Lab 1: Register and Explore

ABOUT THIS LAB

Goals

This lab familiarizes you with the following:

- The new ALMS account that supports the XR Series routers
- Registering routers in AirLink Premium or AirLink Complete for XR80
- Connecting to and logging in to an AirLink OS-based router
- Finding operational status information in AirLink OS
- Configuring several basic settings in AirLink OS locally on a router

Items Needed

This lab is a hands-on exercise and you need the following items to complete it:

- A computer
- An internet connection, preferably with a router or switch
- Two network* cables and available port in a wired router or switch (optional, preferred)
- An XR80 or XR90 production router (activated SIM cards and antennas are optional but beneficial)
- An email address not previously used with ALMS
- A barcode scanner or smartphone capable of scanning QR codes (optional, preferred)

*If working on a laptop or tablet without an Ethernet RJ45 port, you can use a data-capable USB-C cable for LAN connection to your router.

Procedure

Download the Lab Submission document from the Training Portal, and paste the screen shots described in this lab procedure document in the proper locations in the submission document.

In the Lab section of the training course in the Sierra Wireless Training Portal, follow the instructions to upload your completed lab submission document in Word or PDF format. Make sure you include your name and the email address used to register you for the XRSA training course.

LAB NOTES

This lab guides you through interacting with an XR Series router, including setting up the router to support an uplink, registering it in a suitable ALMS account, and getting it online and connected. It enables you to become familiar with the layout of status information and configuration options within AirLink OS.

During the lab, you will:

- Register an XR Series router in a suitable ALMS account
  NOTE This may be your starting state already, or you may need to create a new account and/or register an XR Series router in an existing account
- Provide a suitable uplink for the router to communicate with ALMS
- Confirm from ALMS that the router is communicating
- Connect and log in locally to the XR Series router
- Check the operational status of the XR Series router locally
- Configure some basic device settings locally in AirLink OS

NOTE If you have already started working with an XR Series router or have received one that has already been used; you should still go through the steps in sequence to understand the process.

NOTE If your router is already registered in an account you won't have the opportunity to go through the account creation and/or registration. You can proceed with the lab regardless of account set up or registration. If you do not have the opportunity to set up an account or register a device yourself, you will still be able to.

PREREQUISITE UNDERSTANDING

With the evolution of ALMS as part of the XR solution, we have introduced a new *Account Type*. Before you complete the lab, understand the following about Account Types:

- Types of Customer Accounts – you will need to validate the type of account
- Creation of the correct type of customer account – with a new ALMS account type required for XR Series router registration, you may need to create the correct type of customer account
- Device registration in ALMS – device registration involves both the router serial number and a unique registration code

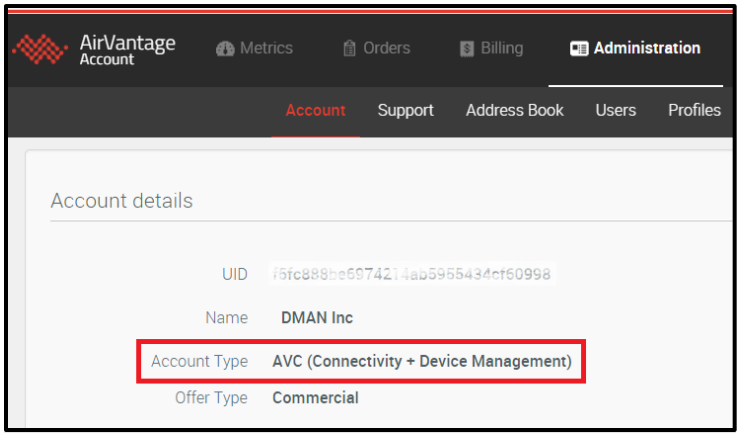
The New ALMS Account

The end-user account type required for XR Series routers is a new ALMS device management account that also supports connectivity. This account type is a requirement for several reasons, including the Out-of-band Management radio.

To confirm that the account is for connectivity and device management:

1. Log into your ALMS account.
2. Click on the three-bar icon in the upper right corner and click **My Account**. (A new tab opens.)
3. Click on the **Administration** tab.
4. Check the **Account Type**; if it does not say "AVC (Connectivity + Device Management)" then it is not the correct account type to support XR Series routers.

