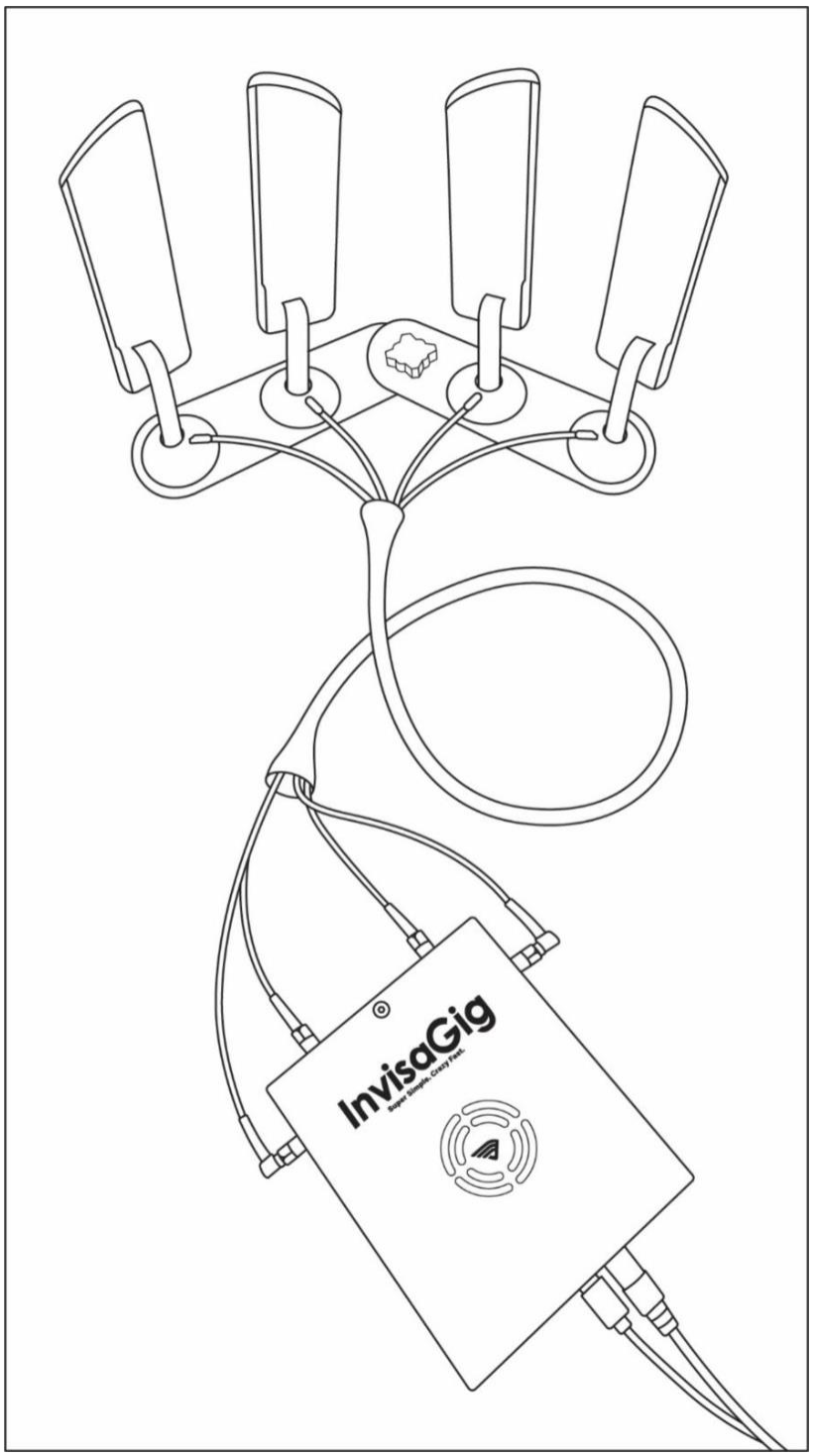
InvisaGig™

Super Simple. Crazy Fast.

User Manual



https://invisagig.com/support

Contents

Hardware Overview

Package Contents

- 1 x InvisaGig Unit, Hardware v1.2
- 1 x Ethernet Cable
- 1 x 12VDC Multi-Region Wall Plug Power Supply
- 1 x Boomerang™ Antenna Base Assembly
- 4x 30 inch Antenna Cables
- 1x Braided Cable Sleeve
- 4x Detachable SMA Antennas

Specifications

Operating Temperature: Min. -30c, Typ. 25c, Max. 75c

Operating Environment: Main Unit is designed for indoor operation. Proper clearance should be given around the unit for proper airflow

Supported Ethernet Transfer Rates: 10/100/1000/2500Mbps

Supported LTE Bands:
B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B34/B38/B39/B40/B41/B42/B43/B46/B48/B66/B71

Supported 5G NR Bands:
n1/n2/n3/n5/n7/n8/n12/n13/n14/n18/n20/n25/n26/n28/n29/n30/n38/n40/n41/n48/n66/n70/n71/n75/n76/n77/n78/n79

Assembly

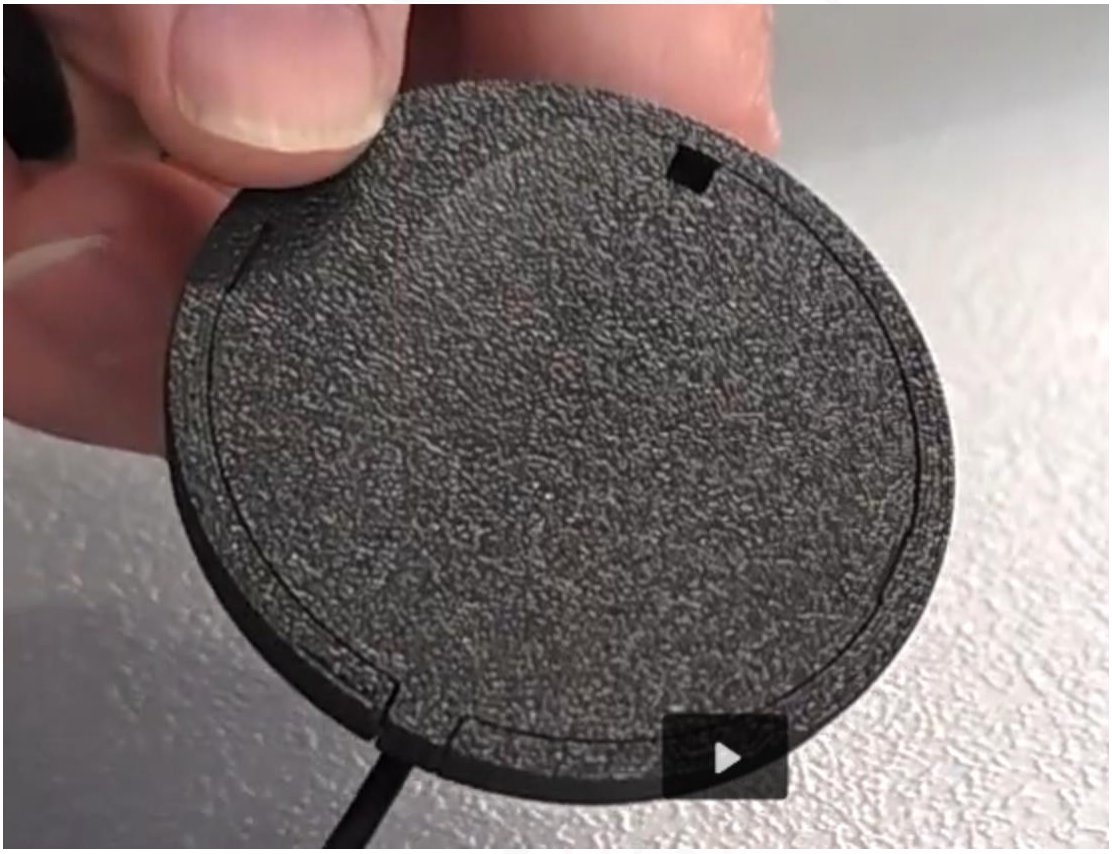
Once package contents have been checked, the unit can be assembled. Follow our video guides here: https://invisagig.com/support.

Step 1: Assemble the Antenna Bases:

Insert the Right-Angle Female SMA connectors into the round Boomerang antenna bases:

Place washer and nut on the threaded end:

Place the back cover over the open back of the base:

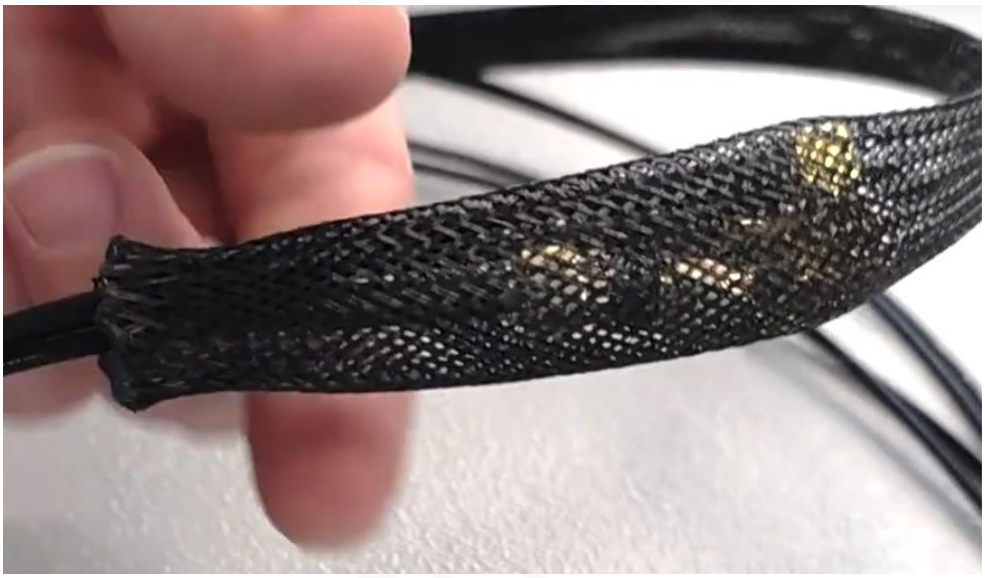


Using an 8mm socket or wrench, gently snug the nut to the base. Do not overtighten.

Repeat for the next 3 antenna bases; four in total.

Step 2: Prepare and attach the cables to the InvisaGig:

Feed the free ends of each cable through the included wire loom:



Reverse the ends of the loom by pressing it back into itself:

Step 3: Attach the cables

Attach the cables to the InvisaGig SMA ports, connect the Right Angle connectors to ports 1 and 4 on the sides, and the straight connectors to ports 2 and 3 on the back:

Step 4: Attach all 4 antennas

Attach all 4 antennas to the individual base unit by screwing them into the SMA connectors. These should be hand-tightened only, do NOT use any tools as this may damage the unit, cables, and/or antennas.

Take care when adjusting the orientation of the antennas, especially when bending them to their right-angle (90 degree) position as the elbow joint will only bend in a single direction.

