

How to Set Up the Avi-on LTE-Ethernet-Bluetooth Remote Access Bridge

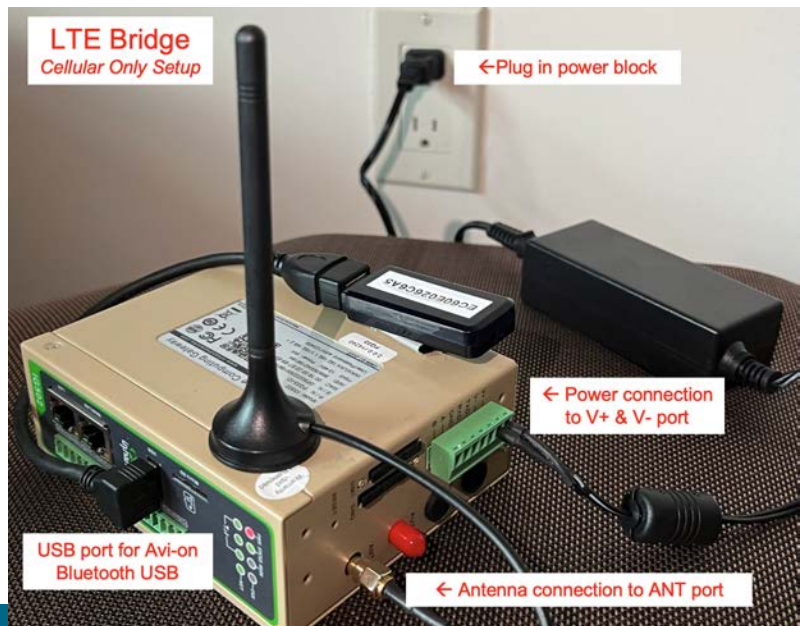
The *Avi-on LTE Remote Access Bridge* is a project startup, support, and data services tool designed to “bridge” communications between your local Avi-on Bluetooth® Controls and the feature-rich power of the Avi-on Cloud

The Avi-on LTE Bridge is recommended for startup of, or changes to, projects of any size or complexity. Most networks benefit from only one Bridge

Avi-on LTE Bridges can be *Temporary* or *Permanent*. See below for details



<<< Scan the QR code at left for the *Avi-on LTE Bridge Product Data Sheet*, or click on Avi-on.com/Resources



Step 1) Bridge Programs: Temporary v. Permanent? LTE, Ethernet, or Both?

An Avi-on LTE-Ethernet-Bluetooth Bridge is shipped LTE and Ethernet ready, and it can be temporary or permanent

A Temporary Bridge speeds project startup, reconfiguration, or support, a convenience to both electricians and the customer. If you have a Temporary Bridge—keep the box and return shipping materials. Note the ‘Return By’ date, and return it on time for credit

- **Startup Phase 1) During electrical wiring and installation.** The LTE Bridge is often installed at a site when there is power, but no Wi-Fi on the site. The Bridge enables the Avi-on startup technician to begin controls setup while electricians are working, validating wiring, drivers, and other details while electricians are onsite and available
- **Startup Phase 2) Remote or onsite/combo commissioning services.** Depending on the pre-paid commissioning services purchase, projects may be commissioned 100% remotely, or with an onsite/remote combination
- **Startup Phase 3) Post-startup support.** By leaving the temporary bridge onsite for a few weeks after startup, remote Avi-on technicians can monitor the network, make quick changes, and customize settings prior to final close-out

