude: Latitude for the last location fix.

Longitude: Longitude for the last location fix.

Speed: Speed the device is traveling at.

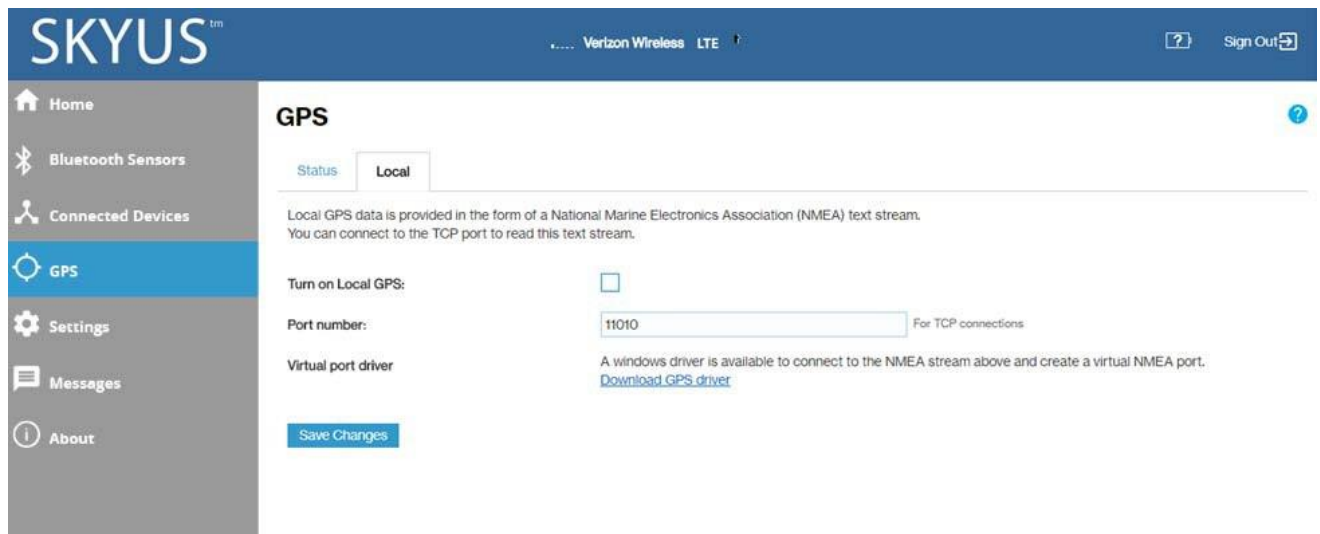
Altitude: Altitude for the last location fix.

Accuracy: A measure of the accuracy of the horizontal position obtained by the GPS receiver.

Direction: Direction the device is traveling relative to North.

Local Tab

Use this tab to enable Local GPS streaming.



Turn on local GPS: Check this box to turn on local GPS.

Port number: The port number used by the driver software on your computer to establish a connection to your Skyus 100B Series router and obtain GPS data. Unless there is a good reason to do so, you should not change the port number. Acceptable port values are between 1024 and 65535.

Virtual port driver: GPS data is provided by the Skyus 100B Series in the form of a National Marine Electronics Association (NMEA) text stream. Using a NMEA (GPS) port is a standard method for applications to access a GPS data stream in Windows and other computing platforms.

To create this port, you must download and install the GPS over Wi-Fi driver for your platform. This driver will create the NMEA port, obtain GPS data from the Skyus 100B Series router, and make this GPS data available to NMEA-aware applications.

Click **Save Changes** to update settings.

Managing Settings

To change system settings, select **Settings** from the Web UI side menu.

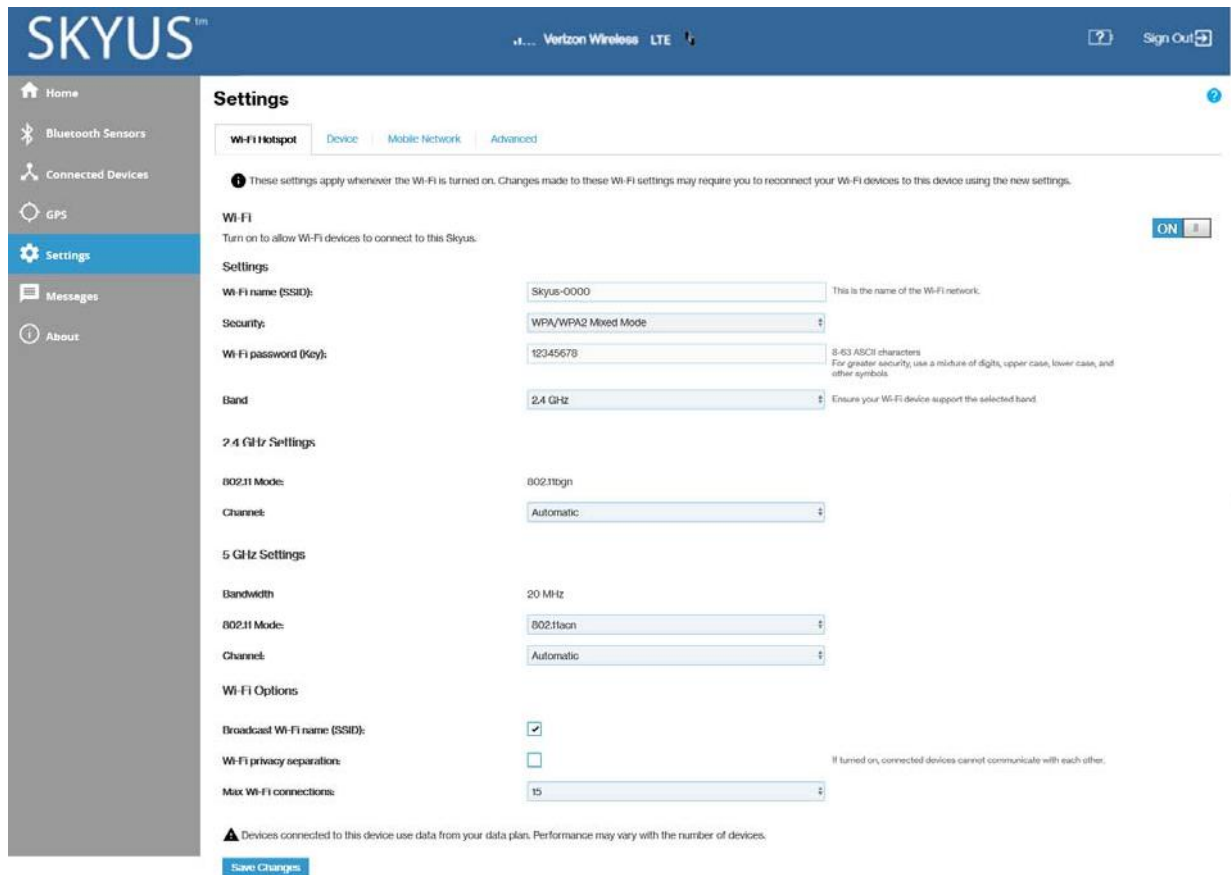
Use the Settings page to configure and program your device. When you are done configuring your device, you can save your current settings as a template for future use to back up your device if needed.

The Settings page includes four tabs:

- Wi-Fi Hotspot Tab
- Device Tab
- Mobile Network Tab
- Advanced Tab

Wi-Fi Hotspot Tab

Use this tab to adjust the Wi-Fi settings for your device. Connected devices must use the Wi-Fi settings shown on this screen.



NOTE: If you change these settings, existing connected devices may lose their connection.

Wi-Fi

Use the **ON/OFF** slider to allow Wi-Fi devices to connect to this router, or not.

Settings

Wi-Fi name (SSID): Enter a Wi-Fi name (SSID) to set up or change the Wi-Fi name. The name can be up to 28 characters long.

Security: Select an option for Wi-Fi security:

- **WPA2 Personal** is the most secure method of Wi-Fi Protected Access and should be used if possible.
- **WPA/WPA2 Personal** can be used if some of your older devices do not support WPA2.
- **WPA/WPA2 Enterprise** is designed for organizations and includes enterprise-grade authentication. **NOTE:** This method provides administrative control over access to your Wi-Fi network, so that administrators assign, modify and revoke login credentials for users. A Remote Authentication Dial-In User Service (RADIUS) server is required and must be configured for this option.
- **None** allows others to monitor your Wi-Fi traffic and use your data plan to access the Internet. **NOTE:** Avoid using this option.

Wi-Fi password (Key): Enter a Wi-Fi password.

Important: It is critical that you change the password from the default **and** use a different password from your Admin password to keep the device and your network secure.

Band: Wi-Fi can be accessed over two bands, depending on your Wi-Fi device: 2.4 GHz and 5 GHz:

- The 2.4 GHz band is supported by all devices with Wi-Fi and should be used by devices that are a few years old or older. This band passes through walls better, so it may have a longer range.
- The 5 GHz band is best for newer devices. It offers better throughput and reduced interference, but does not pass through walls as well as the 2.4 GHz band.

2.4 GHz Settings

802.11 Mode: Specify which 802.11 protocol is to be used when the 2.4 GHz band is active.

Channel: Select **Automatic** or specify a Wi-Fi channel to use. **NOTE:** Selecting the appropriate channel will help reduce signal loss when near another Wi-Fi device.

5GHz Settings

Bandwidth: The bandwidth when 5 GHz band is active.

NOTE: Leave the Bandwidth at the default setting unless you experience interference with other Wi-Fi devices. If you experience interference, try lowering the Bandwidth setting to reduce the interference.

802.11 Mode: Specify which 802.11 protocol is to be used when the 5 GHz band is active.

Channel: Select **Automatic** or specify a Wi-Fi channel to use. **NOTE:** Selecting the appropriate channel will help reduce signal loss when near another Wi-Fi device.

Options

Broadcast Wi-Fi name (SSID): Check this box to allow Wi-Fi devices in the area to see the Wi-Fi name (SSID) on their list of available networks. If not selected, the Wi-Fi name will need to be manually entered for devices to connect to the network.

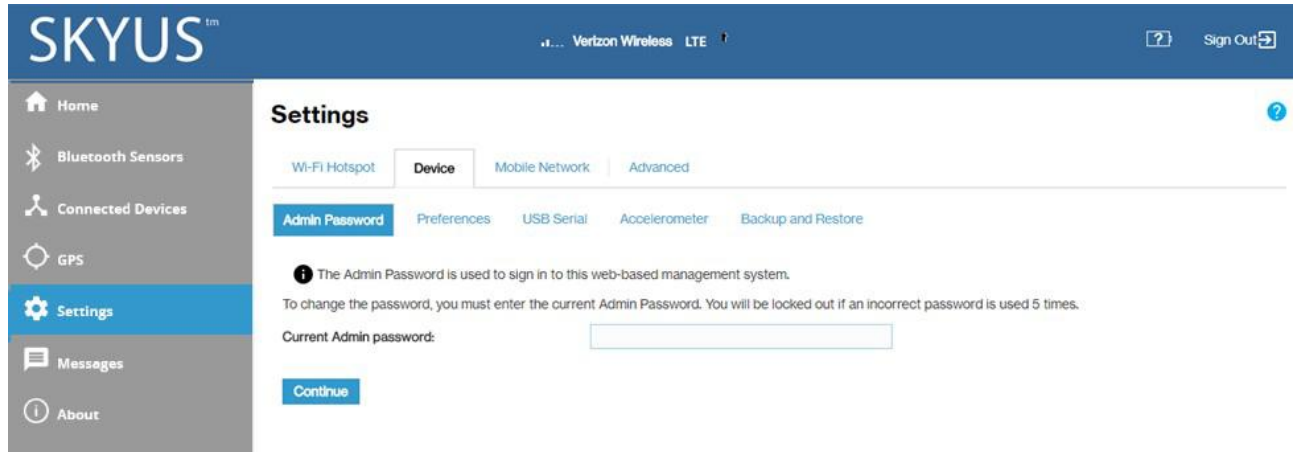
Wi-Fi privacy separation: Check this box to prevent Wi-Fi data transfer between devices. For normal operation, this should be unchecked. If checked, each connected device is isolated from all other connected devices. This provides additional security if some connected devices are unknown or not completely trusted.

Max Wi-Fi connections: Specify the number of connections that can simultaneously connect to the Skyus Wi-Fi network.

Select **Save Changes** to store new settings.

Device Tab

Use this tab to configure device-specific settings, including resetting the Admin password for your device.



The Device tab includes five sub tabs:

- Admin Password Sub Tab
- Preferences Sub Tab
- USB Serial Sub Tab
- Accelerometer Sub Tab
- Backup and Restore Sub Tab

Admin Password Sub Tab

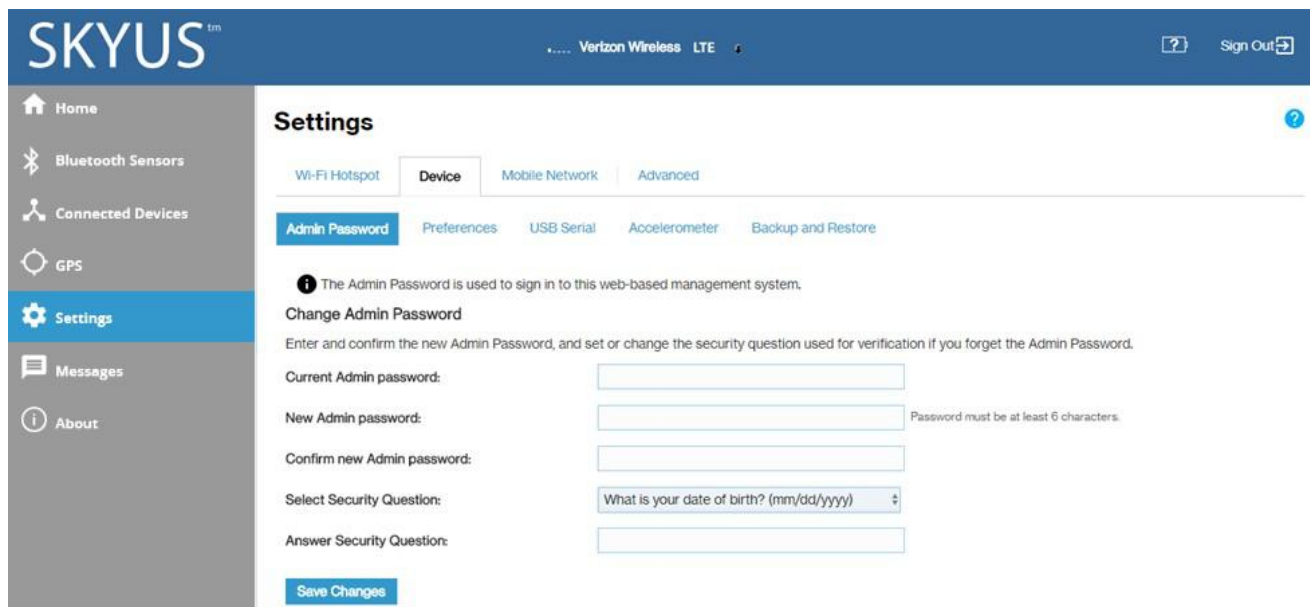
This page allows you to change the Admin Password and to set security options related to the Admin Password. The Admin Password is used to sign in to the Skyus 100B Series Web Interface.

Important: It is critical that you change the Admin password from the default to keep the device and your network secure.

To change your Admin password:

1. Enter the Current Admin password and click **Continue**. The Admin Password sub tab appears.

NOTE: If you enter an incorrect value too many times, you will be locked out of the Admin Web Interface. To clear this lock, restart your Skyus device.



The screenshot shows the Skyus 100B Series Web Interface. The top navigation bar includes the Skyus logo, signal strength, Verizon Wireless LTE, and a Sign Out button. A left sidebar contains menu items: Home, Bluetooth Sensors, Connected Devices, GPS, Settings (highlighted), Messages, and About. The main content area is titled 'Settings' and has tabs for Wi-Fi Hotspot, Device (selected), Mobile Network, and Advanced. Under the Device tab, there are sub-tabs: Admin Password (selected), Preferences, USB Serial, Accelerometer, and Backup and Restore. A blue information icon is present. Below the sub-tabs, a message states: 'The Admin Password is used to sign in to this web-based management system.' The section is titled 'Change Admin Password' and includes the instruction: 'Enter and confirm the new Admin Password, and set or change the security question used for verification if you forget the Admin Password.' The form contains the following fields: 'Current Admin password:' with an input field; 'New Admin password:' with an input field and a note 'Password must be at least 6 characters.'; 'Confirm new Admin password:' with an input field; 'Select Security Question:' with a dropdown menu showing 'What is your date of birth? (mm/dd/yyyy)'; and 'Answer Security Question:' with an input field. A 'Save Changes' button is at the bottom.