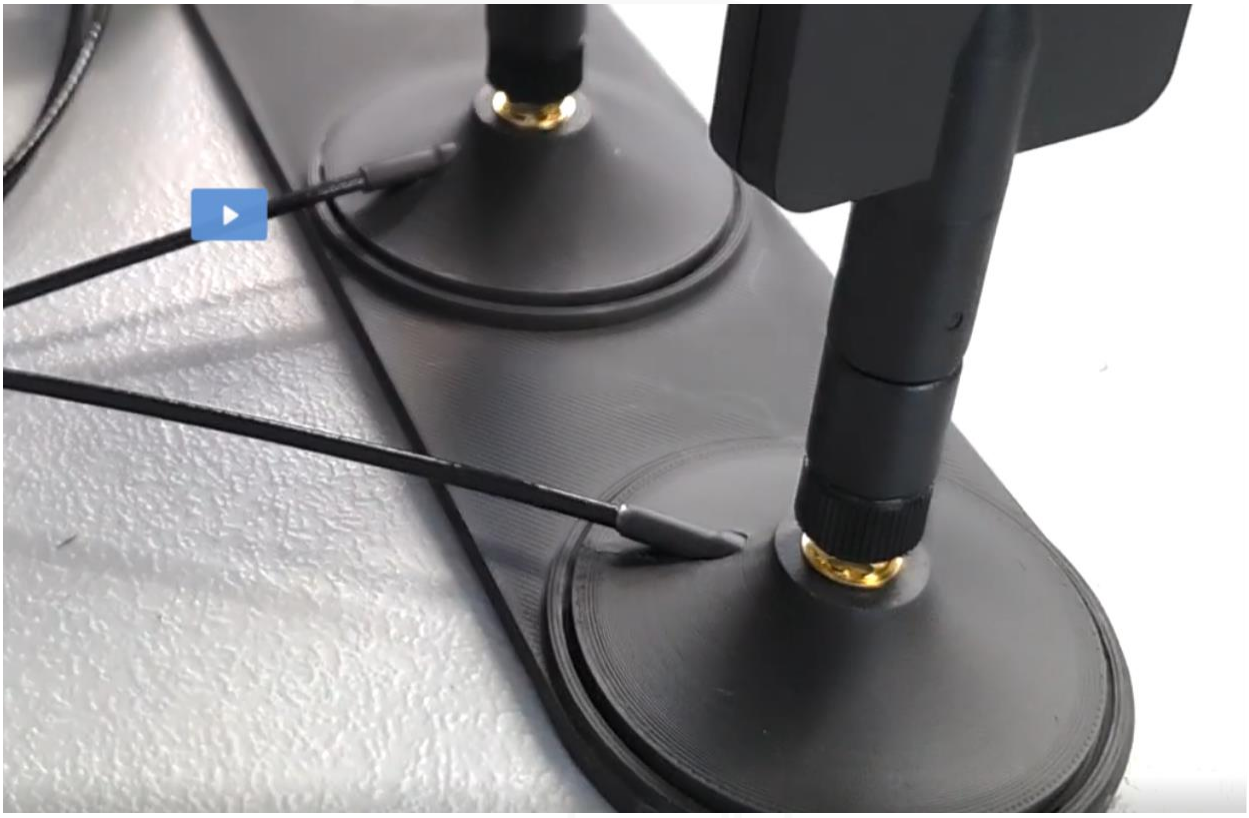
Once the antenna is properly adjusted to its proper position, it can be rotated 180 degrees in either direction at the SMA connector joint to achieve the overall desired orientation.

Step 5: (Optional – but more stable) Assemble the Boomerang™ base:

Place the round antenna bases (only after assembling with an antenna attached, for ease of placement and removal) into the cup receivers of the Boomerang™ bases.

Press the round antenna base into the receiver cup evenly and firmly until it is secured in place inside the receiver cup of the Boomerang™ antenna base.

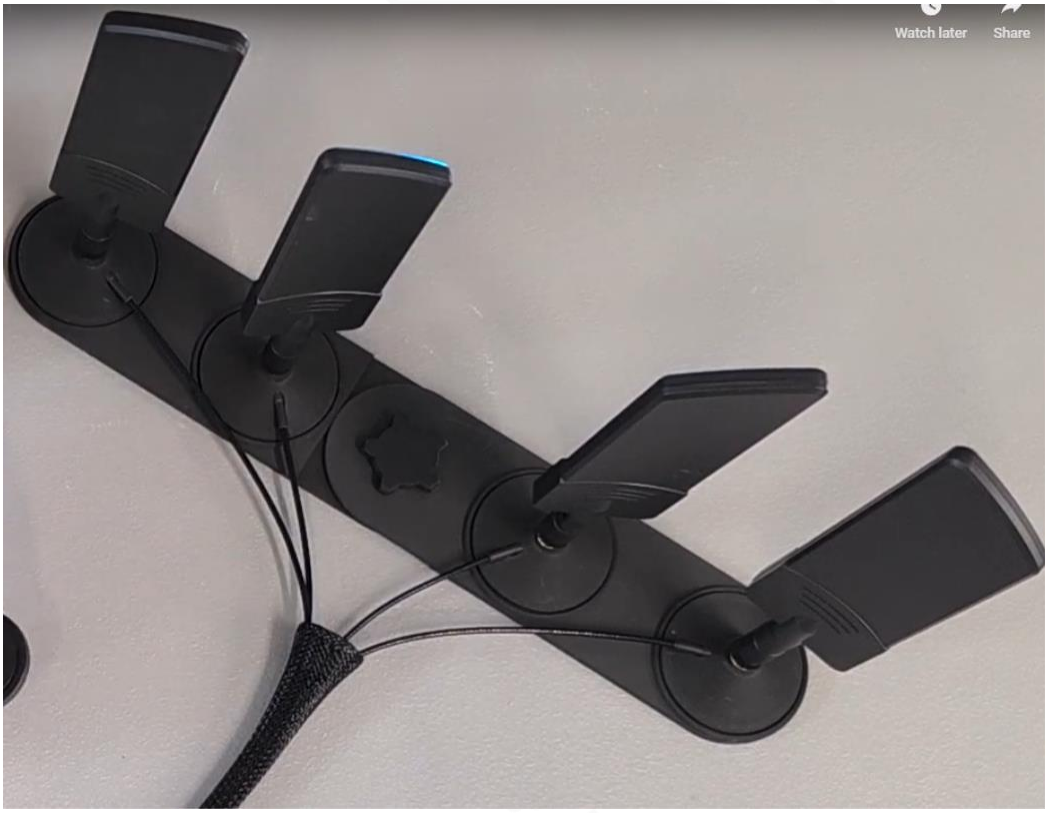
The recommended arrangement is to place antennas corresponding to ports 1 and 4 on one base and antennas corresponding to ports 2 and 3 on the other base.



Optionally join the two base halves together to complete the Boomerang assembly:

Make certain to gently align the threads of the pivot bolt with the base receiver threads, ensuring not to cross-thread them.

Tighten to desired amount of movement, or to lock into position:



Adjust and place antennas in desired position.

Step 6: Insert SIM

Once the antennas are connected, insert your preferred SIM card into SIM slot #1:

Be sure that the SIM card is oriented correctly when inserted with the metal contacts in the downward position.

Step 7: Connect Ethernet and Power

Connect the Ethernet cable between the Ethernet port of the InvisaGig unit and your PC or router's WAN/Internet port.

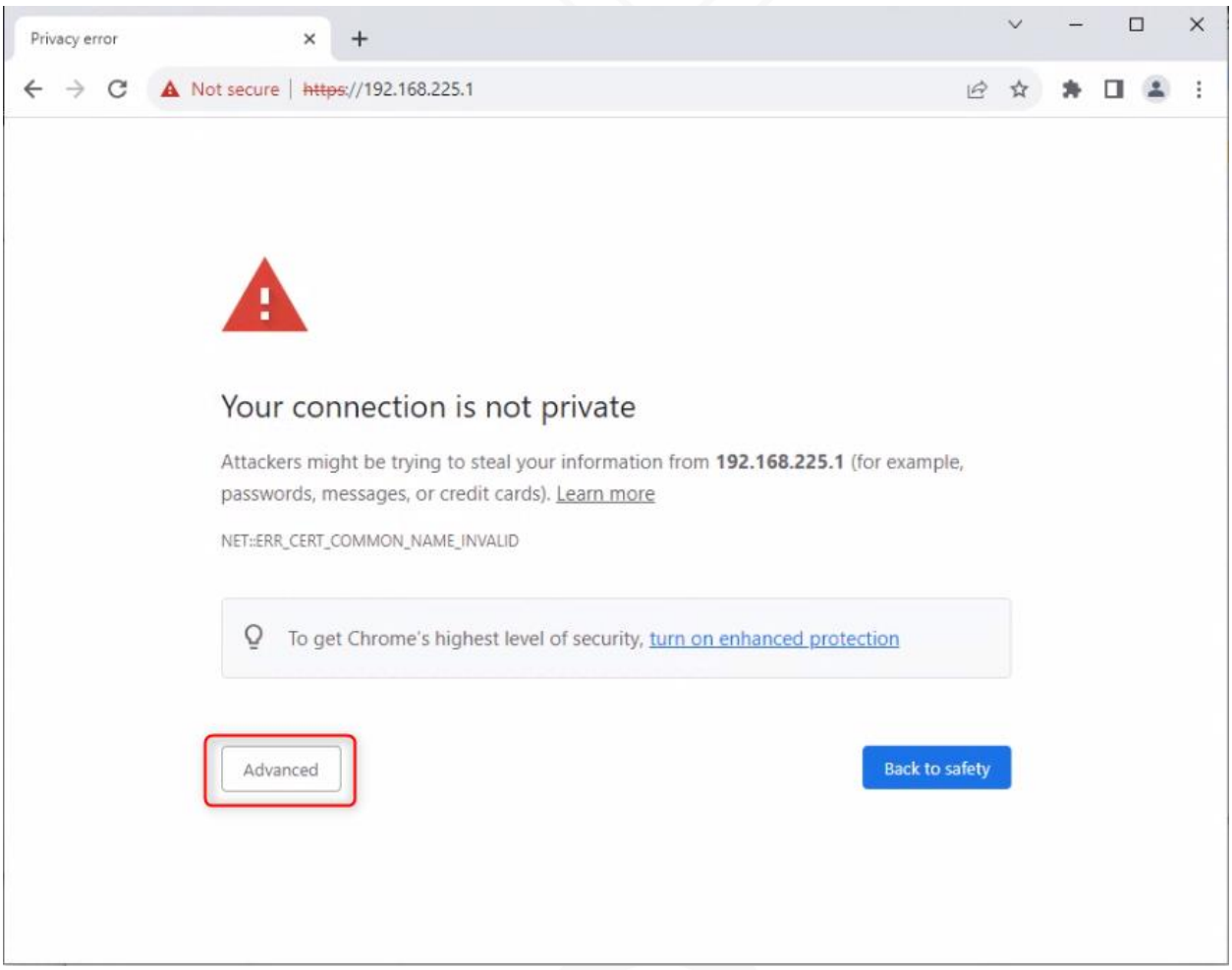
After the antennas are connected, SIM is inserted, and Ethernet is connected, plug in the 12VDC USB-C connector from the power supply into the power port of the unit.

The unit will take a minute or two to power up. Be sure to assemble the proper power plug adapter for your region, onto the power supply.