NOTE As of this training, this is the current state of account types and the best way to recognize a new ALMS account type. It will likely change over time.



5. If the account type is not the correct one, the customer needs to create a new account or migrate the existing account, according to the timeline (see note below)

NOTE There is a current procedure for working with end-customer accounts when they purchase an XR Series router, and that procedure will be changing during 2022 as new tools are developed for migrating existing account to the new account type.

Initial Process	Early Account Migration	All Account Migration
This procedure is in effect since late 2021	This option is expected to begin in the first half of 2022	This phase is expected to begin in the second half of 2022
1. Customer creates new account from partner signup link or generic landing page. 2. Customer creates support request to create partnership between existing and new ALMS accounts. 3. Customer logs in to ALMS and uses "Change company" to move between fleets. Once migration tool is ready, customer will be contacted to consolidate back into a single account.	As customers purchase XR Series routers, they have the option of automatically migrating their existing ALMS account to the new account type. This enables adding new devices to the existing fleet.	After accounts are updated to the new account type, Sierra Wireless Support proactively contacts customers to migrate accounts in preparation for next-generation routers.

Partners' own ALMS Reseller class accounts will also be migrated after the customer account migration has achieved significant progress. Until then, partners should follow the same new-account-partnering process described above.

About Creating the New ALMS Account

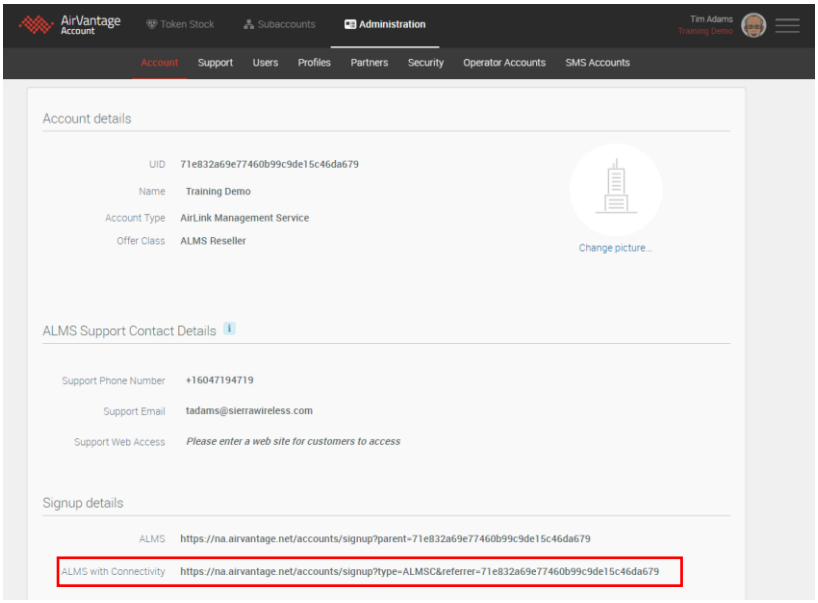
If you need to create a new ALMS account, do one of the following:

Option 1: Use the instructions in the Quick-start card included in the XR Series router box.

1. Go to https://www.sierrawireless.com/products-and-solutions/routers-gateways/alms/register/
2. When you register for the new account, use an email address not currently associated with any ALMS account. This is required for account creation purposes and can be updated once the account is created and paired with an existing account.
3. Select a data center location.
   - Global model XR Series routers must be registered in an EU-based account
   - North American model XR Series routers must be registered in a NA-based account (subject to change).

Option 2: If your reseller partner has signed up to represent Sierra Wireless connectivity, use their account signup link labeled "ALMS with Connectivity" on the **Administration** > **Account** tab.

NOTE The reseller can provide that link to the end user so that the end user's new ALMS account automatically partners with the reseller account.



About Registering the Routers in ALMS

The registration process for ALMS has traditionally used the router's serial number combined with its cellular module's IMEI number as a secondary value to minimize errors.

This process has changed with AirLink OS based devices and now uses the router serial number coupled with a unique registration code. The registration code is used only to register the router in ALMS.