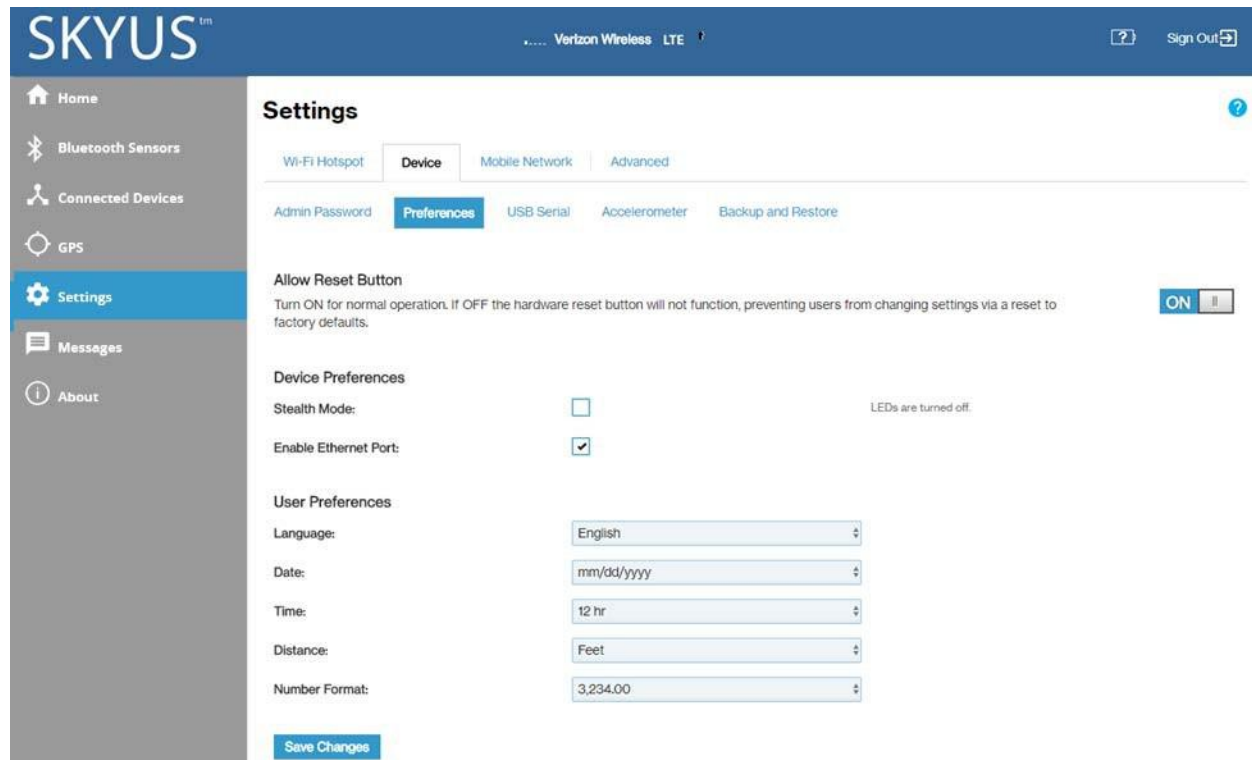
2. Enter your current Admin password again, then enter a new password and confirm it.
3. Select a security question from the drop-down list and type an answer to the question in the **Answer Security Question** field. **NOTE:** Answers are case-sensitive.
4. Click **Save Changes**.

The next time you sign in to the Skyus 100B Series Web Interface, use the new Admin password. If you cannot remember the password, click **I forgot the Admin password**. After you correctly answer the security question you set up, the current password is displayed.

NOTE: You can set up a separate Wi-Fi password in **Settings > Wi-Fi Hotspot** (see Wi-Fi Hotspot Tab), but that is different from the Admin password, which is for this Web Interface. **DO NOT** use the same password for both.

Preferences SubTab

Use this page to turn off the hardware reset button, enable/disable LEDs and the Ethernet Port, and set user preferences such as language and date/time formats.



Use the **Allow Reset Button ON/OFF** slider to turn off the hardware reset button. This ensures that device settings cannot be reset to factory default by using the reset button on the bottom of the router.

Device Preferences

Stealth Mode: Check this box to turn off the indicator LEDs on the router.

Enable Ethernet Port: This box is checked when the Ethernet port is enabled. Deselect to disable the Ethernet port on your router.

User Preferences

Language: Currently, only English is available.

Date: Select the date format to be used on the Web Interface (mm/dd/yyyy or dd/mm/yyyy).

Time: Select the time format to be used on the Web Interface (12 or 24 hour).

Temperature: Select the temperature format to be used on the Web Interface (Fahrenheit or Celsius).

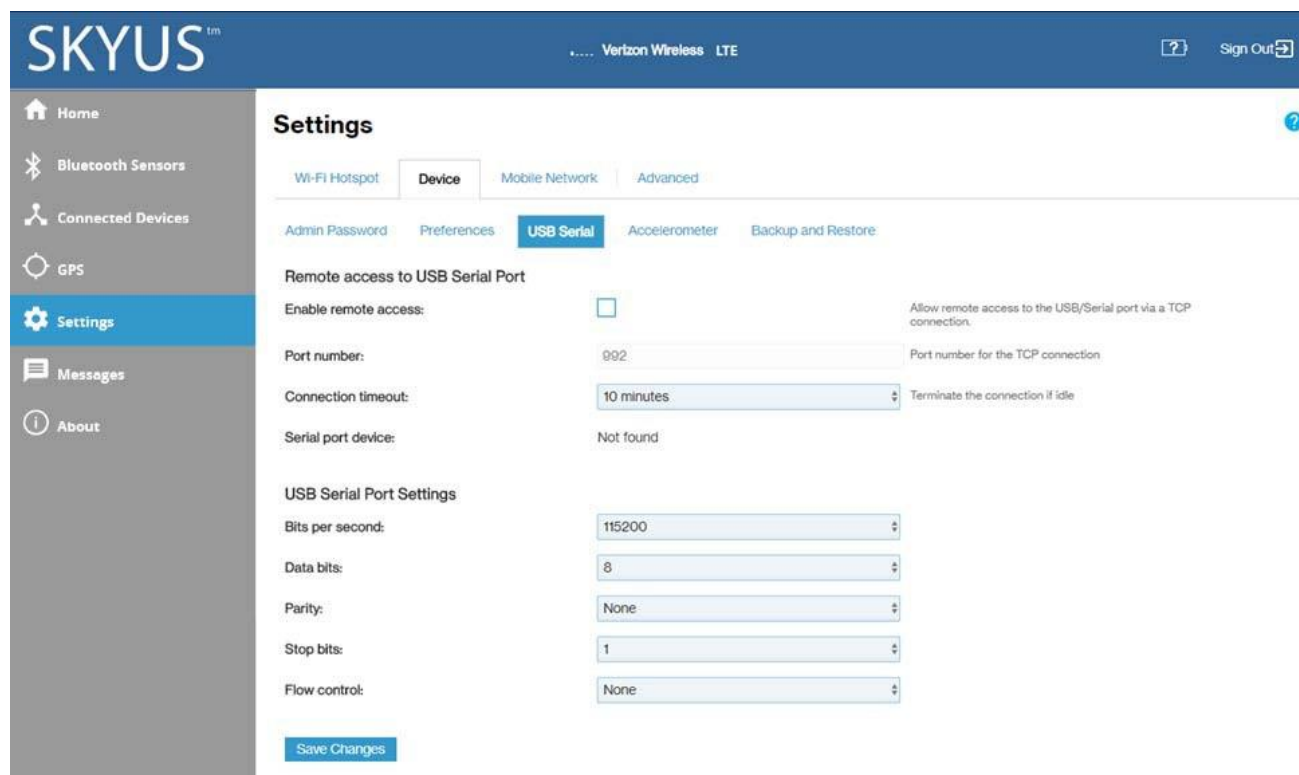
Distance: Choose the units of measure for distance on the Web Interface (Feet or Meters).

NumberFormat: Choose the format for decimal numbers (using a period or comma as the decimal point).

Select your display choices and click **Save Changes** to update settings.

USB Serial Sub Tab

If you have connected a USB/serial port adaptor and a serial port device to the Skyus router, you can use this page to remotely access the serial port device.



The screenshot shows the Skyus router's settings interface. The top navigation bar includes the Skyus logo, signal strength, Verizon Wireless LTE, and a Sign Out button. The left sidebar contains menu items: Home, Bluetooth Sensors, Connected Devices, GPS, Settings (highlighted), Messages, and About. The main content area is titled 'Settings' and has tabs for Wi-Fi Hotspot, Device (selected), Mobile Network, and Advanced. Under the Device tab, there are sub-tabs: Admin Password, Preferences, USB Serial (selected), Accelerometer, and Backup and Restore. The 'Remote access to USB Serial Port' section includes: 'Enable remote access' (unchecked checkbox), 'Port number' (text input with '002'), 'Connection timeout' (dropdown menu with '10 minutes'), and 'Serial port device' (text input with 'Not found'). The 'USB Serial Port Settings' section includes: 'Bits per second' (dropdown menu with '115200'), 'Data bits' (dropdown menu with '8'), 'Parity' (dropdown menu with 'None'), 'Stop bits' (dropdown menu with '1'), and 'Flow control' (dropdown menu with 'None'). A 'Save Changes' button is at the bottom.

Remote access to USB Serial Port

Check the **Enable Remote Access** box to enable the remote TCP connection to the device's USB/serial port. You can use Telnet or a similar application to establish this connection.

NOTE: You cannot make changes to the following fields unless this box is checked.

Port number: Specify the desired port to establish the TCP connection.

Connection timeout: Specify the amount of idle time at which the connection will be automatically terminated. If you do not want the connection to be terminated by the Skyus router, select **Never**.

Serial port device: The connected serial port device.

USB Serial Port Settings

Serial port settings should be set to match the connected serial device.

Bits per second: Specify the rate of data flow. Supported speeds range from 300 bps to 115200 bps.

Data bits: Select 7 or 8 to match the serial device.

Parity: Select Odd, Even, or None to match the serial device.

Stop bits: Select 1 or 2 stop bits to end a packet, as used by the serial device.

Flow control: Select the option of how the packets will be controlled used by the serial device: None, XON/XOFF, Hardware.

Select your choices and click **Save Changes** to update settings.

Accelerometer SubTab

Use this page to enable and configure accelerometer settings. Accelerometer settings are typically used in mobile (automotive) environments.

The screenshot shows the SKYUS Settings interface. The top navigation bar includes the SKYUS logo, signal strength, Verizon Wireless LTE, and a Sign Out button. A left sidebar contains menu items: Home, Bluetooth Sensors, Connected Devices, GPS, Settings (highlighted), Messages, and About. The main content area is titled 'Settings' and has tabs for Wi-Fi Hotspot, Device (selected), Mobile Network, and Advanced. Under the Device tab, there are sub-tabs: Admin Password, Preferences, USB Serial, Accelerometer (selected), and Backup and Restore. The Accelerometer settings are as follows:

Setting	Value	Notes
Enable accelerometer:	<input type="checkbox"/>	
G Range:	2g	
Auto-calibration:	<input type="checkbox"/>	
Retain calibration data on restart:	<input type="checkbox"/>	
Quality factor:	75	Determines when Auto-calibration is completed (25 - 100)
Mode:	Motion detection	
Threshold:	16	0 - 127
Count:	2	0 - 127
Hold time:	300	Delay in seconds before the event is cleared

A 'Save Changes' button is located at the bottom of the settings area.

General

Check the **Enable Accelerometer** box to turn on the accelerometer.

NOTE: The following settings apply regardless of the mode selected (Motion detection or Driver behavior).

G Range: Specify the gravity (G) force range. This is the maximum value that can be recorded accurately. The wider the range, the less accurate the readings will be. The default value is 2g, which is sufficient for normal vehicles. A value above 2g indicates a crash.

Check the **Auto-calibration** box to enable auto-calibration. **NOTE:** It is recommended to always check this box if the accelerometer is going to be used.

Retain calibration data on restart: When this box is checked, the device automatically re-calibrates on restart. Use this feature if the Skyus device is in a fixed location in a vehicle. In that case, it will allow the accelerometer to perform auto-calibration faster. In other settings it should remain turned off.

Quality factor: Specifies the accuracy of calibration needed prior to completion of the calibration process. **NOTE:** This is similar to a % confidence level for auto-calibration. If set to 75, then calibration is considered complete when the device calculates that there is a 75% probability that is correct. Values below 25% are not allowed because the results would be unreliable. A higher number will enable a more accurate calibration, but it will take longer to complete the calibration process.

Mode: Choose between Motion detection and Driver behavior. The selections below will change depending on your choice.

Motion Detection

Motion detection detects, monitors, and reports only for bulk movements that will show that the device is moving or not. This mode is generally used when the Skyus device is installed in machinery or a vehicle that should not move, so as to cause an alert if motion is detected.

Threshold: The G force that triggers a motion event. Count and Hold time settings are used to ensure the motion event is genuine.

Count: The number of consecutive samples above the Threshold (G force) needed to trigger a motion event. For example, if Count is set to 100 and there are 98 consecutive samples above the Threshold value, then one sample below the threshold, the count restarts at 0 and no motion event is triggered.

NOTE: The sampling rate is 10 Hz (10 samples per second). You can convert the Count value to a time interval (in seconds) by dividing the Count value by 10.

Hold time: The delay, in seconds, before a motion event is cleared. The accelerometer waits for this amount of time to determine if the event is finished. If additional readings above the Threshold value are received during the Hold time interval, they are considered part of the same event and the Hold time timer is restarted. When no additional readings above the Threshold value are received for a period equal to the Hold time, the event is considered finished.

Click **Save Changes**.

Driver Behavior Detection

Driver behavior detects and monitors motion, direction, rates, and accelerations to provide information related to driver behavior. This mode is used when the Skyus device is installed in a vehicle and you wish to monitor vehicle operation.

Mode: Driver behavior

Driver Behavior

Braking

Threshold (milliG)	Set Time (msec)	Clear Time (msec)	Max Time (sec)
0	100	200	10
0	100	200	10
0	100	200	10
0	100	200	10

Acceleration

Threshold (milliG)	Set Time (msec)	Clear Time (msec)	Max Time (sec)
0	100	200	10
0	100	200	10
0	100	200	10
0	100	200	10

Right Turn

Threshold (milliG)	Set Time (msec)	Clear Time (msec)	Max Time (sec)
0	100	200	10
0	100	200	10

Left Turn

Threshold (milliG)	Set Time (msec)	Clear Time (msec)	Max Time (sec)
0	100	200	10
0	100	200	10

Vertical

Threshold (milliG)	Set Time (msec)	Clear Time (msec)	Max Time (sec)
0	100	200	10
0	100	200	10

Magnitude

Threshold (milliG)	Set Time (msec)	Clear Time (msec)	Max Time (sec)
0	100	200	10

Save Changes

If you select **Driver behavior** as the **Mode**, configure the fields for Braking, Acceleration, Right Turn, Left Turn, Vertical, and Magnitude (a change in any direction). You can specify a Threshold for each of the behaviors that will trigger an event (can be used to create alarms through IoT Connect). You can also define Set Time, Clear Time, and Max Time.

NOTE: Auto-calibration must be enabled for the Skyus device to determine which direction is forward, so that vehicle motion can be measured correctly.

Threshold: The G force (measured in milliG to allow precise definition) that triggers a motion change event. For fields where multiple thresholds are available, set a series of thresholds at different levels.

Set Time: The amount of time, in milliseconds, the G force must remain above the Threshold value in order for an event to be triggered.

Clear Time: The amount of time, in milliseconds, before an event is cleared. When an event is triggered, it lasts until the Max Time value is reached, or until the Clear Time has elapsed without any further readings above the threshold. A new event cannot be triggered until the previous event has been cleared.