Software Overview

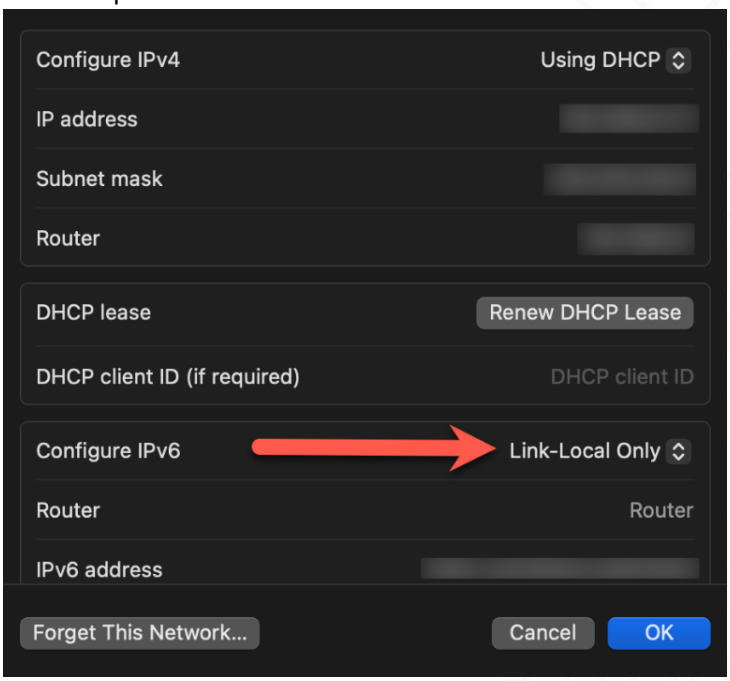
First Time Configuration Interface Access

Once the InvisaGig unit is connected to your device via Ethernet, navigate to https://192.168.225.1 and click through to accept the security warning in your browser. In Chrome this is done by clicking 'Advanced' then 'Proceed to 192.168.225.1':



*****MacOS Note*****

It has been observed that some versions of MacOS can have issues accessing the InvisaGig when IPv6 is enabled, and the unit is connected directly to the Mac. To avoid this issue, navigate to "System Settings… > Network" then select your Ethernet or USB-to-Ethernet adapter from the list of network connections on the left. Click on "Details… > TCP/IP" then select "Link-Local Only" from the "Configure IPv6" dropdown menu:



Installing InvisaGig Certificates (OPTIONAL)

If you do not want to click past browser security warnings when accessing the configuration page from a new device, you can download the InvisaGig root and/or configuration page certificates to your device for installation directly from the device over HTTP:

http://192.168.225.1/rootcert

http://192.168.225.1/cert

We also provide Windows and MacOS native scripts to install the certs and set convenient local Hosts file entries for the configuration page if you prefer to access units via hostname instead of IP address (i.e. 'https://config.invisagig.com'). A .zip archive containing these scripts, a copy of the certificates that they install, and a README with instructions can be downloaded directly from the device over HTTP:

http://192.168.225.1/scripts

NOTICE: Neither manual nor scripted installation of any certificate is required to access the InvisaGig's configuration page via IP address. We simply provide them to those who wish to remove the browser security warnings. ****Please note that the **use of any custom LAN IP would likely still produce unsecured connection warnings by your browser as we cannot anticipate all custom IPs which may be assigned to the unit.

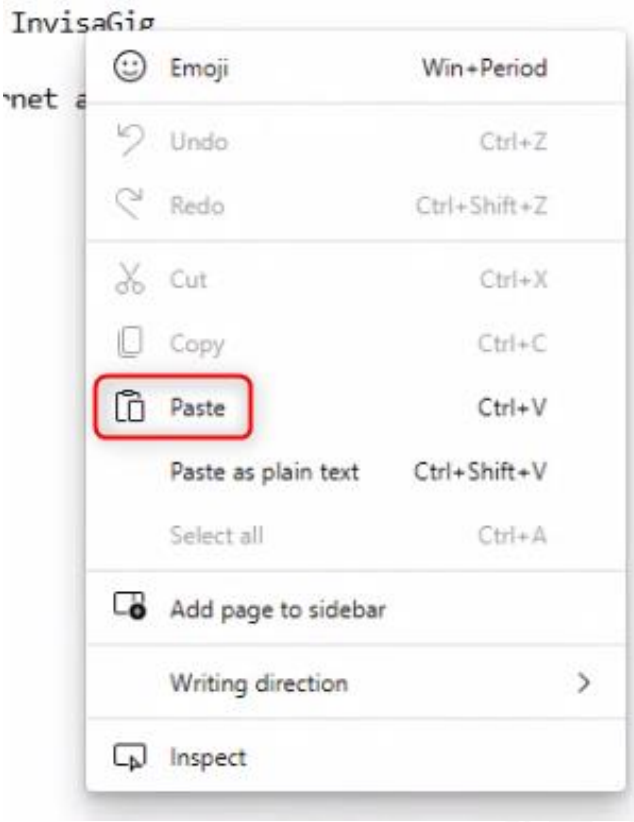
Configuration Interface

Accessing the Configuration Interface

By default, the configuration interface can be accessed at https://192.168.225.1 .

Option Selection and Input

The menu is a graphical web interface driven by text input provided by the user. To select an option, input the corresponding menu number and press [Enter]. Some fields such as the list of Enabled Bands can contain pre-populated values which can be manipulated using the arrow keys, delete, and backspace. For other prompts which require extended input, you can simply copy and paste text as you can in most other applications. Once you have selected and copied some text, paste is accomplished by right-clicking in the browser window to display the menu interface, and selecting 'Paste':



Hyperlinked Text

The user interface may provide helpful contextual footers on some menu screens with a URL linking to relevant content or support. If you hover over these with your mouse, you will notice they are hyperlinks that you may click on directly ex.:

Having trouble? Documentation and support can be found at https://invisagig.com/support

Access Interruptions During Network Changes

Be aware that when executing certain configuration menu options, the browser may temporarily lose connection to the Configuration Interface as it commits network changes internal to the device. For less

impactful changes, the interface page may show a “Reconnecting…” message like the one below:

In many cases the connection will then restore itself and you will be returned to the Landing Menu. During more impactful changes (i.e., Cell Bindings, reboots, etc.) the automatic reconnection attempts may time out and drop you to a “Press [Enter] to Reconnect” message like the one below:

In such case, press [Enter] to reconnect as instructed. If the device is still processing networking changes you may have to wait 30-60 seconds before retrying access. If no reconnection status messages are displayed simply use the refresh function on your browser to manually reload the page. Upon reconnection you will be returned to the Landing Menu.

Landing Menu

This is the initial menu observed when accessing the configuration page:

```
[ Welcome! ]

1) Login
2) Modem Info
3) Live Signal
X) Disconnect
Please enter your choice:


Having trouble? Documentation and support can be found at https://invisagig.com/support
```

Login and Main Menu Screens

Selecting this option will prompt for a password and log you into the Main Menu. The default password is “**ChangeME2!**” without the quotes. This should be changed with the “Change Password” option in the Main Menu or by running the Setup Wizard.

```
[ Welcome! ]

1) Login
2) Modem Info
3) Live Signal
X) Disconnect
Please enter your choice: 1


[ Login ]

Enter the password:
**********
```

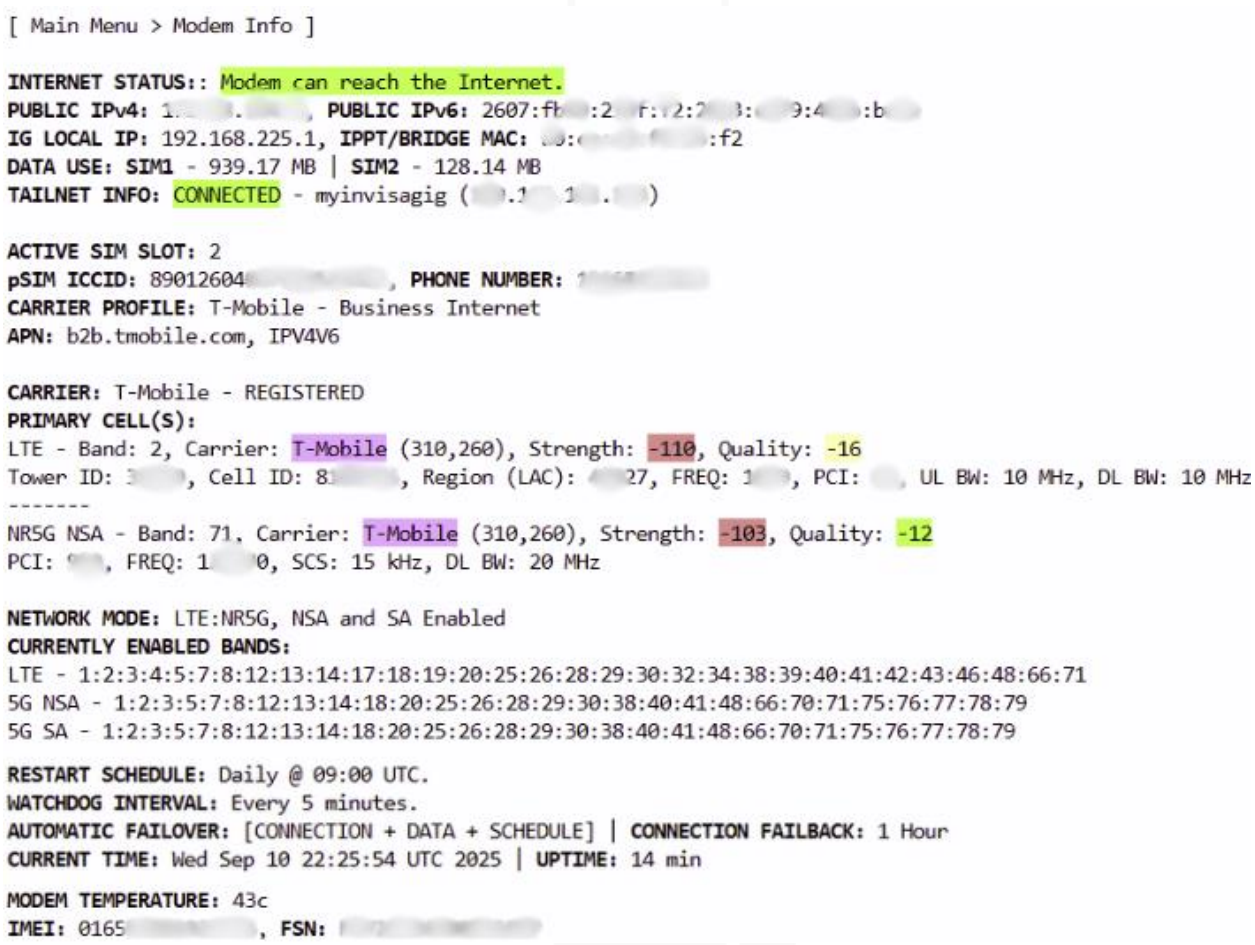
Once logged in, you should see the full main menu (Referenced again later):

```
[ Main Menu ]

1) Change Password
2) Modem Info
3) Live Signal
4) Connection Configuration
5) InvisaGig Update Check
6) Text Messages
7) WatchDog & Scheduled Restart
8) Visual Accessibility
9) Setup Wizard
10) Data Usage
11) Factory Defaults
12) Reboot
X) Logoff
Please enter your choice:
```

```
Having trouble? Documentation and support can be found at https://invisagig.com/support
```

Modem Info

Modem info displays all relevant information about the current state of the modem, cellular carrier, and current configurations:



Internet Status (with Network Information)

Displays the level of current Internet connectivity. Green color indicates no issues, Yellow indicates possible issues with DNS resolution (indicative of an unstable connection), and Red indicates no connectivity. This section also shows the local and public IP addresses being used by the unit. If Bridge Mode (IP Passthrough) is enabled, it will also show the MAC address of the device which will receive the passed-through IPv4 address from the carrier.