The registration code can be found in two locations:

1. On the label affixed to the underside of the router

2. Included in the shipment "flat file" that is normally transacted between Sierra Wireless and its distributors, and between the distributors and the resellers who purchase through them

LAB EXERCISES

Create a new ALMS account to support your XR Series router

Your ALMS account and XR Series router will be in one of three states at the beginning of this lab.

New ALMS account and Router registration status	Have not got New ALMS Account	Have new ALMS account
Router registered by you		Skip down to screenshot instructions
Router registered by someone else		Log into account and go through registration steps to become familiar with the process. At the end of the process you will get a duplicate system error, but it will not do any harm.
Router not registered	Create a new ALMS account using one of the two methods listed above.	Log into account and register your router.

Register your XR Series router in ALMS

For this part of the lab exercise, you will register a single device into your own new ALMS account.

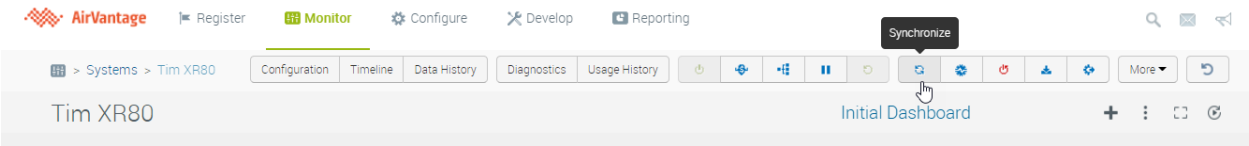
1. Look on the label on the bottom of your XR Series router and locate the Reg Code.
2. Use a QR-capable bar code scanner or smart phone to capture the QR code on the bottom of the XR Series router.
    a. You will see a series of semi-colon-separated entries, which includes the serial number, IMEI number(s), default password, and registration code.
    b. Identify which value corresponds to the default password on the label, and which value corresponds to the Reg code.
    c. In a text editor app, save the Serial Number and Reg Code values for later use.
3. Log into your new ALMS account, click Register, select the appropriate router model (XR80 or XR90) and enter the serial number and Reg code. You may give it a name if desired.

    NOTE If your router is already registered in this or another account, you will get an error message saying the system already exists in ALMS. If it is already registered, there is no harm in repeating the registration process.

    NOTE If you receive a message saying your router already exists in ALMS but it is not in the account that you have access to, please contact Support or one of the course instructors to investigate and hopefully make it accessible to you.
4. Once registered, unbox the router and:
    a. Connect the single antenna in the box to the LPWA antenna connection on the front.
    b. Connect the power adapter (or connect the DC wiring harness to a DC adapter providing between 10.5 and 36V DC (these are the default power settings for the XR Series).
    c. If desired, connect an Ethernet cable from any one of the XR Series Ethernet ports to an uplink. This can be done after the unit is powered on, unlike previous generations of AirLink routers.

NOTE If the LPWA antenna is placed in a location with reasonable signal strength (e.g. better than -80dB) the LPWA radio can activate over the air and has recently done so in multiple samples within 5 minutes of powering on the router for the first time.