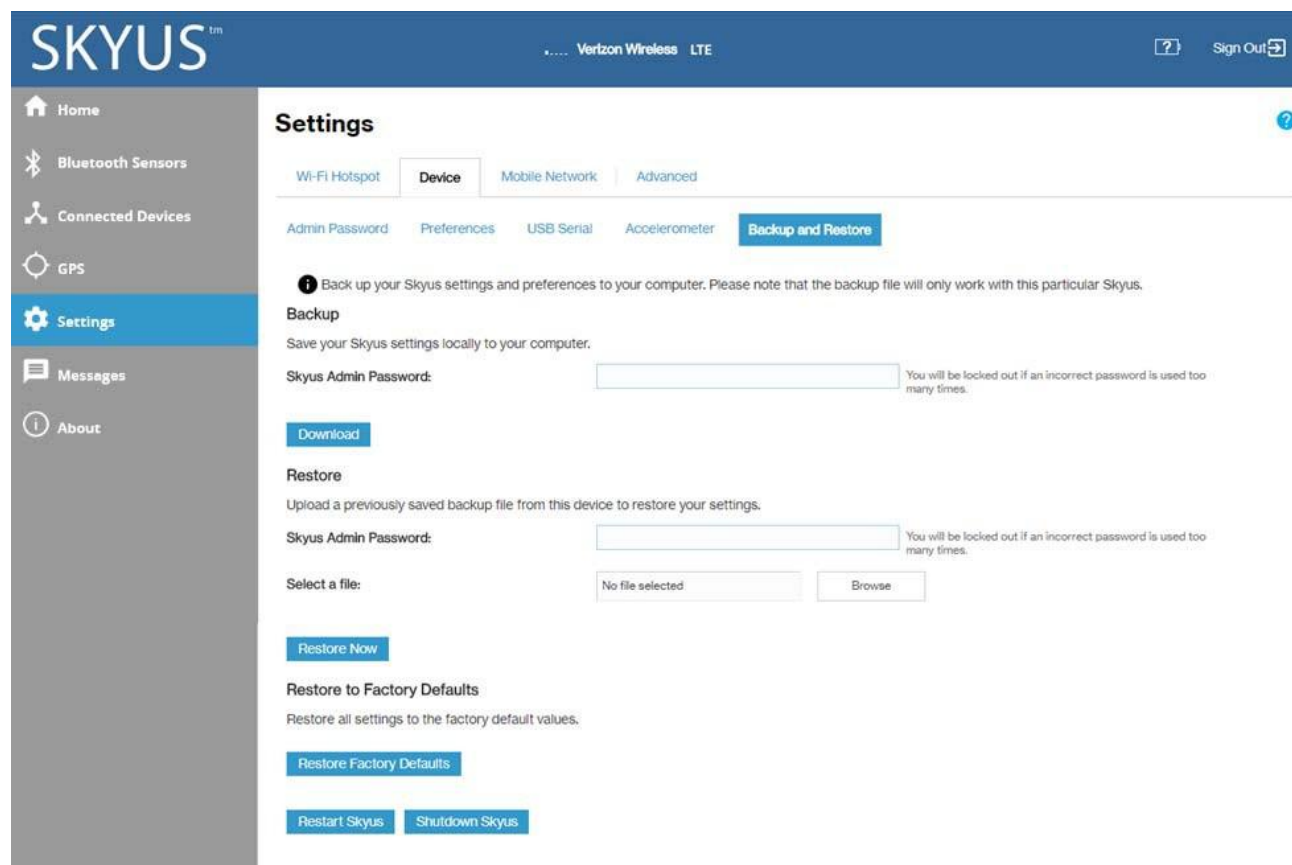
Max Time: The amount of time, in seconds, an event can last. If readings above the Threshold value persist after this amount of time, a new event is triggered.

NOTE: A single change can trigger multiple events. For example, if the Thresholds for Braking are set to 100, 200, 300, and 400, a 500 milliG motion triggers events for all four Thresholds.

Click **Save Changes**.

Backup and Restore Sub Tab

Use this sub-tab to create a device configuration file that can be used to backup and restore your custom settings. You can also restore all settings to the factory default values.



Backup

To backup current Skyus 100B Series settings to a file on your computer, enter your Admin password in the **Skyus Admin Password** field.

The default Admin password is printed on the bottom of the router. If you have changed the Admin password and don't remember it, select **Sign Out** in the top-right corner of the Home page, click **I forgot the Admin password**, and answer the security question. The current Admin password will be displayed.

NOTE: If you enter an incorrect password five times in a row, you will be locked out of the Web UI. To unlock it, restart the router.

Click the **Download** button. The file is automatically downloaded to your Downloads folder. This configuration file contains all settings for the device, router and system functions. It does not contain any modem settings or data.

NOTE: The backup file cannot be edited or viewed on the downloaded system or on any other device. This file can only be restored for this model of Skyus router, and settings can only be viewed or changed using the Web UI.

Restore

CAUTION: Restoring settings (uploading a configuration file) changes ALL of the existing settings to match the configuration file. This may change the current Wi-Fi settings, breaking all existing connections to this router and disconnecting you from the Web UI.

To restore system settings from a backup settings file, enter your Admin password in the **Skyus Admin Password** field.

In the **Select a file** field, click **Browse** and choose a backup settings file to restore. **NOTE:** You can only restore a file that was created for this model of Skyus router.

Click the **Restore Now** button.

Your device will automatically reset and you will need to log back into the user interface.

Restore to Factory Defaults

Restore factory defaults: This button resets all settings to their factory default values.

CAUTION: This initiates a restart and may change the current Wi-Fi settings, breaking all existing connections to this router and disconnecting you from the Web UI.

Restart Skyus: This button turns your router off and on again.

Shutdown Skyus: This button turns off your router.

Mobile Network Tab

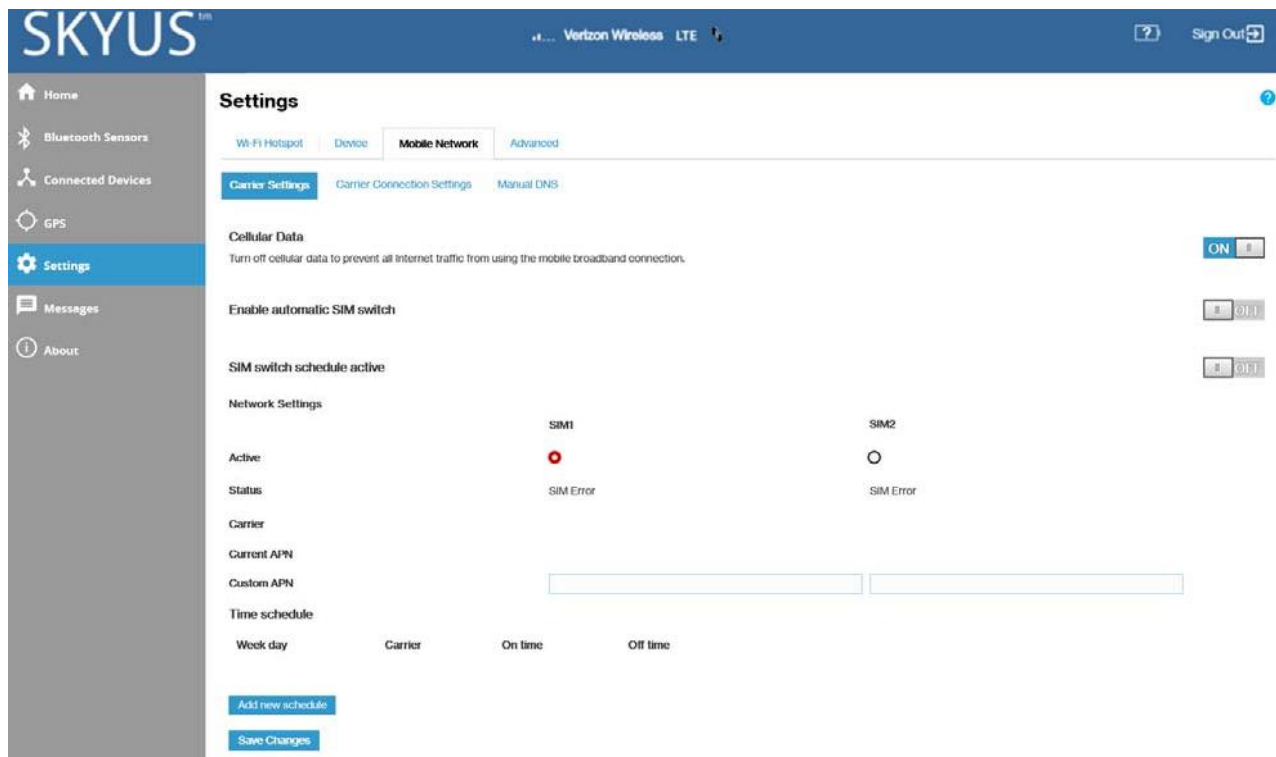
Use this tab to modify the mobile network settings on your Skyus 100B Series router.

The Mobile Network Tab contains three sub tabs:

- Carrier Settings Sub Tab
- Carrier Connection Settings Sub Tab
- Manual DNS Sub Tab

Carrier Settings Sub Tab

Use this page to modify the carrier settings on your Skyus 100B Series router. You can set up multiple schedules for SIM usage for each SIM.



Cellular Data

By default, cellular data is turned on. To turn off cellular data, move the **ON/OFF** slider to **OFF**.

CAUTION: If you turn cellular data off, Internet access via this device will not be possible. All connections will be terminated.

Enable automatic SIM switch

To enable automatic SIM switching, move the **ON/OFF** slider to **ON**.

SIM switch schedule active

Move the **ON/OFF** slider to **ON** to activate the SIM switch schedules listed under **Timeschedule**. Use the **Add new schedule** button to create schedules.

Network Settings

Active: Select a SIM to be active or to set a time schedule for that SIM.

Status: The current status of the SIM.

Carrier: The cellular carrier associated with the SIM.

Current APN: The Access Point Name (APN) currently used to connect to the cellular network associated with the SIM. The APN is pre-configured and, in most cases, should not be changed.

Custom APN: In most configurations, the Skyus 100B Series router is used with a dynamic IP and SIM and the Access Point Name (APN) is available from the network, for example: *vzwinternet*. However, if you are on a private network, you may need to set a custom APN for the network to communicate with the Skyus device, for example: *we01.vzwstatic*.

The following table includes some commonly used APNs. Contact your carrier to confirm the correct APN for your line of service.

Carrier	APN Type	APN
Verizon	Public Dynamic	vzwinternet
	Public Static-West	we01.vzwstatic
	Public Static-Northwest	nw01.vzwstatic
	Public Static-Northeast	ne01.vzwstatic
	Public Static-South	so01.vzwstatic
	Public Static-Midwest	mw01.vzwstatic
AT&T	Public Dynamic	broadband
	Public Dynamic	i2gold
T-Mobile	Public Dynamic	fast.t-mobile.com

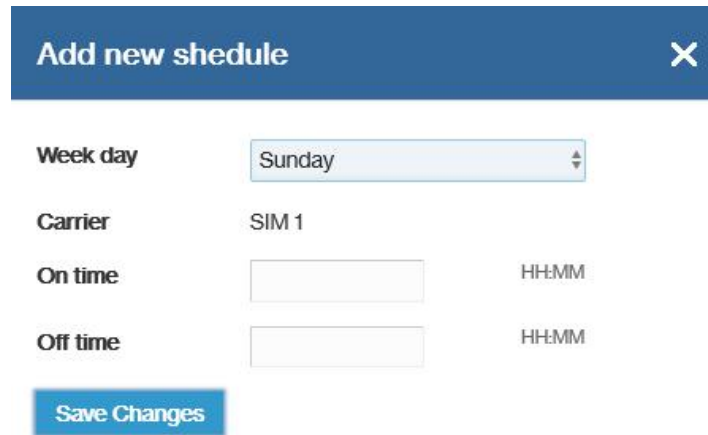
Time schedule

This section provides a list of the schedules you have set up for each SIM. Use the **Add new schedule** button to create schedules.

Add new schedule Button

NOTE: Select the SIM on which you want to set a schedule in the **Active** setting above before selecting the **Add new schedule** button.

Select this button to create a new schedule. You can create multiple schedules for each SIM. The Add new schedule dialog box appears.



Add new shedule X

Week day Sunday

Carrier SIM 1

On time HH:MM

Off time HH:MM

Save Changes

Week day: Use the drop down to choose a day of the week for the schedule.

Carrier: The SIM on which you are setting a schedule. To change the SIM, close this dialog and select the correct SIM in the **Active** section above.

On time: Enter the time you want the SIM switched on for the selected day, using military time in HH:MM format, for example: enter 08:00 for 8 AM.

Off time: Enter the time you wish the SIM switched off for the selected day, using military time in HH:MM format, for example: enter 17:00 for 5 PM.

Click **Save Changes**.

The new schedule is listed in time schedules. You can delete a schedule with the **Delete** button.

Use the **SIM switch schedule active** toggle to activate or deactivate all listed schedules.

Click **Save Changes** to save settings on the Carrier Settings sub tab.

Carrier Connection Settings Sub Tab

Use this page to modify the ping settings on your Skyus 100B Series router.

The screenshot shows the Skyus 100B Series router settings page. The top navigation bar includes the Skyus logo, signal strength indicators (Verizon Wireless LTE), and a 'Sign Out' button. The left sidebar contains navigation options: Home, Bluetooth Sensors, Connected Devices, GPS, Settings (highlighted), Messages, and About. The main content area is titled 'Settings' and has tabs for 'Wi-Fi Hotspot', 'Device', 'Mobile Network' (selected), and 'Advanced'. Under 'Mobile Network', there are sub-tabs for 'Carrier Settings', 'Carrier Connection Settings' (selected), and 'Manual DNS'. The 'Carrier Connection Settings' section includes the following fields and controls:

- Ping schedule:** A label for the section.
- Ping frequency:** A text input field containing '15' with a 'Minutes' label to its right.
- Number of retries:** A text input field containing '5'.
- Ping retry time:** A text input field containing '5' with a 'Seconds' label to its right.
- Ping Address:** A section header for the address fields.
- Primary address:** A text input field containing 'www.google.com' with a 'Ping test' button to its right.
- Secondary address:** A text input field containing 'www.bing.com' with a 'Ping test' button to its right.
- Signal strength:** A text input field containing '-130' with a 'dBm' label to its right.
- Save Changes:** A blue button at the bottom of the settings area.

Ping schedule

Ping frequency: The number of minutes between pings.

Number of retries: The maximum number of ping retry attempts.

Ping retry time: The length of time of ping retry attempts.

Ping Address

Primary address: The address of the primary server to ping. Use the **Ping test** button to test.

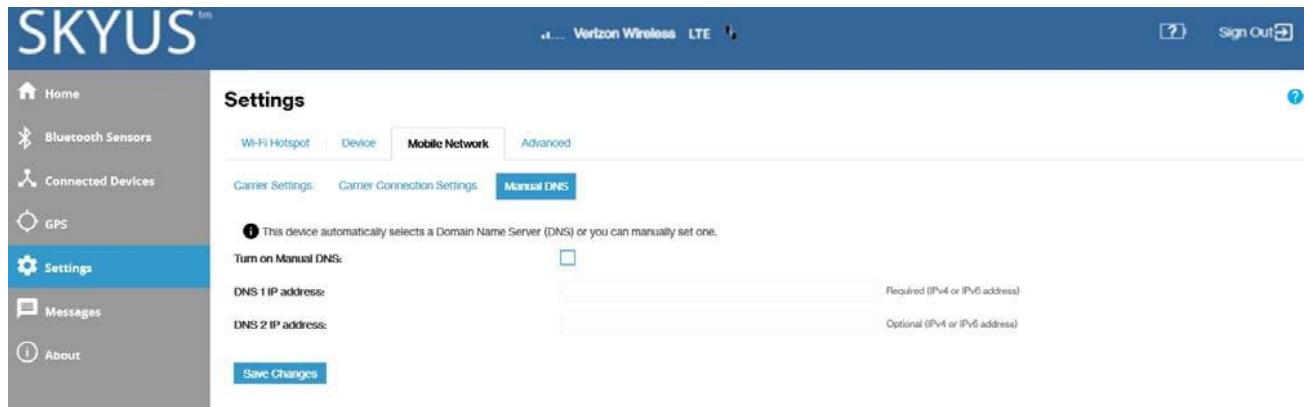
Secondary address: The address of the secondary server to ping. Use the **Ping test** button to test.

Signal strength: If signal strength falls below this level, the carrier is switched.

Click **Save Changes**.

Manual DNS Sub Tab

By default, the Skyus 100B Series router will automatically select the proper Domain Name Server (DNS). However, this page allows you to select a manual DNS.