Data Use

This section shows the data usage of each SIM slot, a combined upload + download usage value, measured in MegaBytes(MB). See the section on Data Usage for more details and configuration.

Tailnet Info

Displays the Tailnet connection status, machine name and Tailnet IPv4 address of the device when configured for use with Tailscale.

Active SIM Slot & Carrier Profile Information

Shows carrier related information for the active SIM along with current APN and IP type settings. Also shows currently active carrier profile.

Carrier & Connected Cell Information

Displays currently active/connected carrier. Also displays the current connected cell details such as Tower ID, Cell ID, Region (LAC), FREQ (ARFCN), PCI, SCS, and available Bandwidth.

Bound Cell Info (Sometimes referred to as 'Tower Locking')

This section displays information about the currently bound cell(s) if any bindings are enabled. Green color of the 'bound cell' text indicates the cell binding is active. Yellow indicates the binding is set by the user but currently inactive. A binding may be inactive if it was removed by the WatchDog service due to a failure to reach the Internet when testing at the selected interval.

Network Mode

Currently selected network technology of the modem such as LTE or NR5G along with the 5G technology enabled if applicable ('NSA' for Non-Standalone, 'SA' for Standalone).

Currently Enabled Bands

Displays the currently selected list of bands enabled for the modem to connect with. If 5G NSA or SA are disabled, the band list for these will not show at all.

WatchDog Interval, Current Time, and Uptime

Displays the WatchDog check interval, current time and date of the unit in UTC (synchronized from the connected cell carrier), and how long the IG unit has been up since last reboot or power off.

Automatic Failover | Connection Failback

Displays a brief of the dual SIM connection failover and failback settings currently active.

Modem Temperature

Displays the current temperature in degrees centigrade as measured by the modem internally.
Notice: Common normal temperature is between 40C and 70C. These temperatures are perfectly fine for your InvisaGig unit. If you see your unit above 75C for prolonged periods, you must either relocate your InvisaGig or at least ensure the fan is running. The InvisaGig can operate up to 90C internal temperature before internal triggers begin to shut the unit down for safety, but it is best practice not to operate above 80C in general, and not to operate above 75C for more than short periods of time.

IMEI and FSN (Factory Serial Number)

Displays your InvisaGig modem IMEI number and factory serial number.

Live Signal

Selecting the optimal installation location for your InvisaGig unit is the key to achieving the best performance. The unit should be placed in a location and orientation where it will receive the best signal exposure from the carrier's nearest cell tower. The Live Signal function allows for near instant feedback of signal information while reorienting the unit and selecting its permanent installation location.

Under Live Signal view, the connected cell, associated signal information, and modem temperature are displayed in near real-time, refreshing all information once per second. Four signal information values are shown which represent each internal antenna of the InvisaGig unit. Pressing [x] will end the live view and display the last measured value until you press [Enter] to return to the Main Menu.

Live Signal also provides near real-time information about what cells are currently being used for carrier aggregation, their bandwidth, and if any secondary aggregation cells are actively in use or not. **Yellow** indicates the cell is connected but not yet in use while **Green** indicates the cell is actively being used in

aggregation. You will typically only see aggregation cells active under heavy download traffic.

```
Press [X] exit live view.

PRIMARY CELL(S):
T-Mobile - LTE BAND 66, FREQ [redacted]1
T-Mobile - NR5G BAND 41, FREQ [redacted]0

SIGNAL POWER:
-108,-107,null,null,LTE
-109,-100,-98,-100,NR5G

SIGNAL QUALITY:
-17,-17,null,null,LTE
-12,-10,-10,-10,NR5G

SIGNAL/NOISE RATIO:
1,5,null,null,LTE
4,13,11,15,NR5G

CARRIER AGGREGATION CELL(S):
PRIMARY - LTE BAND 66, FREQ: [redacted]1, PCI: [redacted]9, BW: 15 MHz
SECONDARY - NR5G BAND 41, FREQ: [redacted], PCI: [redacted]2, BW: 90 MHz

MODEM TEMPERATURE
41c
Press [Enter] key to continue...
```

Primary Cell(s)

This is the primary carrier that the modem is connected to.

Signal Power

This shows the Reference Signal Received Power (RSRP) for all four connected antennas in dBm.
Reference ranges:
Excellent = > -80, **Good = -80 to -90**, **Marginal = -90 to -100**, **Weak = < -100**

Signal Quality

This shows the Reference Signal Received Quality (RSRQ) for all four connected antennas in dB.
Reference ranges:
Excellent = > -10, **Good = -10 to -15**, **Okay = -15 to -20**, **Bad = < -20**

Signal/Noise Ratio

This shows the Signal to Noise Ratio (SINR) for all four connected antennas in dB. Reference ranges: **Excellent = > -20**, **Good = 13 to 20**, **Okay = 0 to 13**, **Bad = < 0**

Carrier Aggregation Cells

This shows the Primary and Secondary cells being used for Carrier Aggregation (CA).

Main Menu

This is the main menu which is displayed after Login on the Landing Menu.

```
[ Main Menu ]

1) Change Password
2) Modem Info
3) Live Signal
4) Connection Configuration
5) InvisaGig Update Check
6) Text Messages
7) WatchDog & Scheduled Restart
8) Visual Accessibility
9) Setup Wizard
10) Data Usage
11) Factory Defaults
12) Reboot
X) Logoff
Please enter your choice:


Having trouble? Documentation and support can be found at https://invisagig.com/support
```

Change Password

Selecting this option will allow you to change the password used to access the Main Menu. You will be prompted to first enter the existing password and, if correct, then for the new password twice to confirm it. Upon update of the password, you will be redirected back to the Landing Menu where you will then need to enter the updated password to access the Main Menu again.

```
[ Main Menu > Change Password ]

Enter the current password.
(Or press [Enter] to return without making any changes):
**********
```

```
Enter the new password:
**********
Enter the new password again:
**********
Password updated successfully.
Press [Enter] to return.
```

Modem Info

This is the same 'Modem Info' accessed via the Landing Menu. In this view, sensitive information such as IMEI and FSN are not redacted. See 'Modem Info' description from the previous 'Landing Menu' section for details.

Live Signal

This is the same Live Signal information which can be found in the Landing Menu. Refer to the 'Live Signal' description under the Landing Menu section of this document for more info.

Connection Configuration

This is a sub-menu which is home to all settings governing InvisaGig connectivity. See 'Connection Configuration Menu' section further down for details on all settings underneath this menu option.

InvisaGig Update Check

Periodically, feature enhancements and bug fixes will be published as updates to the InvisaGig configuration interface. To check for and install updates, use this option.

```
[ Main Menu > InvisaGig Update Check ]

Do you wish to check for updates? (y/n): y
INFO: Initializing update process.
INFO: Current IG version is 1.0.[redacted].
INFO: Checking for available update...
INFO: New version 1.0.[redacted] found, do you want to update? (y/n)? n
Update aborted.
Press [Enter] key to continue...
```

Text Messages

Depending on the plan provisioned, the unit may receive text messages. This menu option can be used to view the text messages or delete them.

```
[ Main Menu > Text Messages ]

1) Check Messages
2) Delete Messages
X) Exit to Main Menu
Make a selection: 1

[ Main Menu > Text Messages > Check Messages ]

Phone Number: +1[redacted], Date: 07/11/25, Time: 15:41:12 UTC-7
[redacted]

Phone Number: +1[redacted] Date: 07/11/25, Time: 15:41:11 UTC-7
[redacted]

Phone Number: +1[redacted], Date: 07/14/25, Time: 18:24:55 UTC-7
[redacted]

Phone Number: [redacted], Date: 07/24/25, Time: 11:57:38 UTC-7
[redacted]

Phone Number: [redacted], Date: 07/24/25, Time: 11:57:38 UTC-7
[redacted]

Press [Enter] key to continue...
```

```
[ Main Menu > Text Messages > Delete Messages ]

Are you sure you wish to delete *ALL* stored text messages? (y/n): y
[ Main Menu > Text Messages > Delete Messages ]

Messages deleted.

Press [Enter] key to return.
```

WatchDog & Scheduled Reboot

This menu option provides control of functionality that can automatically monitor for, and react to, a loss in Internet connectivity and the ability to schedule regular restarts of the unit if so desired.

```
[ Main Menu > WatchDog & Scheduled Restart ]

1) Connection WatchDog
2) Scheduled Restart
X) Exit to Main Menu
Please enter your choice:
```

Connection WatchDog

When enabled, the Connection WatchDog will check Internet connectivity of the device at the user specified interval. If connection is lost, WatchDog will try to gracefully reconnect to the carrier. If this fails, it will then check for any active tower bindings and remove those first to see if that restores the connection. If the connection is still not restored or there is no active tower binding, the unit will reboot as a final attempt to restore the connection. The connection check can be set to run every 5, 15, or 30 minutes.

```
[ Main Menu > WatchDog & Scheduled Restart > Connection WatchDog ]

CURRENT WATCHDOG INTERVAL: Every 5 minutes.

1) Disable WatchDog
2) Change Interval
3) Action Log
B) Go Back
X) Exit
Please enter your choice:
```

Scheduled Restart

This feature allows the user to schedule hourly, daily, or weekly restarts of the IG device. The time zone is localized to the IG's UTC time (established once the modem is connected to the cell carrier).

```
[ Main Menu > WatchDog & Scheduled Restart > Scheduled Restart ]

CURRENT RESTART SCHEDULE: Every Saturday @ 08:00 UTC.

1) Disable Scheduled Restart
2) Modify existing schedule
B) Go Back
X) Exit

Please enter your choice:
```

Visual Accessibility

This menu selection allows the user to toggle between UI color schemes and/or font size for enhanced readability.

```
[ Main Menu > Visual Accessibility ]

1) Dark Mode: DISABLED
2) Large Text: DISABLED
X) Return to Main Menu
Please enter your choice:
```

Dark Mode

Activating Dark Mode inverts background and foreground color resulting in a black background and white foreground text. This can be helpful for those with bright light sensitivities. Deactivating Dark Mode returns the UI to the default of black text on a white background.

```
[ Main Menu > Visual Accessibility ]

1) Dark Mode: ENABLED
2) Large Text: DISABLED
X) Return to Main Menu
Please enter your choice:
```

Large Text

Activating Large Text increases the font size and adds double line spacing between menu selections.

```
[ Main Menu > Visual Accessibility ]

1) Dark Mode: DISABLED

2) Large Text: ENABLED

X) Return to Main Menu

Please enter your choice:
```

Setup Wizard

The Setup Wizard provides a guided configuration of all major settings required to get new owners up and running quickly.

```
Welcome to the InvisaGig Setup Wizard!

We will ask a few simple questions to get you connected quickly.
No changes will be made until all prompts are answered.
You can exit the Wizard at any point by entering [X].
You can go back to the previous step by entering [B].

Press [Enter] to continue...
```