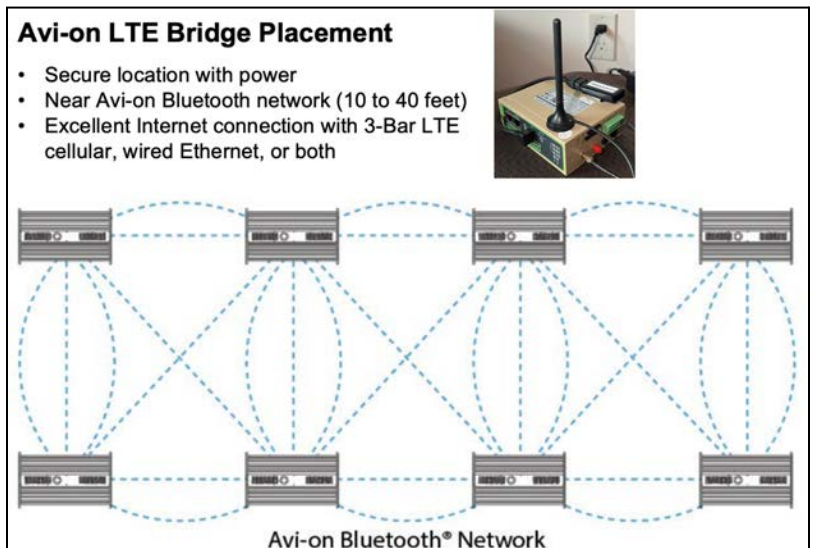
A Permanent Bridge is required for services like 24/7 connection, energy data streaming, API connection, or future changes

- A *Permanent Avi-on LTE/Ethernet Bridge* is shipped cellular and Ethernet ready
- Project should specify either an *LTE Primary* (no IT needed) or *Ethernet Primary* with cellular failover (IT assistance required)

Step 2) Install your LTE Bridge in a secure location near Avi-on devices & Internet

Connect Power, Antenna, & USB Dongle

1. Plug-in the **power cable** to the green **V+ V-** phoenix connector located on the side of the Bridge without lights. See photo at right
2. Plug-in the **antenna cable** to the **ANT** port (same side as power cable)
3. Plug-in the **USB cable** attached to the USB dongle to the **USB** port on front of device where lights are (see photo on next page)



Place Bridge in a Secure Location Near Avi-on Devices & Internet

- Install the Bridge where it will be undisturbed AND has reliable power (like an IT closet)
- Locate the Bridge near BOTH (a) several Avi-on Bluetooth nodes (within 10 to 40 feet), AND (b) with GREAT Internet Connectivity (see two options for Internet below)
- If you need to shorten the distance to Avi-on devices, or move the antenna to get 3-bars of LTE, then extension cables may be used
 - **SMA male/female antenna extension cable (max 100 feet)** are available from online retailers
 - **USB-A extension cable to move the USB Dongle closer to the Avi-on network (max 100 feet).** Extensions longer than 30 feet require signal multipliers and are available from online retailers

Option 1: LTE as Primary Internet Connection

For sites using LTE as the primary connection, a per-node cellular data plan is included in the initial price from Avi-on

- **No IT assistance is required for LTE Bridge setup**
- **LTE Bridge placement.** Locate the bridge where it is secure, has 3-bar cellular coverage, AND is within 10 to 40 feet of the Avi-on Bluetooth network. The actual distance in your facility will depend on how/where things are installed and the cellular strength in your location. Avi-on cannot predict or guarantee the distances needed in your situation. Extension cables are available for antenna and Bluetooth
- **Cellular coverage.** Stand next to the Bridge and check the coverage on your personal phone: ‘3 bars’ will be most reliable

Option 2: Ethernet as Primary Internet Connection (With or Without Cellular Failover)

By connecting the Bridge to the local network via Ethernet, you minimize cellular data charges by leveraging the local network

- **Ethernet Bridge placement.** >ocate the Bridge near an Ethernet port AND within 10 to 40 feet of the Avi-on Bluetooth network. (Note, you can also have Ethernet with Cellular failover, or vice versa)
- Plug-in an Ethernet cable to the **WAN/LAN** port on the LTE Bridge on the front where the lights are (not the LAN port)
- **IT cooperation required for Ethernet Bridge setup.** Ask IT to specify either DHCP or Fixed IP protocols. For details, please see *Optional Ethernet Setup* below

Step 3) If needed, ADD Bridge to location with *Avi-on Mobile Commissioning App* or *Avi-on Pro*

Avi-on generally ships a project’s specific Bridge ‘plug-and-play,’ which means that it is pre-claimed to the project’s location. If your Bridge is already claimed to your project’s location, then you can skip this step. If not, read on

- **Temporary or ‘loaner’ Bridges.** If your Bridge is claimed to a different location, please use the *App* to REMOVE it, then re-ADD it to the correct project’s location. If you do not have access to the location, you will need to request it from the Location Manager.
- **Unclaimed Bridges.** If you are the Project Manager, and you are sure that your project has no pre-existing location, please register an account, create a new location and ADD (aka ‘claim’) the Bridge just like you would any other Avi-on device