To turn on Manual DNS:

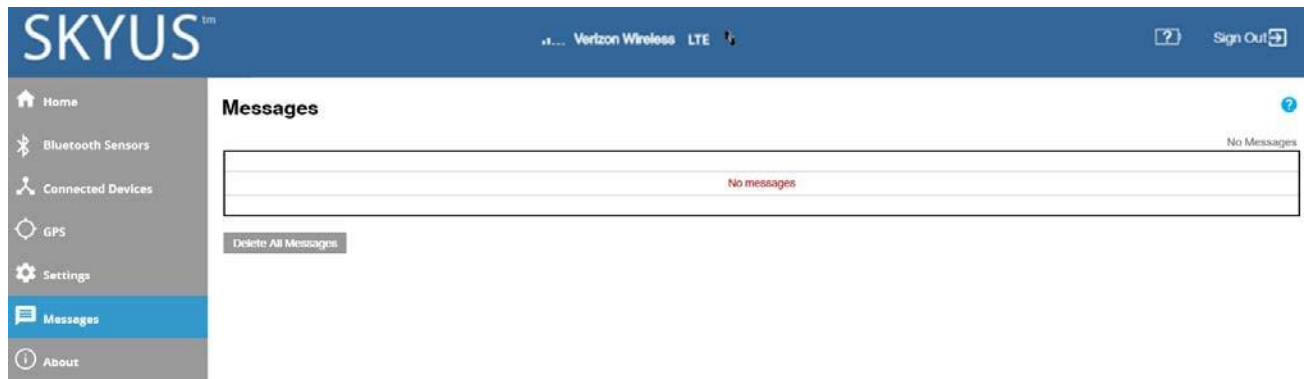
1. Check the **Turn on Manual DNS** box.
2. Enter the appropriate required address (IPv4 or IPv6) in the DNS 1 IP Address field. This address is required.
3. Enter the appropriate optional address (IPv4 or IPv6) in the DNS 2 IP Address field. This field can be left blank.
4. Click **Save Changes**.

Advanced Tab

Advanced settings are intended only for users with advanced technical knowledge. For information about the Advanced Settings page, go to Chapter 4, “Advanced Settings” on page 69.

Accessing Messages

To access messages, select **Messages** from the Web UI side menu. The Messages page appears.



Messages Page

This page displays text messages sent to your device. These are typically messages from your service provider and cannot be replied to, so no reply feature is provided.

Messages

Counters at the top of the screen indicate the number of unread (new) messages and the total number of messages.

Messages are listed in order of date. Unread (new) messages are indicated by an icon. Messages are set to Read once they are displayed on this page, so the next time the page is entered, they will no longer be marked as Unread.

Use the **Delete All Messages** button to delete all messages.

Viewing Info About the Router

On the Web UI Home page, the Mobile Network section shows current status information about your router and mobile network.

The screenshot displays the SKYUS Web UI Home page. The top navigation bar includes the SKYUS logo, signal strength indicators for Verizon Wireless LTE, a 100% battery icon, and a Sign Out button. A left sidebar menu contains options: Home, Bluetooth Sensors, Connected Devices, GPS, Settings, Messages, and About. The main content area features a 'Skyus by Inseego' header with a product image. To the right, device information is listed: Telephone (541 520 9605), IMEI (9900 0636 8014 618), Software version (1.0.1.001), and Agent (RSC) Version (2.0). A central 'Mobile Network' section, highlighted with a blue border, shows: Status (Connected), Network Name (Verizon Wireless), Technology (LTE), Time Connected (00:02:41:21), Received (21.92 MB), Transmitted (13.44 MB), IPv4 Address (166.248.205.187), and IPv6 Address (empty). Below this is a 'Connected Devices' section showing a device with MAC address eug-000635 and IPv4 address 192.168.1.5. An 'Event Log' section on the right contains system messages from July 6, 2016, including network connection events and a WebUI admin session start.

To view more detailed information about your router and its use, select **About** from the Web UI side menu.

The About page includes seven tabs:

- Current Status Tab
- Data Usage Tab
- Device Info Tab
- Diagnostics Tab
- Logs Tab
- Software Update Tab
- Support Tab

Current Status Tab

Use the Current Status tab to view Internet status, Wi-Fi hotspot information, and internet session details.

The screenshot shows the SKYUS mobile application interface. At the top, the SKYUS logo is on the left, and 'Verizon Wireless LTE' and 'Sign Out' are on the right. A left-hand navigation menu includes Home, Bluetooth Sensors, Connected Devices, GPS, Settings, Messages, and About (highlighted in blue). The main content area is titled 'About' and has a sub-menu with 'Current Status' (selected), Data Usage, Device Info, Diagnostics, Logs, Software Update, and Support. Under 'Internet Status', the following information is displayed:

Status:	Connected
Network Name:	Verizon Wireless
Technology:	LTE
Time Connected:	00:15:31:54 (dd:hh:mm:ss)
Received:	31.69 MB
Transmitted:	275.57 MB
IPv4	
IP Address:	100.122.197.181
Mask:	255.255.255.252
Gateway:	100.122.197.182
DNS:	198.224.167.135
IPv6	
IP Address:	2600:100f:b100:95d6:215:ffff:fe0c:11c4

Below this, there is a 'View Internet Sessions' button. Under 'Wi-Fi Hotspot', the following information is displayed:

Wi-Fi network name (SSID):	Skyus-0000
Wi-Fi security:	WPA/WPA2 Mixed Mode
Wi-Fi password (key):	12345678
Channel:	0
Wi-Fi mode:	BGN
Connected devices:	0
Maximum devices allowed:	12

Internet Status

Status: Indicates whether your router is Connected or Disconnected.

Network Name: The cellular carrier network (for example, Verizon Wireless or AT&T)

Technology: The cellular technology (for example, LTE or 3G)

Time Connected: The cumulative time connected

Received: The cumulative amount of data received for the current 24 hr period

Transmitted: The cumulative amount of data transmitted for the current 24 hr period

IPv4

IPv4 Address: The Internet IP address assigned to the router

Mask: The network mask associated with the IPv4 address.

Gateway: The gateway IP address associated with the IPv4 address.

DNS: The Domain Name Server currently used by this device.

IPv6

IPv6 Address: The global IPv6 address for the router (blank if IPv6 is turned off or is not supported by the current network connection or carrier).

View Internet Sessions

Select the **View Internet Sessions** button to see detailed information on internet activity.

Internet Sessions from 06/30/2018 6:39:46 PM to 07/01/2018 3:05:51 PM

Export

Date/Time	Duration	Received	Transmitted	Total Data	Roaming	IPv4 Address	IPv6 Address
06/30/2018 6:39:46 PM	00:01:44:27	3.71 MB	9.45 MB	13.16 MB		100.82.63.70	::
06/30/2018 8:33:16 PM	00:18:15:56	17.33 MB	42.36 MB	59.69 MB		100.92.155.207	2600:100f:b102:dc22:215:ffff:fe0c:11c4
07/01/2018 3:05:51 PM	00:15:29:48	31.61 MB	274.66 MB	306.28 MB		100.122.197.181	2600:100f:b100:95d6:215:ffff:fe0c:11c4

Wi-Fi Hotspot

Wi-Fi network name (SSID): The Wi-Fi network name.

Security: The type of security.

Wi-Fi password (key): The Wi-Fi password.

Channel: The Wi-Fi channel.

Wi-Fi Mode: The Wi-Fi mode.

Connected devices: The number of connected devices.

Maximum devices allowed: The maximum number of connected devices allowed.

Data Usage Tab

Use the Data Usage tab to view details about data usage or to reset the data counter and settings.

The screenshot shows the SKYUS mobile app interface. At the top, there's a blue header with the SKYUS logo, signal strength, Verizon Wireless LTE, 100% battery, and a Sign Out button. A left sidebar contains navigation options: Home, Bluetooth Sensors, Connected Devices, GPS, Settings, Messages, and About (highlighted). The main content area is titled 'About' and has a sub-header 'Data Usage' selected among other tabs like Current Status, Device Info, Diagnostics, Logs, Software Update, and Support. The 'Data Usage' section displays: 'Your estimated data usage is displayed below.', 'This may not match your bill. Check with your service provider for billable usage.', 'Data used: 0.00 GB', 'Days remaining: 26', and 'Last reset date:'. Below this is a 'Reset Data Counter' button. The 'Settings' section includes 'Usage alert level: None' (with a dropdown arrow and a note 'If the desired level is not listed, select 'None'.') and 'Cycle start date: 1' (with a dropdown arrow and a note 'Data counter resets on this day of the month.'). A 'Save Changes' button is at the bottom. A note at the bottom states: 'Note: Actual billed usage may be higher than the estimated data usage displayed above.'

Estimated Data Usage

This section may vary according to your plan. It contains a graphical representation of data usage. Information is displayed for the current reporting period (starting from the **Cycle start date** you set), unless you use the **Reset Data Counter** button.

Data used: An estimation of the amount of data used during the current reporting period.

Days remaining: The number of days left before the current reporting period ends.

Last reset date: The date when the data was last manually reset.

Select the **Reset Data Counter** button to restart the **Data Used** field.

Settings

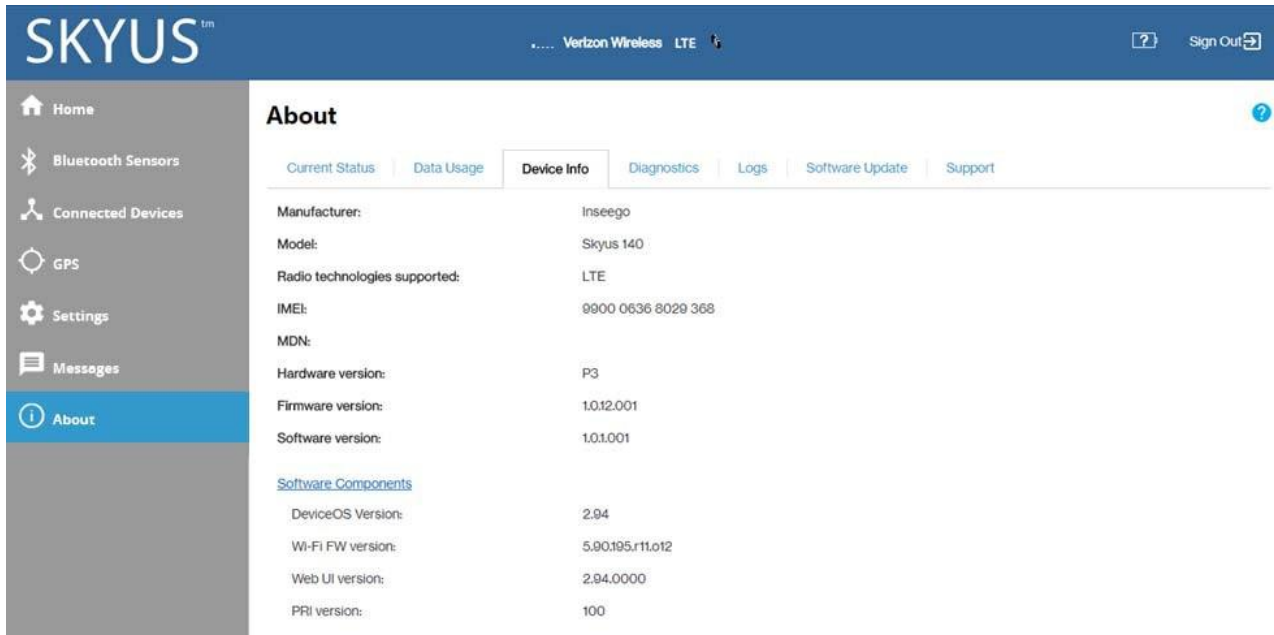
Usage alert level: Specify an alerting threshold for data usage (from 20 MB to 20 G).

Cycle start date: Specify the start day of the month for your data counter cycle. **NOTE:** You can set this to correspond to the start day of your billing cycle.

Make your selections and click **Save Changes**.

Device Info Tab

This page presents useful information that will be needed in the event Support is required.



The screenshot shows the SKYUS web interface. The top navigation bar includes the SKYUS logo, a signal strength indicator, 'Verizon Wireless LTE', and a 'Sign Out' button. A left sidebar contains navigation links: Home, Bluetooth Sensors, Connected Devices, GPS, Settings, Messages, and About (highlighted). The main content area is titled 'About' and features a tabbed interface with 'Device Info' selected. The 'Device Info' tab displays the following information:

Manufacturer:	Inseego
Model:	Skyus 140
Radio technologies supported:	LTE
IMEI:	9900 0636 8029 368
MDN:	
Hardware version:	P3
Firmware version:	1.0.12.001
Software version:	1.0.1.001
Software Components	
DeviceOS Version:	2.94
Wi-Fi FW version:	5.00.195.r11.012
Web UI version:	2.94.0000
PRI version:	100

Manufacturer: The manufacturer of this router.

Model: The model name and number for this device.

Radio technologies supported: The radio technologies supported by your Skyus device. This refers to the Skyus 100B Series router and not the mobile network.

IMEI: The IMEI (International Mobile Equipment Identity) for this device. This is a 15 or 17 digit code used to uniquely identify an individual mobile station on a LTE network. The IMEI does not change when the SIM is changed.

MDN: The MDN (Mobile Directory Number) is the phone number assigned to the Skyus device. This changes when the SIM is changed.

Hardware version: The hardware version for your Skyus device.

Firmware version: The version of the firmware (software) currently installed for the modem component.

Software version: The version of currently installed software.

Software Components

Select the [Software Components](#) link to see the following version information for various software components.

DeviceOS version: The version number for the OS (Operating System) and its components.

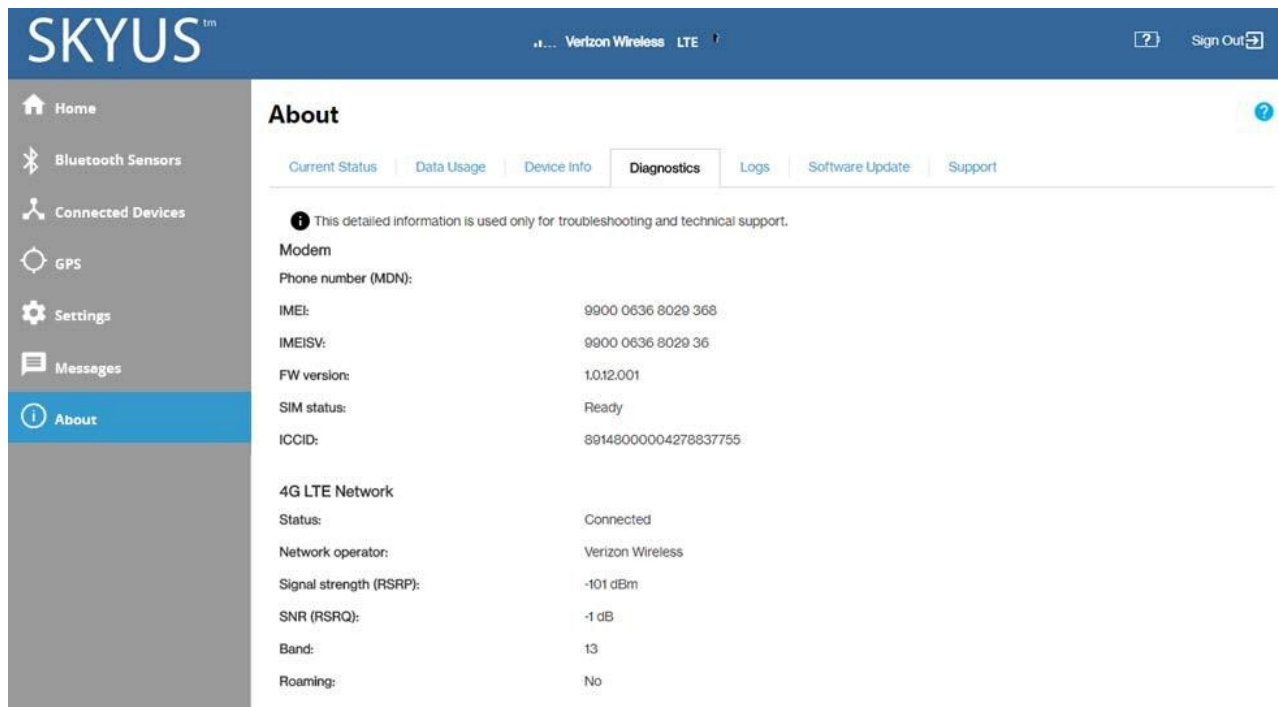
Wi-Fi FW version: The version of the firmware (software) currently installed for the Wi-Fi component.

Web UI version: The version number for the Web Interface.

PRI version: The configuration version currently applied to this device.

Diagnostics Tab

The information presented on this page is typically only needed for troubleshooting and technical support. If you need to contact Support, please record this information and be ready to share it with your Insego Support Representative.