…

```
[ Main Menu > Setup Wizard > Dark Mode > Large Text > Password > Carrier Profile > WatchDog > Scheduled Reboots > User Profile > Finalize ]

That's it! Here is a summary of your selections:

DARK MODE: DISABLED
LARGE TEXT: DISABLED
PASSWORD: CHANGED
CARRIER PROFILE: T-Mobile - Business Internet
WATCHDOG: Every 30 Minutes
SCHEDULED REBOOT: Every Sunday @ 08:00 UTC.
USER PROFILE: NOT SAVED

Are you ready to reboot now to apply these selections? ([Y]es/[N]o/[B]ack/E[x]it):
```

Data Usage

Activating this feature you can enable per SIM slot data usage tracking.

```
[ Main Menu > Data Usage ]

Data usage statistics are not yet enabled.
Would you like to enable them? (y/n): y
```

Select the day of the month (SIM billing date) that matches the day of the month that your data plan rolls over to a new billing/tracking month; per SIM slot.

```
[ Main Menu > Data Usage > SIM1 Billing Date ]

Enter the day of the month your cellular data plan billing date starts, in numerical format.
Numbers from 1 to 31 are valid.
Enter SIM1 billing date, go [B]ack, or E[x]it: 8
```

If you do not have a need for tracking data use on SIM slot #2, then simply press enter on this entry, or enter the billing date for that SIM as well.

```
[ Main Menu > Data Usage > SIM2 Billing Date ]

Enter the day of the month your cellular data plan billing date starts, in numerical format.
Numbers from 1 to 31 are valid. If SIM2 is unused, press [Enter] to skip.
Enter SIM2 billing date, go [B]ack, or E[x]it: 12


[ Main Menu > Data Usage > Retention Period > Successfully Enabled ]

Data usage statistics will now be collected once every minute.
Please wait at least one minute prior to returning to this menu before checking data use.
Press [Enter] to continue.
```

Check Data Usage

Select the Data Usage menu to see your per SIM slot data usage statistics

```
[ Main Menu > Data Usage ]

INFO LAST UPDATED: 2025-09-10 22:32:25 UTC
Updated every minute. Press [Enter] to refresh totals.

SIM1 - Downloaded: 286.10 MB | Uploaded: 213.37 MB | Total: 499.46 MB
[Billing Day: 7th] - 27 Days Remaining in Period

SIM2 - Downloaded: 897.18 MB | Uploaded: 544.00 MB | Total: 1441.18 MB
[Billing Day: 21st] - 11 Days Remaining in Period

1) Reset Counters
2) Disable Tracking
3) Historical Usage
4) Change Billing Day
X) Return to Main Menu
Please enter your choice:

Note: Recorded data use is an estimate only and may differ from carrier recorded totals.
```

Similar info will be displayed on the modem Status Page

```
[ Main Menu > Modem Info ]

INTERNET STATUS:: Modem can reach the Internet.
PUBLIC IPv4: [redacted], PUBLIC IPv6: 2600:[redacted]
IG LOCAL IP: 192.168.225.1, IPPT/BRIDGE MAC: [redacted]
DATA USE: SIM1 - 938.49 MB | SIM2 - 127.73 MB
TAILNET INFO: CONNECTED - myinvisagig ([redacted])
```

Factory Defaults

In case you would like to start fresh, you can reset all configuration values back to factory defaults by selecting this option.

NOTE: It is best practice to remove the SIM card prior to executing a factory reset of the unit and wait a few minutes after the factory reset is performed before re-inserting a SIM and then accessing the configuration page again. Following this best practice ensures that there is no network activity which could prevent all defaults from being restored.

```
[ Main Menu > Factory Defaults ]

!!!--WARNING--WARNING--WARNING--WARNING--WARNING--WARNING--WARNING--WARNING--!!!
This will reset *ALL* settings on the unit and issue an immediate reboot.
Be sure to Export any User Profiles you wish to save before proceeding.
Do *NOT* remove power while reset is in progress!

Do you still wish to proceed? (y/n):
```

```
[ Main Menu > Factory Defaults > Confirmation ]

ARE YOU ABSOLUTELY CERTAIN YOU WISH TO RESET ALL SETTINGS AND REBOOT? (y/n):
```

Reboot

Selecting this option will allow you to perform a restart of the unit.

```
[ Main Menu > Reboot ]

A reboot will disconnect you from the Internet.
Do you wish to proceed? (y/n):
```

Logoff

Selecting this option will end the current configuration session.

```
[ Goodbye! ]

You may now close this window.


Having trouble? Documentation and support can be found at https://invisagig.com/support
```

Connection Configuration Menu

The Connection Configuration Menu is accessed by selecting ‘Connection Configuration’ from the Main Menu.

```
[ Main Menu > Connection Configuration ]

1) Network Mode (LTE/LTE+5G/5G)
2) Local Tower Search
3) User Profiles
4) Carrier Profiles
5) Local IP & Multiple Modem Setup
6) Tailscale
7) Enabled Bands
8) SIM Selection
X) Exit to Main Menu
Please enter your choice:
```

Network Mode (LTE/LTE+5G/5G)

The cellular technology type used by the modem can be changed using this option. The selection options are LTE Only, LTE & 5G, or 5G Only. When selecting LTE & 5G, an additional prompt is shown asking which 5G technology should be enabled (NSA = Non-Standalone, SA = Standalone).

```
[ Main Menu > Connection Configuration > Network Mode ]

CURRENT NETWORK MODE: LTE:NR5G, SA Disabled

1) LTE Only
2) LTE & 5G
3) 5G Only
B) Back to Connection Configuration
X) Exit to Main Menu
Choose a mode:
```

Local Tower Search (Tower Binding)

Tower binding, a.k.a. Cell binding, a.k.a Tower Locking, allows the modem to be bound to a specific LTE or 5G SA cell (or list of cells under LTE Only network mode). ***Tower binding is not recommended in most cases due to the connectivity issues it may introduce if the bound cell goes offline due to malfunction, maintenance, etc.*** This is because, when the modem is instructed to bind to a specific cell, it will, by default, not "fall back" to other cells automatically if the bound one loses connectivity. However, InvisaGig has added unique failsafe functionality (Connection WatchDog) enabled by default when binding cells to ensure cell bindings are removed if the modem loses connectivity.

Cell binding is most beneficial when the unit is located an equal distance between two carrier cell sites which broadcast the same bands with roughly the same signal strength but have different amounts of congestion. If the user wishes to ensure the modem does not connect to the congested site, then a cell

binding can be put in place to keep it from roaming between the two sites. Outside of this scenario, it is recommended to either allow default modem logic to select the cell (based on signal strength), or if the undesired cell site is broadcasting on different bands, use the Enabled Bands feature to mitigate the issue instead.

Simple Tower Binding

To search for a local tower cell and bind it, simply select the menu option for 'Local Tower Search' and choose the cell type you wish to bind. Your Network Mode must match the tower type you select. If you select a scan for a tower type which does not match your current Network Mode, you will be asked if you want to change the network mode to proceed with the selected tower type. Once the Network Mode is set, you will be able to proceed.

```
[ Main Menu > Connection Configuration > Local Tower Search ]

1) LTE
2) 5G SA
3) Remove All Tower Bindings
4) View Tower Binding Log
B) Back to Connection Configuration
X) Exit to Main Menu
Make a selection:
```

```
[ Main Menu > Connection Configuration > Local Tower Search > LTE ]

Current Time: Tue Aug  5 21:25:22 UTC 2025

Latest LTE scan result, Tue Aug  5 18:08:34 UTC 2025:
1) Band: 5, Carrier: Verizon (311,480), Strength: -73, Quality: -13
   Tower ID: 16[redacted], Cell ID: [redacted], Region (LAC): [redacted], FREQ: 2450, PCI: 159

2) Band: 13, Carrier: Verizon (311,480), Strength: -76, Quality: -9
   Tower ID: 16[redacted], Cell ID: [redacted], Region (LAC): [redacted], FREQ: 5230, PCI: 159

3) Band: 2, Carrier: Verizon (311,480), Strength: -86, Quality: -7
   Tower ID: 46[redacted], Cell ID: [redacted], Region (LAC): [redacted], FREQ: 775, PCI: 159

4) Band: 4, Carrier: Verizon (311,480), Strength: -93, Quality: -11
   Tower ID: 4[redacted], Cell ID: [redacted], Region (LAC): [redacted], FREQ: 66536, PCI: 159

5) Band: 66, Carrier: Verizon (311,480), Strength: -97, Quality: -15
   Tower ID: 4[redacted], Cell ID: [redacted], Region (LAC): [redacted], FREQ: 66986, PCI: 35

6) Band: 12, Carrier: T-Mobile (310,260), Strength: -92, Quality: -10
   Tower ID: 3[redacted], Cell ID: [redacted], Region (LAC): [redacted], FREQ: 5035, PCI: 148

7) Band: 71, Carrier: T-Mobile (310,260), Strength: -100, Quality: -15
   Tower ID: 3[redacted], Cell ID: [redacted], Region (LAC): [redacted], FREQ: 68911, PCI: 154

8) Band: 4, Carrier: T-Mobile (310,260), Strength: -107, Quality: -11
   Tower ID: [redacted], Cell ID: [redacted], Region (LAC): [redacted], FREQ: 66811, PCI: 409
```

...

```
16) Band: 14, Carrier: AT&T FirstNet (313,100), Strength: -73, Quality: -10
   Tower ID:  , Cell ID:  , Region (LAC):  , FREQ: 5330, PCI: 325

17) Band: 17, Carrier: AT&T FirstNet (313,100), Strength: -75, Quality: -10
   Tower ID:  , Cell ID:  Region (LAC):  , FREQ: 5780, PCI: 106

18) Band: 2, Carrier: AT&T FirstNet (313,100), Strength: -89, Quality: -14
   Tower ID:  , Cell ID:  , Region (LAC):  , FREQ: 900, PCI: 166

19) Band: 4, Carrier: AT&T FirstNet (313,100), Strength: -89, Quality: -8
   Tower ID:  , Cell ID:  , Region (LAC):  , FREQ: 66686, PCI: 10

20) Band: 66, Carrier: AT&T FirstNet (313,100), Strength: -90, Quality: -10
   Tower ID:  , Cell ID:  , Region (LAC):  , FREQ: 67086, PCI: 310

21) Band: 30, Carrier: AT&T FirstNet (313,100), Strength: -97, Quality: -12
   Tower ID:  , Cell ID:  , Region (LAC):  , FREQ: 9820, PCI: 379

M) Manual Entry
B) Back to Local Tower Search
X) Exit to Connection Configuration
Make a selection or press [Enter] without a selection to start a new scan.
```

In the example here, if I choose to bind to a particular T-Mobile band 4, from my list above, I would enter the corresponding line # (8 for me) :

```
8) Band: 4, Carrier: T-Mobile (310,260), Strength: -107. Quality: -11
   Tower ID:  , Cell ID:  , Region (LAC):  , FREQ: 66811, PCI: 409
```

...

```
M) Manual Entry
B) Back to Local Tower Search
X) Exit to Connection Configuration
Make a selection or press [Enter] without a selection to start a new scan.
```

```
(Multiple LTE cells can be entered by separating them with commas): 8
```

And then confirm

```
[ Main Menu > Connection Configuration > Local Tower Search > LTE > Scan > Binding Confirmation ]

The selected cell(s) below will now be bound:
Band: 4, Carrier: T-Mobile (310,260)
Tower ID: 31659, Cell ID: 8104706, Region (LAC): 44027, FREQ: 66811, PCI: 409

This will disrupt your connection temporarily and replace any existing cell bindings.
Press [Enter] key to continue, [B] to go back, [X] to exit:
```

Advanced Tower Binding

To manually bind an LTE tower cell (or for 5G NSA since the primary carrier is still LTE), you will require its EARFCN and PCI identifiers. To bind a 5G SA tower, you will need its PCI, NR-EARFCN, SCS*, and BAND. These required values can be obtained in several ways.