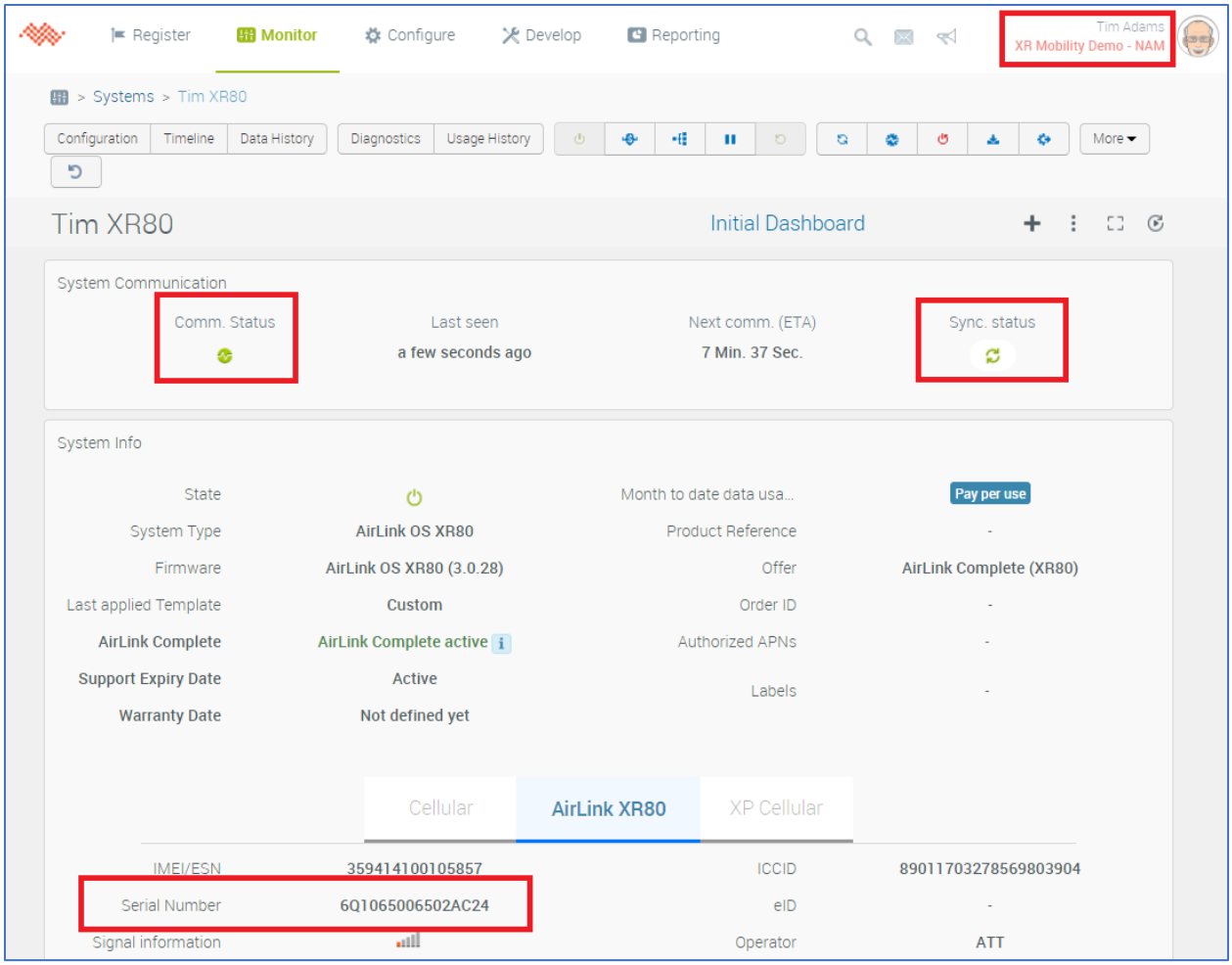
5. It may take some time for the router to register and the LPWA radio to come online, but the device will perform an initial check in with either Ethernet or other available uplink.
6. Once the router has completed its initial check-in, you should be able to see its status using the **Monitor** > **Systems** tab in ALMS.
7. Perform a sync in ALMS by clicking the Sync icon in the top toolbar as shown.



Capture Screenshot #1

Once synchronized, capture a screenshot of the **Monitor > Systems** page using **PrtSc** button or another utility, and paste the image into the Lab Submission document as Screenshot #1. The screenshot must display the following items, highlighted in red below:

- ALMS account name
- Comm status in green
- Sync status in green
- Router serial number