The screenshot shows the SKYUS mobile application interface. At the top, there's a blue header with the SKYUS logo on the left, signal strength and network type (Verizon Wireless LTE) in the center, and a 'Sign Out' button on the right. A left-hand navigation menu is visible, with 'About' selected and highlighted in blue. The main content area is titled 'About' and has several tabs: 'Current Status', 'Data Usage', 'Device Info', 'Diagnostics' (which is active), 'Logs', 'Software Update', and 'Support'. Below the tabs, there's a warning icon and text: 'This detailed information is used only for troubleshooting and technical support.' The 'Modem' section lists the following details:

Phone number (MDN):	
IMEI:	9900 0636 8029 368
IMEISV:	9900 0636 8029 36
FW version:	1.0.12.001
SIM status:	Ready
ICCID:	89148000004278837755

The '4G LTE Network' section lists the following details:

Status:	Connected
Network operator:	Verizon Wireless
Signal strength (RSRP):	-101 dBm
SNR (RSRQ):	-1 dB
Band:	13
Roaming:	No

Modem

Phone number (MDN): The phone number assigned to the Skyus device. This changes when the SIM is changed.

IMEI: The IMEI (International Mobile Equipment Identity) for this device. This is a 15 or 17 digit code used to uniquely identify an individual mobile station on a LTE network. The IMEI does not change when the SIM is changed.

IMEISV: This field combines the IMEI with an approval number for this type of device.

FW version: The version of the firmware (software) currently installed for the modem component.

SIM status: The status of the SIM card. If the SIM card is missing, or this field indicates some form of SIM error, connection to the mobile network is not possible.

ICCID: The unique ID number assigned to the SIM card. This will be blank if there is no installed SIM or a SIM error.

4G LTE Network

Status: Indicates whether the LTE network has been detected (Not Available or Available).

The following fields are filled when the LTE network is Available.

Network operator: The name of the LTE network.

Signal strength: The strength of the LTE signal, measured in dBm. Higher absolute values indicate a stronger signal, for example: -80dBm is a stronger signal than -90dBm. **NOTE:** LTE signal strength is typically lower than 3G signal strength.

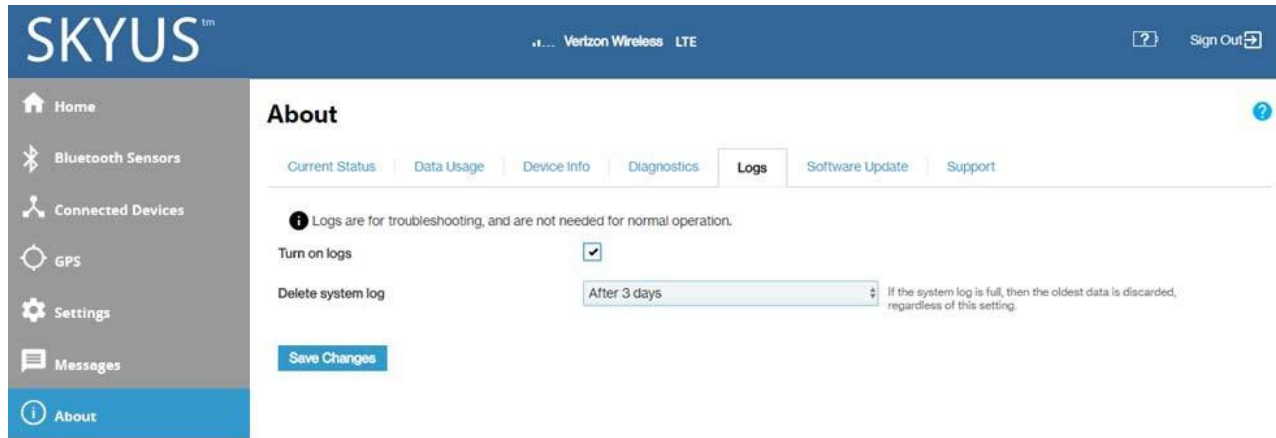
SNR: SNR (Signal-to-noise ratio) measures signal quality. Higher values indicate a better signal.

Band: Indicates the band used for the current LTE connection. **NOTE:** LTE networks may use different bands in different regions.

Roaming: Indicates whether the current connection is a roaming connection.

Logs Tab

Use this tab if you are experiencing issues with your device. Logging an issue is the best way to identify a root cause.



Turn on logs: Check this box to enable logging. When checked, the log information appears below.

Delete system log: Use this drop-down to select how long the log data is retained. **NOTE:** The oldest data is deleted when the log is full, regardless of this setting.

Click **Save Changes**.

Mobile Network Log: Select this button to view log information regarding connections to the mobile network.

System Log: Select this button to view log information on events other than mobile data connections.

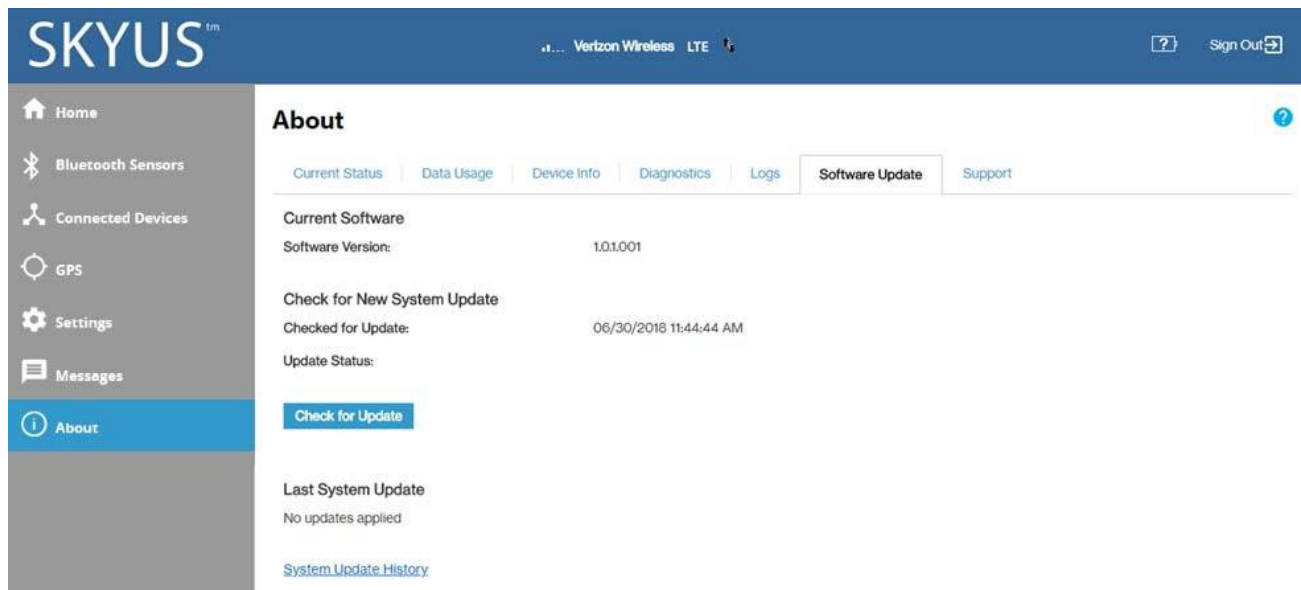
Clear Log: Deletes all existing log data, making new data easier to read.

Refresh: Updates the log data being displayed.

Download Log: Prompts you to download log data to your computer or connected device.

Software Update Tab

Software updates are delivered to the Skyus 100B Series router automatically over the mobile network. This tab displays your current software version, last system update information, and allows you to check for new software updates.



Current Software

Software Version: The version of the software currently installed on your Skyus 100B Series device.

Check for New System Update

Checked for update: The date and time the Skyus router last checked to see if an update was available.

Update Status: This area is usually blank. If you check for an update, the result of that check, or the download progress of an update displays.

Check for update: Click this button to manually check for available software updates. **NOTE:** Normally this is not necessary, as updates are automatically pushed to the Skyus device.

- If a new software update is available, click **Download now** to install it.
- If a new system update is available, you are given an option to install it now or later.
- If a configuration update is available, it is installed automatically.

Last System Update

This section displays details about the last software update, including the date and time of the last update, and the name, source, package version and size of the update.

System Update History

Click the [System Update History](#) link to view details of the last updates (up to 20) that have been downloaded and installed to this device. If no updates have been installed, this section will display the current software version.

Support Tab

If you need Support for your Skyus 100B Series device, use the Support tab to visit <https://www.inseego.com/support>.

The screenshot shows the SKYUS mobile application interface. At the top, the SKYUS logo is on the left, and the status bar shows 'Verizon Wireless LTE' and a 'Sign Out' button with a question mark icon. A navigation menu on the left lists: Home, Bluetooth Sensors, Connected Devices, GPS, Settings, Messages, and About (highlighted in blue). The main content area is titled 'About' and has a sub-navigation bar with tabs: Current Status, Data Usage, Device Info, Diagnostics, Logs, Software Update, and Support (highlighted). Under 'Your Device', the Model is 'Skyus 160'. Under 'Web-based Support', it says 'Please go to <https://www.inseego.com/support> for FAQs and other support information.' Under 'Mobile Network Support', it says 'Please contact your service provider for assistance.'

Getting Help

Select the question mark (?) in the upper right hand corner of a page to view Help on that topic.

4

Advanced Settings

Overview

Firewall

MAC Filter

LAN

Port Filtering

Port Forwarding

IPPT

Remote Management

VPN

Overview

The Advanced Settings pages are intended for users with technical expertise in the area of telecommunication and networking.

WARNING! Changing the Advanced settings may be harmful to the stability, performance and security of the Skyus 100B Series router.

Advanced settings are available when you select **Settings** from the Web UI side menu, then select the **Advanced** tab.

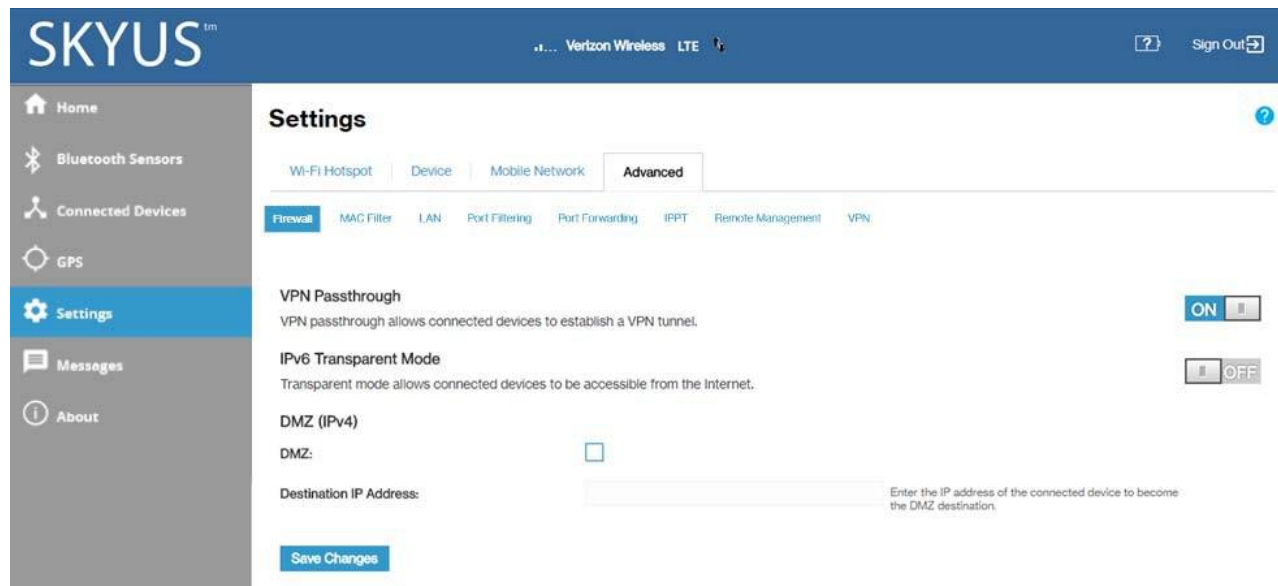
The Advanced Settings page includes eight sub tabs:

- Firewall
- MAC Filter
- LAN
- Port Filtering
- Port Forwarding
- IPPT
- Remote Management
- VPN

Firewall

The Skyus 100B Series firewall determines which Internet traffic is allowed to pass between the router and connected devices and protects your connected devices from malicious incoming traffic from the Internet. The firewall cannot be turned off.

Use the Firewall tab to adjust the general security level of the firewall, designate a specific device to receive all traffic, and set up specific firewall rules.



VPN Passthrough

To use the **VPN Passthrough**, ensure the **ON/OFF** slider is **ON**. This allows you to establish a VPN tunnel while using the Skyus 100B Series router.

IPv6 Transparent Mode

To use **IPv6 Transparent Mode**, slide the **ON/OFF** slider to **ON**. This allows connected devices to be accessible from the Internet.

DMZ (IPv4)

DMZ allows the connected device specified as the DMZ IP address (the DMZ destination) to receive all traffic that would otherwise be blocked by the firewall. **NOTE:** Allowing DMZ may assist some troublesome network applications to function properly, but the DMZ device should have its own firewall to protect itself against malicious traffic.

DMZ: Check this box to allow DMZ.

Destination IP Address: Enter the IP address of the connected device you wish to become the DMZ device (the DMZ destination). **NOTE:** You can check the IP address of each connected device on the Connected Devices screen.

Click **Save Changes**.

MAC Filter

The MAC filter allows only selected devices to access the Skyus 100B Series network. By default, MAC filter is turned OFF.

Use this tab to turn the MAC Filter ON and specify device access.

The screenshot shows the Skyus 100B Series router settings page. The 'Settings' section is active, and the 'MAC Filter' sub-tab is selected. The MAC Filter is currently turned OFF. The table below lists devices connected to the network:

Type	Name	MAC Address	Status	MAC Address Filter	Delete
Laptop	eug-000635	28:80:a2:1b:87:d2	Your device	<input type="checkbox"/>	
Laptop	Leifs-iPhone	a0:ed:cd:6f:5c:8a	Offline	<input type="checkbox"/>	<input type="checkbox"/>
Laptop	eug-000635	14:8c:50:7c:33:19	Offline	<input type="checkbox"/>	<input type="checkbox"/>

To use the MAC filter, select the device(s) from the device list that you want to be allowed to connect to the network and move the **ON/OFF** slider to **ON**.

CAUTION: Turning on MAC filtering immediately disconnects all devices that are not included in the filter from the network.

NOTE: This device list includes all devices currently connected to the Skyus 100B Series router, except those connected via Ethernet.

Add New Device: Use this button to add a device to the device list, then enter the device name, MAC address, choose whether to select the MAC Address Filter checkbox, and click **Save Changes**.

To delete a device from the list, select its **Delete** checkbox and click **Save Changes**.

To discard any unsaved changes and refresh the list, click **Refresh List**.

Notes on Blocking Devices

There are two ways to block devices from connecting to the Skyus 100B Series router:

- Temporarily block a device from connecting to the router, including devices connected via Ethernet.

To use this method, go to the **Connected Devices** page and click the **Block** button next to the device.

- **Permanently block a device from connecting to your router's network.**

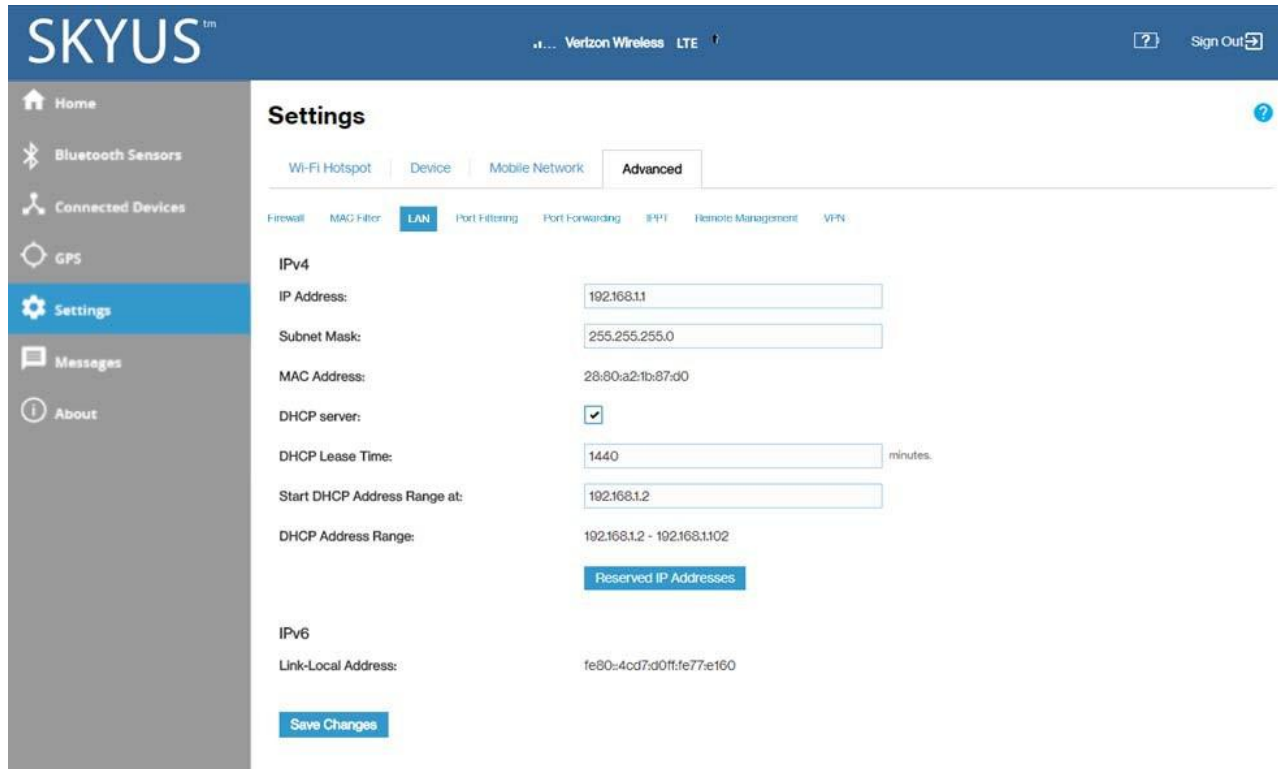
Use the **MAC Filter**.