Watch our video here for a video tutorial: https://www.youtube.com/watch?v=OqaESAakFSI

If you have already bound a cell using Simple Tower Binding, the required parameters to bind a tower will be listed under Modem Info or in the most recent Local Tower Search results. Otherwise, you can find them via a community repository source such as CellMapper or spectrum scanning tools (such as an iPhone in Field Test Mode, an Android app like LTE Discovery, or other dedicated spectrum analyzer hardware). As stated previously under Simple Tower Binding, your Network Mode must be compatible with the tower type you wish to bind or you will be prompted to change it.

Once you have obtained the necessary parameters you can enter them by selecting the desired cell type under 'Local Tower Search' and entering 'M' for Manual Entry using the confirmed parameters of the cell you wish to bind.

***NOTE**: SCS, or 'Subcarrier Spacing', is a new parameter used for 5G NR; it is measured in bandwidth values of 15, 30, 60, 120, 240, or 480 KHz. When referring to Cell Scan output to obtain a cell's SCS, be aware that it is reported as a single digit value ranging between '1' (30KHz) and '5' (480Khz) which corresponds to the bandwidth. The Tower Binding function will accept either the actual KHz value or its equivalent, single-digit, representative value (that Cell Scan output provides). If the single digit format is used, the Tower Binding function will automatically convert it to the corresponding KHz value in the background. The converted, actual KHz value will then be reported in the Tower Binding logs and Modem Info outputs.

Tower Binding Log

To view a log of the Tower Binding activity, select the View Tower Binding Log option from the Local Tower Search menu.

Additional Notes and Recommendations

Local Tower Search scans with a carrier SIM already inserted will yield results reflecting mostly the carrier's own cells and/or roaming partner cells. Cell scanning without a SIM inserted may yield additional cells for other available carriers, but you would need to insert the appropriate carrier provisioned SIM to be able to connect to them.

5G SA Tower Search is still under active improvement by modem vendors. We recommend performing at least two to three consecutive scans to ensure all available tower cells are listed. It has been observed that sometimes, in at least the first 5G SA scan performed, the actively connected cell details may not be included in the result; thus, the recommendation is to scan multiple times to ensure completeness of the cell information.

User Profiles

User Profiles allow you to backup all your InvisaGig settings including Visual Accessibility selections, Network Mode, Enabled Bands, Tower Bindings, Carrier Settings, and WatchDog/Reboot intervals. User profiles allow you to easily toggle entire groups of settings, eliminating the need to manually adjust many individual settings when moving between physical locations or swapping carrier SIM cards.

```
[ Main Menu > Connection Configuration > User Profiles ]

User Profiles allow you to backup all your InvisaGig settings including
UI customizations (Dark Mode vs. Standard), Network Mode, Enabled Bands,
Tower Bindings, Carrier Settings, and WatchDog/Reboot intervals. User profiles
allow you to easily toggle entire groups of settings, eliminating the need
to manually adjust many individual ones when moving between physical
locations or swapping carrier SIM cards.

1) Save
2) Load
3) Delete
4) Export
5) Import
B) Back to Connection Configuration
X) Exit to Main Menu
Make a selection:
```

Save

Allows you to save the current settings to a new named profile.

Load

Provides a list of previously saved profiles that can be selected and restored.

Delete

Displays the list of saved profiles which can be selected for removal.

Export

Saves the selected profile as a file for download.

Import

Allows the user to upload an external file for inclusion as a saved profile.

Carrier Profile Selection & APN

Modern cellular modems employ carrier optimized profiles which are used for connection to a specific carrier. These profiles also take care of selecting the appropriate APN. By default, the modem will automatically choose the preferred profile using Auto selection based on the physical SIM. In some cases, a carrier profile may contain tunings on which towers or bands it will allow the modem to connect to.

In many cases it may be desirable to select a specific profile manually instead of using Auto selection. The Carrier Profile & APN menu item allows you to do this. Additionally, specific APNs can be set using the Generic option. When changing carrier profiles, rebooting is needed for the changes to take effect. Any required reboots will happen automatically once a selection is made.

```
[ Main Menu > Connection Configuration > Carriers Profiles & APN ]

Carrier Profiles include only the most basic settings which are required
by your cellular carrier to reach the Internet such as IP Type and APN.

'Generic' allows you to enter APN settings manually.

If you share the APN settings with us via our contact form
below we can add them as selections in a future IG update:
https://invisagig.com/support/#contact-form

CURRENT PROFILE: T-Mobile - Home Internet

1) T-Mobile / Telekom
2) AT&T
3) Verizon
4) Metro by T-Mobile
5) Cricket
6) Visible
7) Tracfone / Straight Talk
8) MobileX
9) Vodafone
10) GCI
11) Wave Connect
12) Google Fi
13) Generic
14) Auto-Select
B) Go Back
X) Exit
Make a selection:
```

Local IP & Multiple Modem Setup

Local IP & Multiple Modem Setup allows for selection of the installation scenario. The unit may operate as a single device or as a member of a larger set of devices configured together in a failover or load-balanced scenario using appropriate third-party equipment. Preconfigured IP options are offered, or you can specify a private IP address of your choosing. The MAC address used in the default bridge mode (IP Passthrough) configuration can also be specified if desired. Any changes made under this menu item will result in an automatic reboot of the unit as a final step due to the required IP changes.

```
[ Main Menu > Connection Configuration > Local IP & Multiple Modem Setup ]

To assign a predefined IP for this IG unit, make a selection from the list below.
Alternatively, you can specify the IP manually by entering the desired address.
(ex. '10.0.0.1', '172.16.0.1', or '192.168.0.1')

1) 1st Unit [192.168.225.1]
2) 2nd Unit [192.168.145.1]
3) 3rd Unit [192.168.155.1]
4) 4th Unit [192.168.165.1]
5) 5th Unit [192.168.175.1]
6) 6th Unit [192.168.185.1]
B) Back to Connection Configuration
X) Exit to Main Menu
Make a selection [or enter an IP]:
```

IP Passthrough Enable/Disable

As a part of the IP address assignment, you have the option to disable the automatically enabled IP Passthrough, make sure it stays enabled, OR manually assign the MAC address for IP Passthrough use.

```
[ Main Menu > Connection Configuration > Local IP & Multiple Modem Setup > Bridge Mode ]

Do you want to enable Bridge Mode / IP Passthrough? ([Y]es, [N]o, [B]ack, E[x]it):
```

```
[ Main Menu > Connection Configuration > Local IP & Multiple Modem Setup > Bridge Mode > MAC ]

Enabling Bridge Mode requires the MAC address of the connected device (ex. 00:B0:D0:63:C2:26).
The MAC address can be entered manually or detected automatically.
If you are using a router, this value would be the MAC address of the port that the IG is connected to.

Enter a valid MAC address, press [Enter] without a MAC to enable auto-detection, go [B]ack, or E[x]it.
:
```

```
[ Main Menu > Connection Configuration > Local IP & Multiple Modem Setup > Confirm Changes ]

Based on your selections, this IG unit be assigned an IP address of '192.168.225.1'.
Bridge Mode will be enabled with MAC auto-detection.
Are you ready to REBOOT to apply these changes? ([Y]es, [N]o, [B]ack, E[x]it):
```

NOTE: When setting your own IP address, please make note of it, as this will now be the address on which you will access the configuration interface.

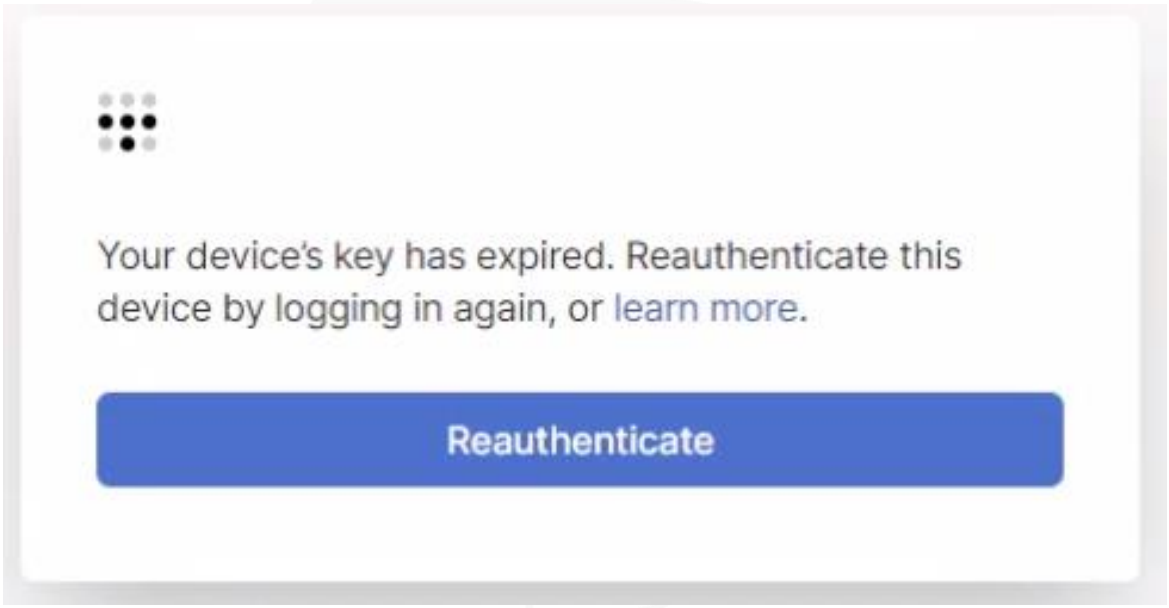
Tailscale

Tailscale is a peer-to-peer, mesh VPN service based on the open source WireGuard protocol that makes it easy to securely access all your devices from anywhere in the world. Leveraging the native Tailscale integration of the InvisaGig you can easily add it to your Tailnet for remote access. Configuring Tailscale is as simple as assigning your InvisaGig a machine name and then logging into Tailscale to complete the connection.