Connect and log into your XR Series router via Ethernet

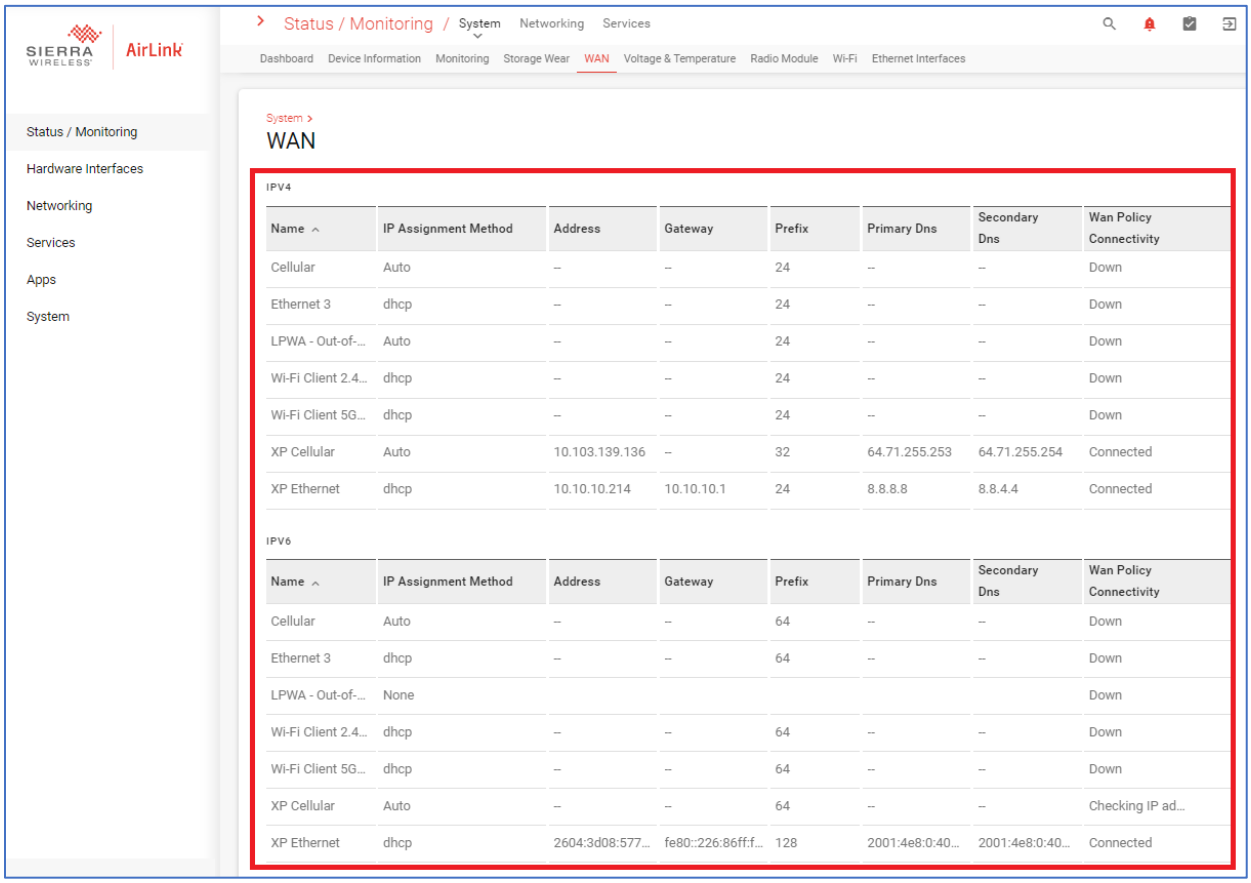
For this part of the exercise, you will explore a number of status parameters and capture your second screenshot for the submission document.

1. Examine the **Dashboard** to see the WAN links status. You should see that your Ethernet connection is showing in dark grey (active). If you have inserted SIM card(s) prior to powering up, you may see signal strength bars on the cellular radios. If you hover over the ⓘ info icon, you will see more complete cellular status.
2. Navigate to **Status / Monitoring > Networking > Multi-WAN** and look in the **Current WAN device** column to see what interface is being used for the default routing policies. You will likely see your Ethernet connection as the current path for all policies, as long as it supports both IPv4 and IPv6.
3. Navigate to **Status / Monitoring > System > Radio Module** and scroll down to the LPWA radio. Note the Adapter Status (probably either Connecting or Connected) and the APN in use.
4. Navigate to **Status / Monitoring > Networking > Neighbor**. This table is the evolution of the DHCP client table, and shows both clients and uplink default gateways, both IPv4 and IPv6. Note your client laptop address and whether it is connected on IPv4 or IPv6 or both, and also identify the default gateway address of the router to which you are connected.
5. Navigate to **Status / Monitoring > System > WAN** and note the IPv4 and IPv6 tables and which interfaces are currently connected. This table will clearly show connection states, IPv4 and IPv6 addressing of WAN links, and DNS information, among other things.