When blocking devices, the following information applies:

- Devices blocked with **Connected Devices > Block** are blocked from the network, even if the **MAC Filter** is on and the device is enabled for the **MAC Filter**.
- If the **MAC Filter** is on, and a device is blocked with **Connected Devices > Block**, and is not enabled for the **MAC Filter**, then it will not be able to connect. Both the **MAC Filter** and the **Block** prevent connection.
- If the **MAC Filter** is on, and a device is enabled for the **MAC Filter**, then the device will be able to connect. However, it can still be blocked using **Connected Devices > Block** or by disabling the **MAC Filter**.

LAN

This tab provides settings and information about the Skyus 100B Series router's local area network (LAN). For this device, the LAN consists of this device and all Wi-Fi and Ethernet connected devices.



IPv4

IP Address: The IP address for this device, as seen from the local network. Normally, you can use the default value.

Subnet Mask: The subnet mask network setting for the Skyus 100B Series router. The default value 255.255.255.0 is standard for small (class "C") networks. If you change the LAN IP Address, make sure to use the correct Subnet Mask for the IP address range of the LAN IP address.

MAC Address: (read-only) The Media Access Controller (MAC) Address for the Wi-Fi interface on this device. The MAC address is a unique network identifier assigned when a network device is manufactured.

DHCP server: This checkbox turns the DHCP Server feature on or off. This should be left checked. The DHCP server allocates an IP address to each connected device. **NOTE:** If the DHCP Server is turned off, each connected device must be assigned a fixed IP address.

DHCP Lease Time: The number of minutes in which connected devices must renew the IP address assigned to them by the DHCP server. Normally, this can be left at the default value, but if you have special requirements, you can change this value.

Start DHCP Address Range at: The start of the IP address range used by the DHCP server. If the IP is set on the client device, use an IP address outside of this DHCP range; if the IP address is set using an IP reservation, it will usually be inside this range. **NOTE:** Only expert users should change this setting.

DHCP Address Range: The IP address range used by the DHCP server.

To ensure that a connected device will always be allocated the same IP Address by the Skyus 100B Series router, click the **Reserved IP Addresses** button. A list of devices with their MAC Address, Current IP Address, and a field to enter a Reserved IP Address appears.

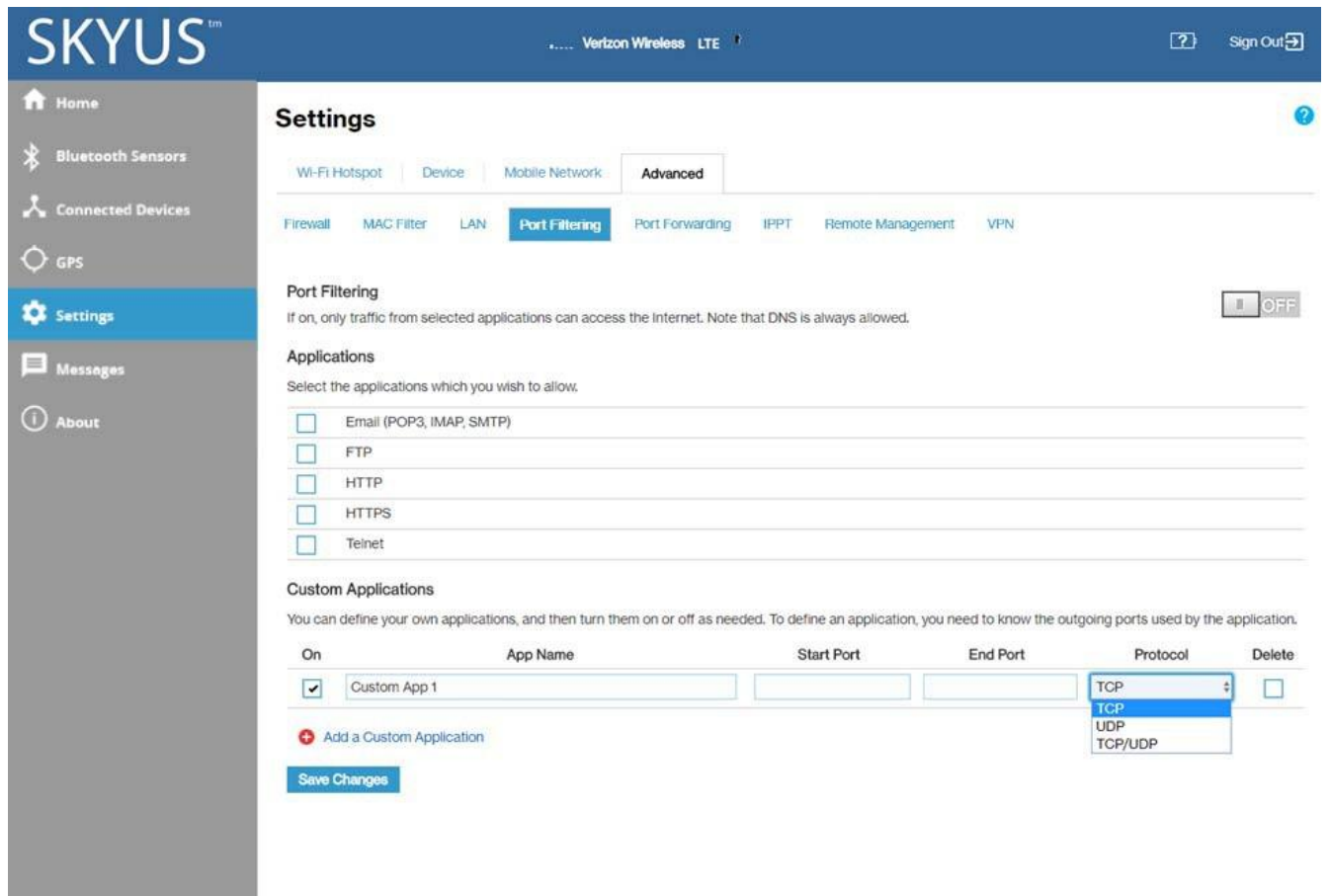
IPv6

Link-Local Address: The Link-Local IPv6 address if the connected device supports IPv6.

Click **Save Changes** to activate and save new settings.

Port Filtering

Port Filtering allows you to block outgoing Internet connections and permit only selected applications to access the Internet. Traffic is identified by port numbers. Some applications are pre-defined. You can define additional applications if you know the details of the traffic used and generated by the applications.



Port Filtering

To turn on port filtering, move the **ON/OFF** slider to **ON**.

To turn off port filtering, so that any application can connect to the Internet, move the slider to **OFF**.

Applications

Select the applications you want to be able to access the Internet and click **Save Changes**.

The following table provides port numbers and protocol information for each port filtering application listed.

Application Name	Port	TCP*	STCP*	UDP*
Email				
POP3	110	Yes	No	Assigned
POP3S	995	Yes	No	Yes
IMAP	143	Yes	No	Assigned
IMAPS	993	Yes	No	Assigned
SMTP	25	Yes	No	Assigned
SecureSMTP	465	Yes	No	No
FTP control (command)	21	Yes	Yes	Assigned
FTP data transfer	20	Yes	Yes	Assigned
HTTP	80	Yes	Yes	Assigned
HTTPS	443	Yes	Yes	Assigned
Telnet	23	Yes	No	Assigned

Custom Applications

You can define up to ten custom applications.

Add a Custom Application: Use this button to add a new row to the custom application list.

On: Check this box if you want the new application to be able to access the Internet.

App Name: Enter a name for the custom application.

Start Port: Enter the beginning of the range of port numbers used by outgoing traffic for the custom application being added.

End Port: Enter the end of the range of port numbers used by the application.

* **Yes** indicates the protocol is standardized for the port number.

No indicates the protocol is not standardized for the port number.

Assigned indicates the port number is assigned by IANA (Internet Assigned Numbers Authority) for protocol use, but may not be standardized.

NOTE: If the application uses a single port instead of a range, type the same value for both the **Start Port** and the **End Port**.

Protocol: Select the protocol used by the port range from the drop-down list (TCP, UDP, or both).

Delete: Check this box to delete a custom application. **NOTE:** Click on the Port Filtering tab again to remove deleted custom applications from view on the screen.

Click **Save Changes** to save any changes made to the custom applications.

Port Forwarding

Port Forwarding allows incoming traffic from the Internet to be forwarded to a particular computer or device on your Wi-Fi network. Normally, the built-in firewall blocks incoming traffic from the Internet. Port forwarding allows Internet users to access any server you are running on your computer, such as a Web, FTP, or Email server. For some online games, port forwarding must be used in order for the games to function correctly.

IMPORTANT: Port forwarding creates a security risk and should not be turned on unless it is required.

Some mobile networks provide you with an IP address on their own network rather than an Internet IP address. In this case, Port Forwarding cannot be used, because Internet users cannot reach your IP address.

The screenshot shows the SKYUS mobile settings application. The top navigation bar includes the SKYUS logo, signal strength, carrier (Verizon Wireless), network type (LTE), and a Sign Out button. A left sidebar contains menu items: Home, Bluetooth Sensors, Connected Devices, GPS, Settings (highlighted), Messages, and About. The main content area is titled 'Settings' and has several tabs: Wi-Fi Hotspot, Device, Mobile Network, and Advanced (selected). Under the Advanced tab, there are sub-tabs: Firewall, MAC Filter, LAN, Port Filtering, Port Forwarding (selected), IPPT, Remote Management, and VPN. The Port Forwarding section has a toggle switch set to 'OFF'. Below this is a table with columns for 'Application' and 'IP Address'. The table lists several applications with checkboxes: DNS, FTP, HTTP/HTTPS, NNTP, POP3/POP3S, SMTP/Secure SMTP, SNMP, Telnet, and TFTP. Below the table is the 'Custom Applications' section, which includes a description and a table for defining custom applications. The table has columns for 'On', 'App Name', 'IP Address', 'Port Type', 'Port Numbers', 'Protocol', and 'Delete'. A dropdown menu for 'Port Type' is open, showing options: 'Range/Single', 'Range/Single', and 'Translate'. A 'Save Changes' button is at the bottom.

Application	IP Address
<input type="checkbox"/> DNS	
<input type="checkbox"/> FTP	
<input type="checkbox"/> HTTP/HTTPS	
<input type="checkbox"/> NNTP	
<input type="checkbox"/> POP3/POP3S	
<input type="checkbox"/> SMTP/Secure SMTP	
<input type="checkbox"/> SNMP	
<input type="checkbox"/> Telnet	
<input type="checkbox"/> TFTP	

On	App Name	IP Address	Port Type	Port Numbers	Protocol	Delete
<input checked="" type="checkbox"/>	Custom App 1		Range/Single	From: <input type="text"/> To: <input type="text"/>	TCP	<input type="checkbox"/>

Port Forwarding

To turn on port forwarding, move the **ON/OFF** slider to **ON**.

To turn off port forwarding, so that any application can connect to the Internet, move the slider to **OFF**.

Port Forwarding Applications

Check the box next to each Port Forwarding application that you want to allow.

If you want to limit service for an application to a single connected device, enter the IP address of the target device in the application's **IP Address** field.

Click **Save Changes**.

The following table provides port numbers and protocol information for each port forwarding application listed.

Application Name	Port	TCP*	STCP*	UDP*
DNS	53	Yes	No	Yes
FTP control (command)	21	Yes	Yes	Assigned
FTP data transfer	20	Yes	Yes	Assigned
HTTP	80	Yes	Yes	Assigned
HTTPS	443	Yes	Yes	Assigned
NNTP	119	Yes	No	Assigned
POP3	110	Yes	No	Assigned
POP3S	995	Yes	No	Yes
SMTP	25	Yes	No	Assigned
SecureSMTP	465	Yes	No	No
SNMP	161	Assigned	No	Yes
Telnet	23	Yes	No	Assigned
TFTP	69	Assigned	No	Yes

* **Yes** indicates the protocol is standardized for the port number.

No indicates the protocol is not standardized for the port number.

Assigned indicates the port number is assigned by IANA (Internet Assigned Numbers Authority) for protocol use, but may not be standardized.

Custom Applications

You can add up to ten custom applications. Once defined, these applications can be turned on and off the same way as pre-defined applications.

Add a Custom Application: Use this button to add a new row to the custom applications list.

On: Check this box if you want the application to be able to access the Internet (enabling port forwarding).

App Name: Enter a name for the custom application.

IP Address: If you want to limit service for the application to a single connected device, enter the IP address of the target device. To find the IP address of a device, go to the Connected Devices page.

NOTE: To ensure the device you are forwarding to does not have a different IP address after a reboot, either statically assign the IP address on the client device, or set up a DHCP reservation.

Port Type: Select Range or Translate from the drop-down list.

Port Numbers: Use the **From** and **To** fields to specify the range of port numbers to be forwarded.

NOTE: If the application uses a single port instead of a range, type the same value in both the **From** and **To** fields.

For translate ports, use the Ext. and Int. to specify ports. **NOTE:** Forwarding takes inbound traffic on a port to the same port on a client device. Use translate ports to send traffic to a different port on the client device. For example, instead of having inbound traffic on port 1234 forward to port 1234 of the client device, you can have it forward to port 5678.

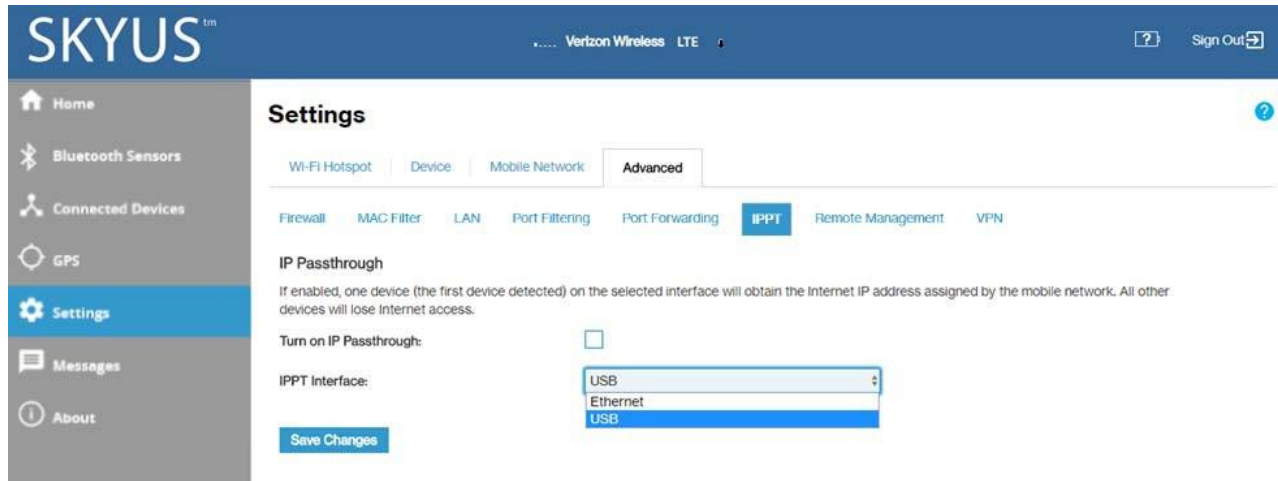
Protocol: Select the protocol used by the port range from the drop-down list (TCP, UDP, or both).