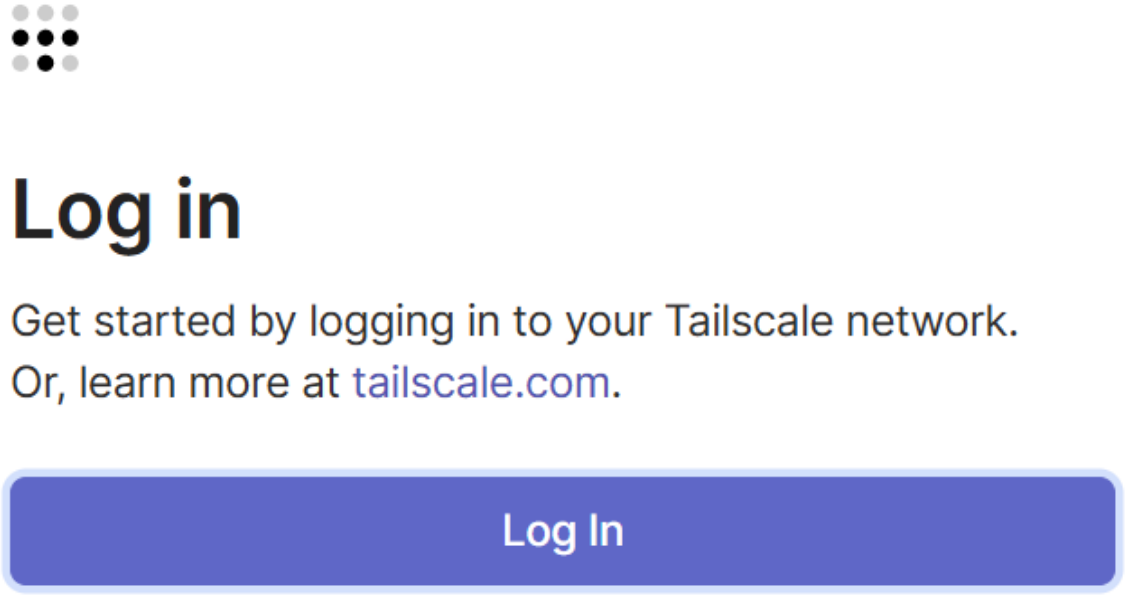
```
[ Main Menu > Connection Configuration > Tailscale > Machine Name ]

Enter the desired Tailnet machine name (default: ig25271858520n).
Valid machine names are alphanumeric from 4 to 15 characters including dashes/hyphens.
Press [Enter] without input to accept the default name, Go [b]ack, or E[x]it): myinvisagig
```

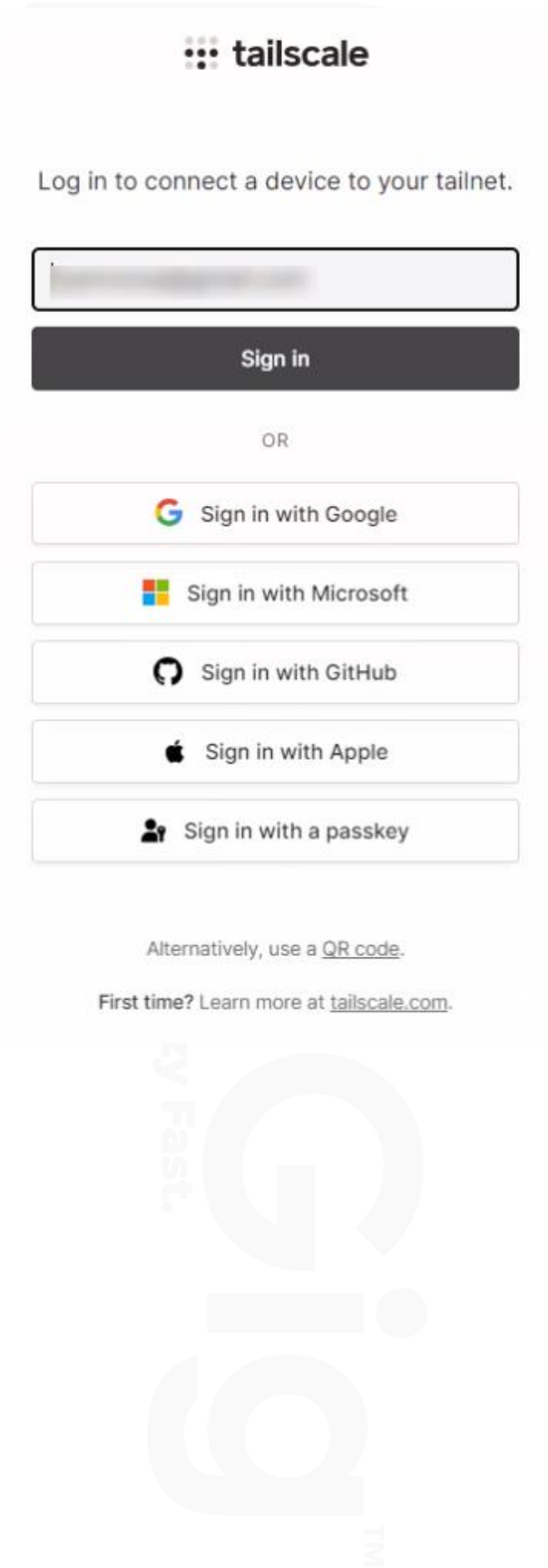
```
[ Main Menu > Connection Configuration > Tailscale > Authentication ]

Setting Machine Name to 'myinvisagig'.
Starting Tailscale services..
```

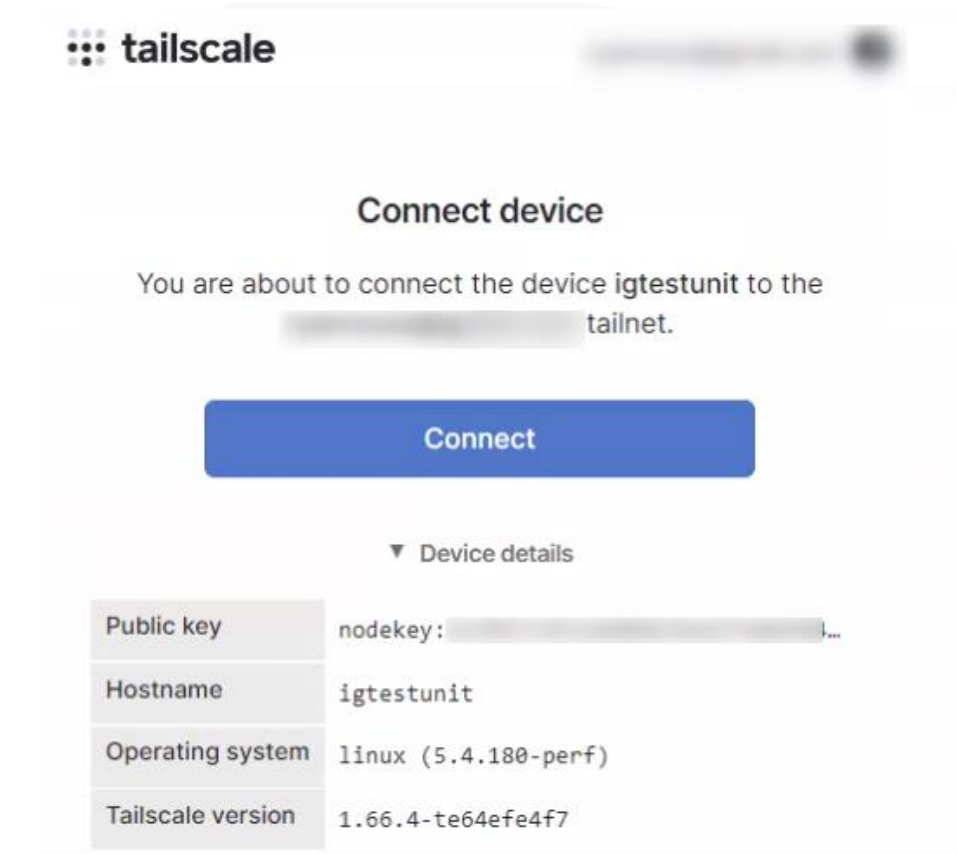
```
[ Main Menu > Connection Configuration > Tailscale > Authentication ]

Click the link below and choose 'Reauthenticate' to complete Tailnet registration:

http://192.168.225.1:8088

Press [Enter] to proceed to Tailscale Menu, go [B]ack, or E[x]it:
```