Capture screenshot #2

While still on the Status / Monitoring > System > WAN page, capture a screenshot that shows the IPv4 and IPv6 tables and current WAN connection states.

The screenshot must show both tables; you can use Ctrl + and Ctrl – to zoom in an out as needed.



Paste the screenshot into the Lab submission document as Screenshot #2.

Set basic configuration parameters in AirLink OS

A very standard group of settings for a basic router deployment includes the following items:

- Setting a non-default cellular APN
- Changing the LAN addressing
- Setting up a station (STA) Wi-Fi profile
- Enabling the access point
- Setting router shutdown behavior (voltage and time after ignition)
- Location reporting for CAD/AVL

Some of these items are things you can configure in your lab environment and some require external resources but you can still try the process to gain some experience. You probably have access to a Wi-Fi network to connect to as a client, and can experiment with the APN setting to see if your provider supports the ability to assign a network APN.

Use the video walkthrough as a reference if it is helpful, as it provides the procedure for setting these items along with some description of the settings and how they behave.

The video is available at this link: https://vimeo.com/685942648/135320d3ec

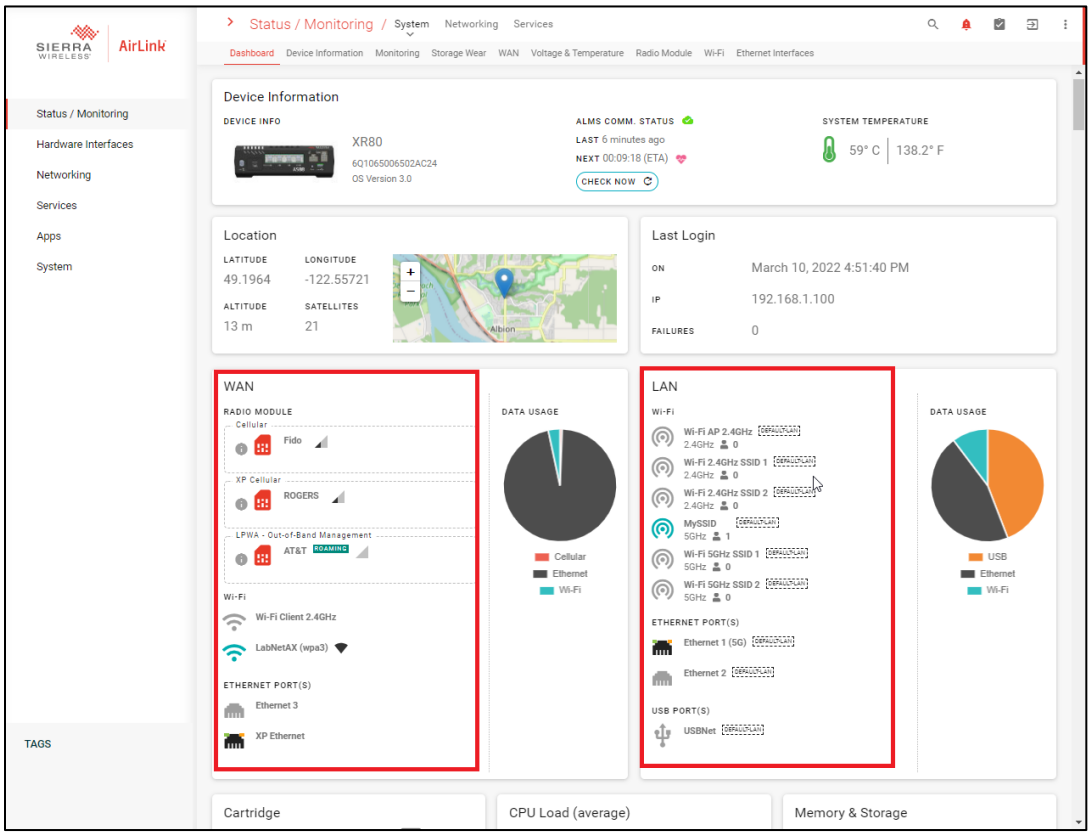
Once you have configured these settings, connect a client to the access point and enable the Wi-Fi WAN (if possible) to capture the final lab screenshots described below.