Delete: Check this box to delete a custom application. **NOTE:** Click on the Port Forwarding tab again to remove deleted custom applications from view on the screen.

Click **Save Changes** to save any changes made to the custom applications.

IPPT

Use this tab to enable IP Passthrough on your Skyus 100B Series device. IP Passthrough enables you to assign a public IP address to a device connected on your network.



IP Passthrough

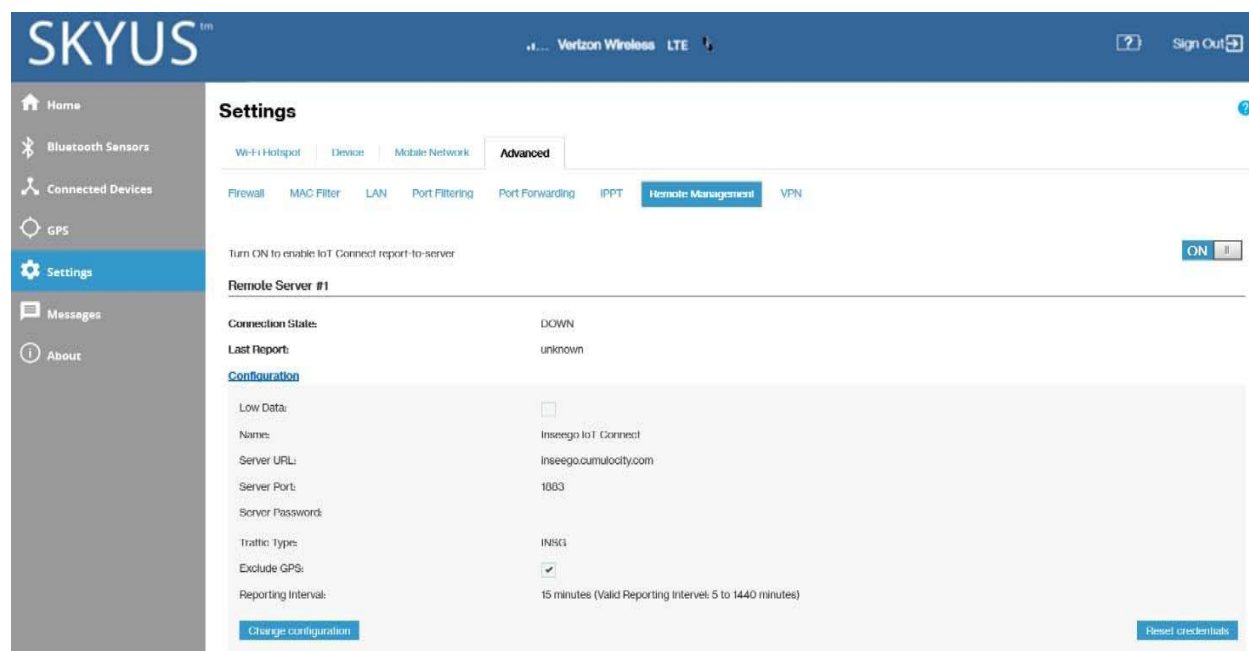
Turn on IP Passthrough: Check the box to enable IP Passthrough. This will enable the first device detected on the specified interface to obtain the IP address assigned by the mobile network. **NOTE:** When IPPT is turned on, all other devices will lose internet access.

IPPT Interface: Select an interface from the drop-down. **NOTE:** When IPPT is enabled on an interface, all other interfaces will be disabled.

Select **Save Changes**.

Remote Management

Remote management allows you to enable the Skyus 100B Series router to communicate to IoT Connect. IoT Connect is a cloud platform product that provides 360 degree visibility and secure accessibility into your deployment from a single platform.



NOTE: By default, the remote connection to IoT Connect is not active. To turn it on, move the **ON/OFF** slider to **ON**.

Remote Server

Connection State: A report on your router's connection to the IoT Connect server. **Up** indicates Skyus 100B Series router is communicating with IoT Servers. **Down** means Skyus 100B Series router is not communicating with IoT Connect servers.

Last Report: The time when your router last sent a packet to the IoT Connect servers.

Configuration

Click [Configuration](#) to view or change configuration details.

Low Data: Check this box to utilize low data reporting. This shrinks the size of the packets your router sends to IoT Connect and can speed up performance. You will still be able to use Connection Up or Down, data usage measurements, alarms, and commands.

Name: This static value shows the name of the server configuration used for IoT Connect services.

Server URL: The server your router is communicating with. This must be the URL where your router is registered.

ServerPort: This static value is provided to show which port your router is using for communication with IoT Connect.

Server Password: The password that was used to register your Skyus 100B Series device. **NOTE:** Editing this field can affect your ability to utilize IoT Connect services.

Traffic type: This static value is provided to show that the router is communicating via Inseego's protocol.

Exclude GPS: Check this box if you do not want the Skyus 100B Series router to send GPS information to the IoT Connect server.

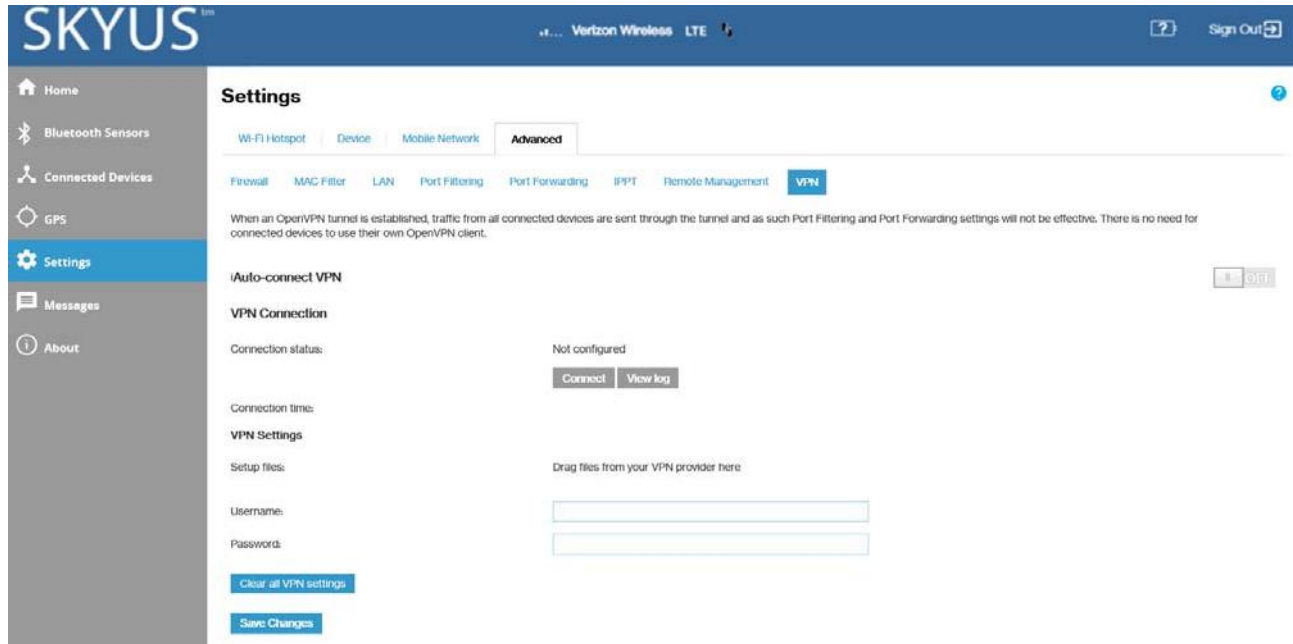
Reporting interval: This is the interval at which your device will send packets into the IoT Connect server. **NOTE:** A shorter interval means more data usage.

Reset credentials: This button clears credentials and resets all your remote server configurations back to the default (IoT Connect) settings.

Change configuration: This button brings up the **Change Remote Server Configuration** dialog, where you can change the configuration information shown on this page.

VPN

Use this page to establish a tunnel connection to an OpenVPN server and route all traffic on connected devices through the tunnel.



Auto-Connect VPN

When the **Auto-connect VPN ON/OFF** slider is **ON**, the VPN tunnel will automatically be established whenever an internet connection is made. When **OFF**, the VPN connection must be established manually.

VPN Connection

Connection status: The status of the VPN connection.

Connection time: The amount of time the VPN connection has been established.

VPN Settings

Setup Files: Drag and drop the OpenVPN configuration files from your OpenVPN provider in the file upload area.

Username: Enter your OpenVPN connection username here.

Password: Enter your OpenVPN connection password here.

Clear all VPN settings: This button deletes all VPN files, logs, and resets all VPN settings.

Select **Save Changes**.

5

Accessories

Included Accessories

Optional Accessories

Power Cable

USB Cable and Adapter

Included Accessories

Your Skyus 100B Series router may include the following accessories. These items are also available for individual purchase if needed. To order an accessory, contact your Inseego sales representative.

Need updates

SKU: SK160NE-ACR Skyus 160 LTE Gateway, AC, Fixed Installation	
Accessory	PN
Whip Antennas	ANT-00007
Backup Battery	40123117
120 VAC Power Cable	CBL-00005

SKU: SK160NE-DCR Skyus 160 LTE Gateway, DC, Mobile/Remote Installation	
Accessory	PN
Whip Antennas	ANT-00007
Backup Battery	40123117
DC Power and IO Cable with Open Leads	CBL-00004

SKU: SK160AP-ACR Skyus 160 LTE Gateway, AC, Fixed Installation	
Accessory	PN
Whip Antennas	ANT-00007
Backup Battery	40123117
120 VAC Power Cable	CBL-00005

SKU: SK160SNE-ACR Skyus 160S LTE Gateway, AC	
Accessory	PN
Whip Antennas	ANT-00007
Backup Battery	40123117
120 VAC Power Cable	CBL-00005

SKU: SK160SAP-ACR Skyus 160S LTE Gateway, AC	
Accessory	PN
Whip Antennas	ANT-00007
Backup Battery	40123117
120 VAC Power Cable	CBL-00005

Optional Accessories

The following accessories are optional. These items are available for individual purchase if needed. For more information or to order an accessory, contact your Inseego sales representative.

Accessory	PN
USB Cable (USB A to USB Micro-B)	CBL-00003
USB Cable 120 VAC Adapter	ACC-00028
USB Cable and 120 VAC Adapter	CBL-00007
PoE (Power over Ethernet, 30 W) Injector	ACC-00029
3 ft Ethernet Cable	FW6829
5 ft Ethernet Cable	FW6605
30 ft Ethernet Cable	FW7920
50 ft Ethernet Cable	FW6678
Serial to USB Adapter	TBD

Power Cable

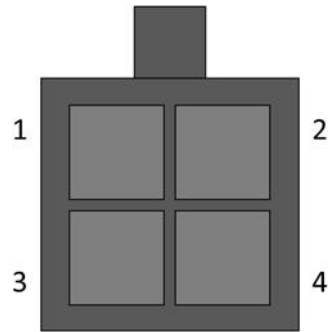
There are two standard power cords available, depending on which SKU is purchased. Both power cords utilize a 4 pin Molex connector.

AC Power Cable

The AC power cable connects the Skyus 100B Series device from the 4 pin Molex connector to a 120 VAC outlet.

DC Power and IO Cable

The DC power cable connects the Skyus 100B Series device from the 4 pin Molex connector to open leads.



Front View
 4 Pin Connector
 Molex 43025-0400
 Or Equivalent

Pin #	AC Power Cable	DC Power and IO Cable
1	Power	Power
2	Ground	Ground
3	Power (Tied to Power)	Ignition Sense
4	NA (Not Pinned)	GPIO

USB Cable and Adapter

Skyus 100B Series devices can be powered by USB when connected to a powered host device or when connected using a USB to AC adapter. The following are sold as an optional accessory.

USB Cable (CBL-00003)

USB 2.0 A to USB Micro-B, 1.5 m



USBAC Adapter (ACC-00028)

120 VAC 1.5 A to 5 VDC 2 A



6

Product Specifications and Regulatory Information

Product Specifications

Regulatory Information

Wireless Communications

Limited Warranty and Liability

Safety Hazards

Installation and Operating Instructions

Product Specifications

Device

Product:	SK160NE	SK160AP	SK160SNE	SK160SAP
Model Number:	SKG1EM7455	SKG1EM7430	SKG1EM7455	SKG1EM7430
SKU:	SK160NE-DCR (Mobile/Remote Install) SK160NE-ACR (Fixed Install)	SK160AP-ACR (Fixed Install)	SK160SNE-ACR (AC Power)	SK160SAP-ACR (AC Power)
Chassis:	Ruggedized Reinforced Plastic			
Dimensions:	118x98x33 mm (4.65x3.85x1.31 in)			
Weight:	250 g (8.5 oz) - with battery			
Mounting:	Integrated Mounting Tabs for #4 or #6 Screws			
SIM:	2 x 4FF Nano SIM, Hinged Slide Lock SIM Sockets, (Accessible in Battery Tray)			
Antennas:	2x SMAs for External Cellular Antennas 1x SMA for External GNSS Antenna Internal Wi-Fi/BT Antennas*			
I/O:	1x Ignition Sense or Digital I/O, 1x Digital I/O			
Backup Battery:	4400 mAh Li-ion Rechargeable Pack, 12+ Hours of Active Use			

Environmental

Operating Temperature (with Battery):	-20 - 50 °C (-4 - 122 °F)
Storage Temperature (with Battery):	-20 - 60 °C (-4 - 140 °F)
Operating Temperature (without Battery):	-30 - 70 °C (-22 - 158 °F)
Storage Temperature (without Battery):	-40 - 85 °C (-4 - 185 °F)

Cellular Bands

Skyus 160LTE and Skyus 160S LTE (NE)

LTE: B1-B5, B7, B12, B13, B20, B25, B26, B29, B30, B41 (Supports 2 Carrier Aggregation Downlink)
3G (HSPA+, UMTS): B1, B2, B3, B4, B5, B8

Skyus 160LTE and Skyus 160s LTE (AP)

LTE: B1, B3, B5, B7, B8, B18, B19, B21, B28, B38-41 (Supports 2 Carrier Aggregation Downlink) 3G (HSPA+, UMTS): B1, B5, B6, B8, B9, B19
3G (TD-SCDMA): B39

* Wi-Fi/Bluetooth not available for Skyus 160S products.

Technology

Wi-Fi:	Wi-Fi 5 (802.11 b/g/n/ac) up to 20 clients*
GNSS:	aGNSS (GPS, GLONASS, Galileo), NMEA or TAIP Protocol, SUPL 2.0 Support, Local UDP and Remote Streaming
Networking:	Port Forwarding/Filtering, VPN Support, IP Passthrough, MAC Filtering, Serial over USB, etc.
User Interface:	Skyus Web UI (https://my.skyus/ or 192.168.1.1), Inseego IoT Connect Secure Cloud Platform
Data Interfaces:	1x USB Micro-B (host or device), 1x GB RJ45 Ethernet (PoE in), Wi-Fi/Bluetooth*
Data Rates:	Cat-6 LTE: 300 Mbps Downlink, 50 Mbps Uplink†

Power

5 ± 0.25 VDC @ 1A (powered USB 2.0 connection required) via USB Micro-B Connector
9-32 VDC via 4-pin Connector
PoE in from PoE host (minimum of 802.3af, 15.4 W)

OS Support

Windows 7 or newer
Linux Ubuntu 14.04 or newer, Linux Kernel 2.6.32 or

*Wi-Fi/Bluetooth not available for Skyus 160S products.

† Theoretical speeds only. Actual speeds depend on carrier network implementation.

Regulatory Information

PRODUCT: SKYUS 160NE, SKYUS 160AP

MODEL NUMBER: SKG1EM7455, SKG1EM7430

FCC ID: PKRISGSKG1EM7455

IC ID: 3229A-SKG1EM7455

FEDERAL COMMUNICATIONS COMMISSION NOTICE (FCC - UNITED STATES)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device 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 radiated 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 into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment must be installed and operated in accordance with provide instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.


CE RED:

Hereby, Inseego Corp. declares that the radio equipment type is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:
<https://www.inseego.com/support/>

Notice: The device complies with RF specifications when the device used at least 20cm from human body.

The device operates on the 5150–5350 MHz frequency range. It is restricted indoor environment only. This product can be used across EU member states.

	AT	BE	BG	HR	CY	CZ	DK
	EE	FI	FR	DE	EL	HU	IE
	IT	LV	LT	LU	MT	NL	PL
	PT	RO	SK	SI	ES	SE	UK

IC:

(EN) This device complies with the applicable industry Canada) License exempt radio apparatus, the operation is authorized under the conditions as follows: (1) this device may not cause interference, and (2) the user of this device must accept any interference caused, even if the interference is likely to affect its performance.