[iTunes \(iOS\)](#) [Google Play \(Android\)](#) [Mobile App Overview](#)

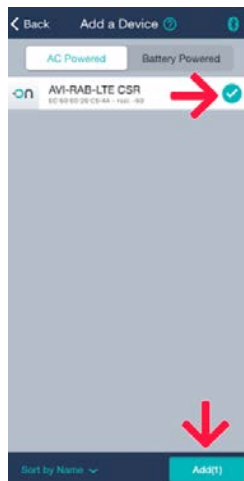


Step 4) Power up & connect your Bridge using the Mobile Commissioning App

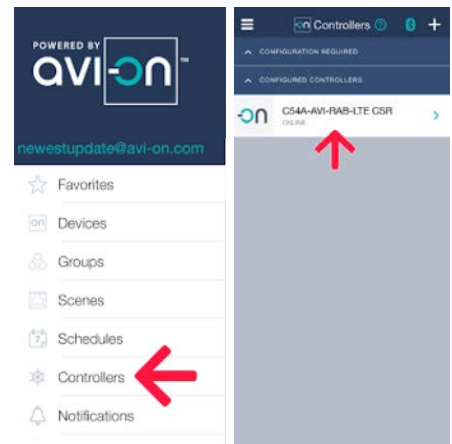
Power up the LTE Bridge and make sure the green phoenix connector (power) is firmly seated. Once online, the Avi-on LTE Bridge will automatically update as new firmware releases are available



Under Devices, press Add Device (+); select the *Avi-on LTE Bridge*; press the ADD button



In the app under controllers, select the *AVI-RAB-LTE*



Optional Ethernet Setup for LTE Bridge

DHCP Specified by Customer’s IT Department

- The Ethernet port on the Bridge is active and set up for DHCP by default
- **Plug the Ethernet cable into the WAN/LAN port on the Bridge**
- The Bridge will automatically switch over from cellular to Ethernet
- Please note that very specific ports must be open and a few domains whitelisted so that two-way traffic occurs. If the Avi-on network is not connecting via Ethernet, then please contact the Customer’s IT Department and request that these ports be opened (since version 2.5.1).
 - NTP (123) time syncing service
 - AMQP (5671,5672) creates secure connection to AWS
 - DNS (53) Google.com (8.8.8.8)
 - Port 80 (HTTP) or Port 443 (HTTPS) keep alive and initial communication
 - avi-on.com cloud registration
 - Cloudamqp.com; needed to resolve the specific IP address for AMQP messaging communications
 - aws.amazon.com location of the specific IP addresses for AMQP messaging communications
- In order to remotely admin a unit and keep it updated the following ports are required by the InHand firmware.
 - TCP/1883 EMQTT protocol access
 - TCP/8883 EMQTT certificate verification port, which is open when required
 - TCP/80; TCP/443 WEB access
 - TCP/9000 Firmware upgrade (file, minio)
 - TCP/82 ngrok generates HTTP management page links using port 82

Fixed IP Address Required by Customer’s IT Department

- If your organization requires a fixed IP address, or advanced network configurations (VLAN, etc.), please contact Avi-on.com/Commissioning with your project name and information
- Advanced network configurations can be applied remotely and do not require an Avi-on site visit

- TCP/83 ngrok generates HTTPS management page links using port 83
- TCP/4443 used to generate the ngrok tunnel
- If the IT Department will not open those specific ports, then the customer may need to purchase a cellular data plan. Please contact [Avi-on.com/Contact](https://avi-on.com/contact) with your project name and we will be glad to assist you

Troubleshooting: DO NOT Factory Reset

If you are having difficulty gaining a solid connection, try these steps

- 1) Re-verify the installation instructions above step-by-step
- 2) **Do not factory reset the LTE Bridge under any circumstances.** Please ask Avi-on technicians for assistance. Go to [Avi-on.com/Contact](https://avi-on.com/contact) and provide your project name, login credentials, and a description of your issue. Factory resetting the Bridge will remove Avi-on access as well as all Bridge functionality from the device, and force you to purchase a new one