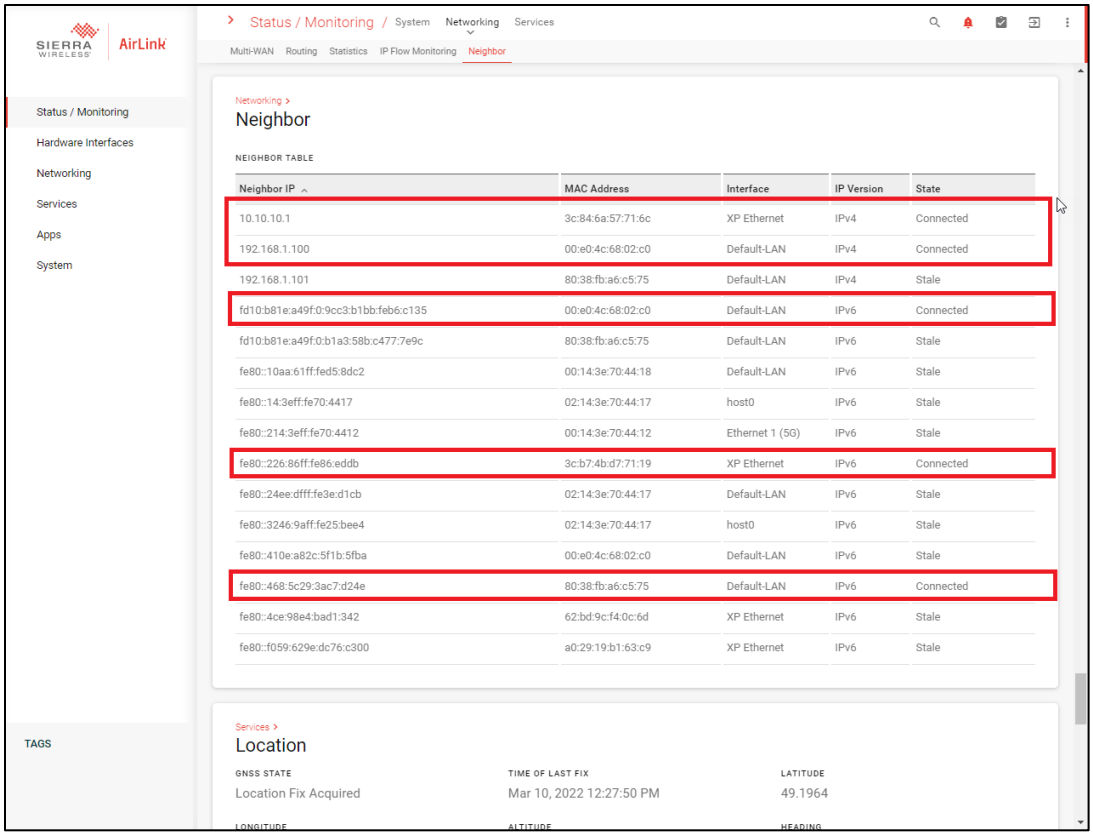
Capture Screenshots #3-4

There is not one interface that will show that you have completed all the configuration items, so for the lab purposes you will capture two screenshots:

- The Dashboard, showing WAN states (Cellular, Wi-Fi, Ethernet) and LAN states (Wi-Fi, Ethernet most likely) as shown below
- The Neighbor table showing active connections

Paste the screenshots in the lab submission document as Screenshot 3 and Screenshot #4.





SUMMARY

In this lab, you have been exposed to:

- the new ALMS account creation process
- the new device registration process, using the Reg code on the router's label
- performing the router physical setup with SIM cards and antennas
- identifying some locations showing WAN and LAN status in AirLink OS
- configuring a set of basic parameters locally on the XR Series router
- the speed and simplicity of changing LAN addressing, even for the link you are using to connect with the router