(FR) 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.

(EN) Radio frequency (RF) Exposure Information The radiated output power of the Wireless Device is below the industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized. The device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions (antennas at least 20cm from a person's body).

(FR) informations sur l'exposition de radiofréquences (rf) la puissance de rayonnement de l'appareil sans fil est inférieure à la fréquence radio d'industrie canada (ic) limites d'exposition. l'appareil sans fil devrait être utilisé de façon telle que le potentiel de contact pendant le fonctionnement normal est réduit au minimum. le dispositif a été évalué et qui semble conforme à l'ic des limites d'exposition aux rf sous des conditions d'exposition mobile (antennes d'au moins 20 cm du corps d'une personne).

(EN) The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

This device is intended for OEM integrators only. Please see the full Grant of Equipment document for other restrictions.

(FR) l'énoncé suivant la déclaration suivante doit être incluse dans toutes les versions de ce document fourni à un oem ou intégrateur, mais ne devrait pas être distribuées à l'utilisateur final.

ce dispositif est destiné aux intégrateurs de oem. voir le document de subvention d'équipement d'autres restrictions.

(EN) The Innovation, Science and Economic Development Canada certification label of a module shall be clearly visible at all times when installed in the host product; otherwise, the host product must be labelled to display the Innovation, Science and Economic Development Canada certification number for the module, preceded by the word "Contains" or similar wording expressing the same meaning, as follows:

Contains IC: N7NEM7455

where N7NEM7455 is the module's certification number

(FR) L'étiquette de certification d'un module d'Innovation, Sciences et Développement économique Canada doit être clairement visible en tout temps, une fois installée dans le produit hôte. sinon, le produit hôte doit porter une étiquette indiquant le numéro de certification d'Innovation, Sciences et Développement économique Canada du module, précédé du mot "contient" ou d'un libellé similaire exprimant le même sens, comme suit:

Contient IC: N7NEM7455

Où N7NEM7455 est le numéro de certification du module

L'appareil fonctionne sur la plage de fréquences 5150 ~ 5350 MHz. C'est un environnement intérieur restreint seulement.

The device operates on the 5150~5350 MHz frequency range. It is restricted indoor environment only.

Wireless Communications

IMPORTANT: Due to the transmission and reception properties of wireless communications, data occasionally can be lost or delayed.

This can be due to the variation in radio signal strength that results from changes in the characteristics of the radio transmission path. Although data loss is rare, the environment where you operate the modem might adversely affect communications.

Variations in radio signal strength are referred to as fading. Fading is caused by several different factors including signal reflection, the ionosphere, and interference from other radio channels.

Inseego Corp. or its partners will not be held responsible for damages of any kind resulting from the delays or errors in data transmitted or received with the Skyus 100B Series device, or failure of the Skyus 100B Series device to transmit or receive such data.

Limited Warranty and Liability

Inseego Corp. warrants for the 12-month period immediately following receipt of the Product by Purchaser that the Product will be free from defects in material and workmanship under normal use. THESE WARRANTIES ARE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES,

EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The exclusive remedy for a claim under this warranty shall be limited to the repair or replacement, at Inseego's option, of defective or non-conforming materials, parts or components. The foregoing warranties do not extend to (I) non-conformities, defects or errors in the Products due to accident, abuse, misuse or negligent use of the Products or use in other than a normal and customary manner, environmental conditions not conforming to Inseego's specification, of failure to follow prescribed installation, operating and maintenance procedures, (II) defects, errors or nonconformities in the Product due to modifications, alterations, additions or changes not made in accordance with Inseego's specifications or authorized by Inseego, (III) normal wear and tear, (IV) damage caused by force of nature or act of any third person, (V) shipping damage, (VI) service or repair of Product by the purchaser without prior written consent from Inseego, (VII) products designated by Inseego as beta site test samples, experimental, developmental, reproduction, sample, incomplete or out of specification Products, or (VIII) returned products if the original identification marks have been removed or altered.

Safety Hazards

EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The exclusive remedy for a claim under this warranty shall be limited to the repair or replacement, at Inseego's option, of defective or non-conforming materials, parts or components. The foregoing warranties do not extend to (I) non-conformities, defects or errors in the Products due to accident, abuse, misuse or negligent use of the Products or use in other than a normal and customary manner, environmental conditions not conforming to Inseego's specification, of failure to follow prescribed installation, operating and maintenance procedures, (III) defects, errors or nonconformities in the Product due to modifications, alterations, additions or changes not made in accordance with Inseego's specifications or authorized by Inseego, (III) normal wear and tear, (IV) damage caused by force of nature or act of any third person, (V) shipping damage, (VI) service or repair of Product by the purchaser without prior written consent from Inseego, (VII) products designated by Inseego as beta site test samples, experimental, developmental, reproduction, sample, incomplete or out of specification Products, or (VIII) returned products if the original identification marks have been removed or altered.

Safety Hazards

WARNING: This equipment is to be installed by qualified personnel only.

NOTE: This product is intended for restricted access whereby access is controlled through the use of a means of security (for example, key, lock, tool, badge access) and personnel authorized for access have been instructed on the reasons for the restrictions and any precautions that need to be taken.

This device is designed to be connected to a grounded power source. The socket (outlet) supplied with a grounded supply source, in order to maintain the security provided by a grounded power source to the device.

Do not operate the Skyus 100B Series device in an environment that might be susceptible to radio interference resulting in danger, specifically:

Areas where prohibited by the law

Follow any special rules and regulations and obey all signs and notices. Always turn off the host device when instructed to do so, or when you suspect that it might cause interference or danger.

Where explosive atmospheres might be present

Do not operate your device in any area where a potentially explosive atmosphere might exist. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death. Be aware and comply with all signs and instructions.

Users are advised not to operate the device while at a refueling point or service station. Users are reminded to observe restrictions on the use of radio equipment in fuel depots (fuel storage and distribution areas), chemical plants or where blasting operations are in progress.

Areas with a potentially explosive atmosphere are often but not always clearly marked. Potential locations can include gas stations, below deck on boats, chemical transfer or storage facilities, vehicles using liquefied petroleum gas (such as propane or butane), areas where the air contains chemicals or particles, such as grain, dust or metal powders, and any other area where you would normally be advised to turn off your vehicle engine.

Near medical and life support equipment

Do not operate your device in any area where medical equipment, life support equipment, or near any equipment that might be susceptible to any form of radio interference. In such areas, the host communications device must be turned off. The device can transmit signals that could interfere with this equipment.

On an aircraft, either on the ground or airborne

In addition to FAA requirements, many airline regulations state that you must suspend wireless operations before boarding an airplane. Please ensure that the modem is turned off prior to boarding aircraft in order to comply with these regulations. The modem can transmit signals that could interfere with various onboard systems and controls.

While operating a vehicle

The driver or operator of any vehicle should not operate a wireless data device while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some countries, operating such communications devices while in control of a vehicle is an offense.

Electrostatic Discharge (ESD)

Electrical and electronic devices are sensitive to electrostatic discharge (ESD). Macintosh native connection software might attempt to reinitialize the device should a substantial electrostatic discharge reset the device. If the software is not operational after an ESD occurrence, then restart your computer.

ROHS COMPLIANCE

As a part of Inseego's corporate policy of environmental protection, Inseego takes every step to ensure that devices are designed and manufactured to comply to the European Union Directive 2015/863 amending 2011/65/EU for the Restriction of Hazardous Substances (RoHS).

Installation and Operating Instructions

Temperature code, T4

SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY.

THESE DEVICES ARE OPEN TYPE DEVICES THAT ARE INTENDED TO BE INSTALLED IN A TOOL-ONLY ACCESSIBLE ENCLOSURE THAT IS SUITABLE FOR THE ENVIRONMENT.

WARNING: EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS / AVERTISSEMENT - RISQUE D'EXPLOSION. NE PAS DÉBRANCHER PENDANT QUE LE CIRCUIT EST SOUS TENSION OU À MOINS QUE L'EMPLACEMENT NE SOIT EXEMPT DE CONCENTRATIONS INFLAMMABLES.

ANTENNAS INTENDED FOR USE IN CLASS I, DIVISION 2 HAZARDOUS LOCATIONS MUST BE INSTALLED WITHIN THE END USE ENCLOSURE. FOR REMOTE INSTALLATION IN AN UNCLASSIFIED LOCATION, ROUTING AND INSTALLATION OF THE ANTENNAS SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE REQUIREMENTS (NEC/CEC).

The USB, Serial, ETH ports, and Reset button may only be accessed for equipment set-up, installation and maintenance within non-hazardous location. These ports and the associated interconnecting cable shall remain inaccessible within the hazardous location.

Power Adaptor (optionally provided with the product) shall not be used in the hazardous location.

The instructions shall stipulate that if a power adaptor is provided with the equipment, the adaptor and associated wiring harness may only be used in a non-hazardous (unclassified) location.

7

Glossary

Glossary

- **4G LTE**—Fourth Generation Long Term Evolution. LTE is a standard for wireless data communications technology and an evolution of the GSM/UMTS standards. The goal of LTE is to increase the capacity and speed of wireless data networks using new DSP (digital signal processing) techniques and modulations that were developed around the turn of the millennium. A further goal is the redesign and simplification of the network architecture to an IP-based system with significantly reduced transfer latency compared to the 3G architecture. The LTE wireless interface is incompatible with 2G and 3G networks, so that it must be operated on a separate wireless spectrum
- **802.11 (a, b, g, n, ac)**— A set of WLAN Wi-Fi communication standards in the 2.4 and 5 GHz frequency bands.
- **APN**— Access Point Name. The name of a gateway between a mobile network and another computer network, often the Internet.
- **bps** — Bits per second. The rate of data flow.
- **Broadband** — High-capacity high-speed transmission channel with a wider bandwidth than conventional modems. Broadband channels can carry video, voice, and data simultaneously.
- **DHCP** — Dynamic Host Configuration Protocol. Software found in servers and routers that automatically assigns IP addresses and other configuration data to computers, tablets, printers, and other devices connection to the IP network.
- **DHCP Server** — A server or service with a server that assigns IP addresses.
- **DMZ** — demilitarized zone. A sub-network that contains and exposes an organization's external-facing services to an untrusted network, usually a larger network such as the Internet.
- **DNS** — Domain Name System. A system for converting host names and domain names into IP addresses on the Internet or on local networks that use the TCP/IP protocol.
- **Firmware**— A computer program embedded in an electronic device. Firmware usually contains operating code for the device.
- **FTP** — File Transfer Protocol. A standard network protocol used to transfer computer files between a client and server.
- **GB**— Gigabyte. A multiple of the unit byte for digital information storage. Usage depends on context. When referring to disk capacities it usually means 10^9 bytes. It also applies to data transmission quantities over telecommunication circuits.
- **Gbps** — Gigabits per second. The rate of data flow.
- **Hotspot**— A Wi-Fi (802.11) access point or the area covered by an access point. Used for connecting to the Internet.

- **HTTP**—Hypertext Transfer Protocol. An application-level protocol for accessing the World Wide Web over the Internet.
- **IEEE**—Institute of Electrical and Electronics Engineers. An international technical/professional society that promotes standardization in technical disciplines.
- **IMAP**— Internet Message Access Protocol. An Internet standard protocol for accessing email from a remote server from email clients. IMAP allows access from multiple client devices.
- **IMEI**— International Mobile Equipment Identity. Used in LTE networks to identify the device. It is usually printed on the device and can often be retrieved using a USSD code.
- **IP** — Internet Protocol. The mechanism by which packets are routed between computers on a network.
- **IP Type** — The type of service provided over a network.
- **IP Address**—Internet Protocol address. The address of a device attached to an IP network (TCP/IP network).
- **ISP**—Internet Service Provider. Also referred to as the service carrier, an ISP provides Internet connection service (See Network Operator).
- **Kbps** — Kilobits per second. The rate of data flow.
- **LAN**—Local Area Network. A type of network that lets a group of computers, all in close proximity (such as inside an office building), communicate with one another. It does not use common carrier circuits though it can have gateways or bridges to other public or private networks.
- **MAC Address**—Media Access Control. A number that uniquely identifies each network hardware device. MAC addresses are 12-digit hexadecimal numbers. This is also known as the physical or hardware address.
- **Mbps** — Megabits per second. The rate of data flow.
- **MSID**—Mobile Station Identifier. A number for a mobile phone that identifies that phone to the network.
- **Network Operator**—The vendor that provides your wireless access. Known by different names in different regions, some examples are: wireless provider, network provider, or cellular carrier.
- **Network Technology**—The technology on which a particular network provider's system is built; such as LTE or GSM.
- **NMEA port**—National Marine Electronics Association port. The port through which applications can access a GPS data stream.
- **NNTP** —Network News Transfer Protocol. The primary protocol used to connect to Usenet servers and transfer news articles between systems over the Internet.

- **POP3**—Post Office Protocol 3. A protocol in which email is received and held for you by your Internet server until you download it.
- **Port**—A virtual data connection used by programs to exchange data. It is the endpoint in a logical connection. The port is specified by the port number.
- **Port Forwarding**—A process that allows remote devices to connect to a specific computer within a private LAN.
- **Port Number**—A 16-bit number used by the TCP and UDP protocols to direct traffic on a TCP/IP host. Certain port numbers are standard for common applications.
- **PRL**—Preferred Roaming List. A list that your wireless phone or device uses to determine which networks to connect with when you are roaming (Network operator specific).
- **Protocol**—A standard that enables connection, communication, and data transfer between computing endpoints.
- **Proxy**—A firewall mechanism that replaces the IP address of a host on the internal (protected) network with its own IP address for all traffic passing through it.
- **RADIUS**—Remote Authentication Dial-In User Service. A networking protocol, operating on port 1812, that provides centralized Authentication, Authorization, and Accounting (AAA or Triple A) management for users who connect and use a network service.
- **Router**—A device that directs traffic from one network to another.
- **RP-SMA**—Reverse Polarity Sub-Miniature Version A. A connector interface with a screw-type coupling mechanism for coaxial cables.
- **RSSI**—Received signal strength indicator.
- **SIM**—Subscriber Identification Module. Found in LTE and GSM network technology, the SIM is a card containing identification information for the subscriber and their account. The SIM card can be moved to different devices.
- **SMA**—Sub-Miniature Version A. A variation of the SMA connector where the gender of the interface is reversed.
- **SMTP**—Simple Mail Transfer Protocol. The standard protocol for sending emails across the Internet.
- **SNMP**—Simple Network Management Protocol. An Internet protocol used to manage and monitor network devices and their functions.
- **SSID**—Service Set Identifier. The name assigned to a Wi-Fi network.
- **TCP/IP**—Transmission Control Protocol/Internet Protocol. The set of communications protocols used for the Internet and other similar networks.
- **TFTP**—Trivial File Transfer Protocol. An Internet software utility for transferring files that is simpler to use than FTP, but does not provide user authentication and directory visibility supported by FTP.

- **Telnet** – A user command and underlying TCP/IP protocol that allows a user on one computer to log into another computer that is part of the same network.
- **TTY** – Text Telephones (TTY), also known as Telecommunications Device for the Deaf (TDD), are used by the deaf, hard-of-hearing, and individuals with speech impairments to communicate.
- **UDP** – User Datagram Protocol (UDP) is a communications protocol that offers a limited amount of service when messages are exchanged between computers in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol (TCP) and, together with IP, is sometimes referred to as UDP/IP.
- **USB** – Universal Serial Bus. A connection type for computing device peripherals such as a printer, mobile modem, etc.
- **USB Port Types** – The USB ports on computers and hubs have a rectangular Type A socket, and peripheral devices have a cable with a Type A plug. Peripherals that do not have an attached cable have a square Type B socket on the device and a separate cable with a Type A and Type B plug. Ports and connectors are available in different sizes (for example, standard, mini, and micro).
- **USSD** – Unstructured Supplementary Service Data (USSD), also known as “Quick code” or “Feature code”, is a communications protocol used to send data between a mobile device and network service provider.
- **VPN** – Virtual Private Network. A secure private network that runs over the public Internet. Commonly used to connect to an office network from elsewhere.
- **Wi-Fi** – Any system that uses the 802.11 standard developed and released in 1997 by the IEEE.
- **Wi-Fi 5** – The fifth generation of Wireless Fidelity, using 802.11ac on 5 GHz. This standard was developed and released in 2013.
- **Wi-Fi Client** – A wireless device that connects to the Internet via Wi-Fi
- **WPA/WPA2** – Wi-Fi Protected Access. A security protocol for wireless 802.11 networks from the Wi-Fi Alliance.