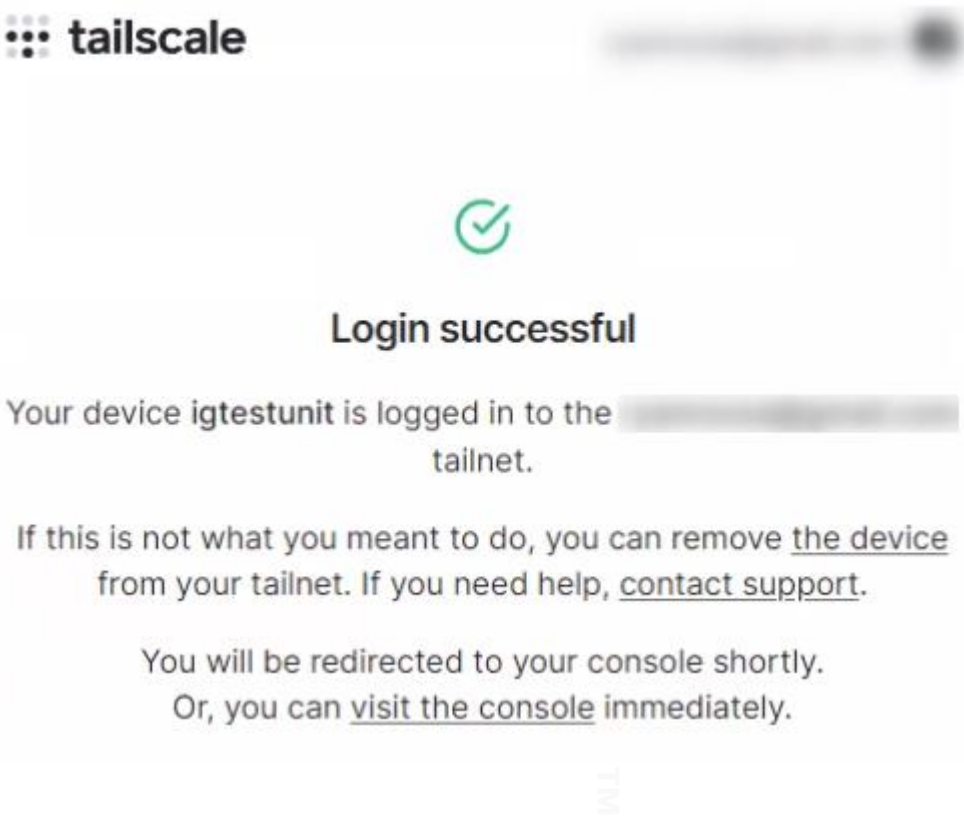


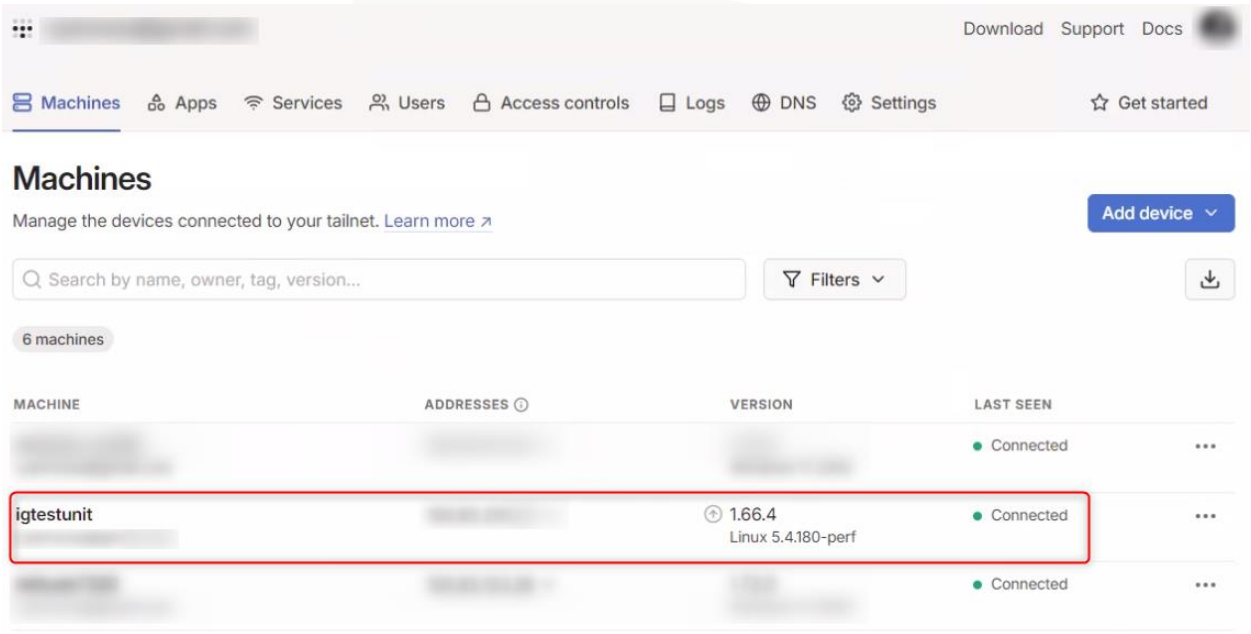
or you may see:












```
[ Main Menu > Connection Configuration > Tailscale ]

TAILNET STATUS: CONNECTED
TAILNET HOSTNAME & IP: myinvisagig (1[redacted])

1) Disconnect Tailscale
2) Exit Node Configuration
B) Back to Connection Configuration
X) Return to Main Menu
Choose an action:
```

Tailscale Exit node Configuration

If you would like your InvisaGig to be an exit node for select traffic on your Tailnet, or if you would like your InvisaGig to send all traffic to an exit node on your Tailnet, select the appropriate option and confirm the proper settings in your Tailscale dashboard.

```
[ Main Menu > Connection Configuration > Tailscale > Exit Node Configuration ]

1) Become an Exit Node
2) Use an Exit Node
B) Back to Tailscale Configuration
X) Return to Main Menu

Choose an action: 1
Now configured as an Exit Node.
You must 'Edit route settings...' for this machine in the admin console
and check 'Use as exit node' before this new Exit Node can be used.
Press [Enter] to return.
```

Note: You MUST approve exit nodes, and configure exit node use in your Tailscale admin dashboard. Refer to up to date Tailscale instructions for details or changes to this process.

Enabled Bands

Enabled Bands can be used to limit the bands used by the modem when connecting to tower cells. This can be useful to limit cell attachment on specific bands in situations where these bands are known to have issues such as instability or congestion. By default, all listed bands supported by the modem are enabled. One can shorten the list of available bands by removing any undesired ones from the list, leaving only the ones which are still desired.

User input should be formatted as a colon (':') separated list of band values (ex. 2:4:12:71 ... etc). The modem will then connect to the band(s) in the remaining list based on signal strength. If no input or invalid input is provided for the list of bands to enable, no changes will be made. Be aware that if bands are removed from the list of available bands, they can no longer be used for either primary carriers or secondary carriers which means that they will not be included in any available carrier aggregation band combinations. Also, be aware that 5G NSA is still using LTE for its primary cell so any bands removed from the LTE list will have a direct effect on 5G NSA connectivity.

Finally, Enabled Bands should not be confused with Tower Binding which is the process of forcing the modem to only attach to a specific tower cell. Local Tower Search and the cell binding processes are covered in the earlier 'Simple Tower Binding' and 'Advanced Tower Binding' sections.

```
[ Main Menu > Connection Configuration > Enabled Bands ]

CURRENTLY ENABLED BANDS:
LTE - 1:2:3:4:5:7:8:12:13:14:17:18:19:20:25:26:28:29:30:32:34:38:39:40:41:42:43:46:48:66:71
5G NSA - 1:2:3:5:7:8:12:13:14:18:20:25:26:28:29:30:38:40:41:48:66:70:71:75:76:77:78:79

1) LTE
2) 5G NSA
3) 5G SA
4) Reset All to Defaults
B) Back to Connection Configuration
X) Exit to Main Menu
Choose which type of bands to enable, or perform a reset to defaults:

[ Main Menu > Connection Configuration > Enabled Bands > 5G NSA Band Selection ]

5G NSA Bands available:
1:2:3:5:7:8:12:13:14:18:20:25:26:28:29:30:38:40:41:48:66:70:71:75:76:77:78:79

Enter colon (':') separated list of NSA 5G bands to enable, [B] to Go Back, [X] to Exit.
(currently enabled bands are pre-populated in the prompt below):
1:2:3:5:7:8:12:13:14:18:20:25:26:28:29:30:38:40:41:48:66:70:71:75:76:77:78:79
```

SIM Selection

If using multiple SIM cards in the InvisaGig, you can select if you would like to enable 'Automatic Failover' or simply manually swap the SIM slots via the 'Manual Failover' menu options

```
[ Main Menu > Connection Configuration > SIM Selection ]

Manual Failover will toggle the active SIM slot and can apply a Carrier
or User Profile to ensure the correct settings are applied for connectivity.

Automatic Failover enables WatchDog controlled toggling of the
active SIM in the event of a carrier connection outage, data use limit, or
configured schedule. Each SIM is assigned a User Profile which is applied
at failover. If WatchDog is not already enabled it will be enabled at a 5
minute interval when Automatic Failover is configured.

Active SIM: SIM1 | Carrier: AT&T
ICCID: 890141[redacted] | Phone#: 1[redacted]
APN: broadband | IP Type: IPV4V6
AUTOMATIC FAILOVER: [CONNECTION + DATA + SCHEDULE]
DATA LIMIT USED: 499.94 / 5000 MB
CONNECTION FAILBACK: 1 Hour

1) Manual Failover
2) Automatic Failover
B) Back to Connection Configuration
X) Return to Main Menu

Choose an action:
```

Manual selection:

```
[ Main Menu > Connection Configuration > SIM Selection > Manual Failover ]

!!!--WARNING--WARNING--WARNING--WARNING--WARNING--WARNING--!!!
Switching SIM slots will result in temporary disconnection.
If a Carrier or User Profile is applied, a reboot will be
performed to apply the required settings.

Slot 1 is active. Switch to slot 2? (y/n):
```

Automatic Failover:

```
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover ]

1) Enable Automatic Failover
B) Back to SIM Selection
X) Exit to Connection Configuration
Make a selection:
```

In order to use the Automatic failover option you must have at least two user profiles saved, so that there can be user settings applied to each SIM card slot that will allow the SIM card chosen to load the proper settings for that SIM card. Please see the User Profiles section for more details.

```
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > SIM 1 Profile ]

You need to create at least two User Profiles first (one for each SIM).
Go [B]ack, or E[x]it:
```

As long as you have a user setting profile saved for each SIM card that you would like to use, you can proceed to choose which user profile to apply to which SIM slot for the automatic failover feature.

```
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > SIM 1 Profile ]

1) ATTBizHotSp1
2) TmoHome1
B) Back to SIM Selection
X) Exit to Connection Configuration
Please select a profile for SIM 1: 2

[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > SIM 2 Profile ]

1) ATTBizHotSp1
2) TmoHome1
B) Back to SIM Selection
X) Exit to Connection Configuration
Please select a profile for SIM 2: 1
```

[Main Menu > Connection Configuration > SIM Selection > Automatic Failover]

The primary function of **Automatic Failover** is to minimize loss of Internet connectivity should the primary carrier (SIM1) experience an outage. Optionally, automatic failover to the secondary carrier (SIM2) can be set to occur when data usage on the primary carrier has exceeded a preset limit or on a user-defined schedule. Note that failovers will occur at the next closest WatchDog execution interval (every 5 minutes by default).

-Automatic Failover Modes-
[CONNECTION] = Failover to SIM2 on loss of SIM1 connectivity.
[DATA] = Failover to SIM2 when SIM1 exceeds a user specified limit.
[SCHEDULE] = Failover to SIM2 during user defined time periods.

Active SIM: SIM1 | **Carrier:** AT&T
ICCID: 8901410 | **Phone#:** 1 7
APN: broadband | **IP Type:** IPV4V6
AUTOMATIC FAILOVER: [CONNECTION + DATA + SCHEDULE]
DATA LIMIT USED: 500.01 / 5000 MB
CONNECTION FAILBACK: 1 Hour

1) SIM1 User Profile: '**ATT1LTE**'
2) SIM2 User Profile: '**TMOBIZ1**'
3) Connection Failback
4) Data Limit Failover
5) Scheduled Failover
6) Disable Automatic Failover
B) Back to SIM Selection
X) Exit to Connection Configuration
Make a selection:

Automatic Failback Feature:

```
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover ]

The primary function of Automatic Failover is to minimize loss of Internet
connectivity should the primary carrier (SIM1) experience an outage.
Optionally, automatic failover to the secondary carrier (SIM2) can be
set to occur when data usage on the primary carrier has exceeded a preset
limit or on a user-defined schedule. Note that failovers will occur at
the next closest WatchDog execution interval (every 5 minutes by default).

-Automatic Failover Modes-
[CONNECTION] = Failover to SIM2 on loss of SIM1 connectivity.
[DATA] = Failover to SIM2 when SIM1 exceeds a user specified limit.
[SCHEDULE] = Failover to SIM2 during user defined time periods.

Active SIM: SIM1 | Carrier: AT&T
ICCID: 8901410[redacted] | Phone#: 1[redacted]7
APN: broadband | IP Type: IPV4V6
AUTOMATIC FAILOVER: [CONNECTION + DATA + SCHEDULE]
DATA LIMIT USED: 500.01 / 5000 MB
CONNECTION FAILBACK: 1 Hour

1) SIM1 User Profile: 'ATT1LTE'
2) SIM2 User Profile: 'TMOBIZ1'
3) Connection Failback
4) Data Limit Failover
5) Scheduled Failover
6) Disable Automatic Failover
B) Back to SIM Selection
X) Exit to Connection Configuration
Make a selection:
```

This feature of the Automatic SIM Failover feature set allows the InvisaGig to be set, after a user defined interval, to 'fail-back' to the primary SIM. This is helpful if your secondary SIM is connected but is not your preferred SIM. If the Secondary does not connect, or loses connection it will further failover back to the other SIM slot, and repeat the process. Failback will not swap to SIM slot #2. Failover will swap between SIM slot #1 and SIM slot #2 back and forth to try and stay online, until it succeeds.

```
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > Connection Failback ]

In the event of an Automatic Failover to SIM2 due to connectivity issue,
Connection Failback to SIM1 can be triggered after a preset interval.

Note: Connection Failback will be ignored if Data Limit Failover has been
enabled and SIM1 has exceeded its limit, or if it conflicts with any user
defined Scheduled Failover time period.

CURRENT FAILBACK INTERVAL: 1 Hour

1) 1 Hour
2) 12 Hours
3) 24 Hours
4) Disable Connection Failback
B) Back to Automatic Failover
X) Return to Connection Configuration
Enter a selection:
```

This feature can be disabled without disabling the entire failover feature, in the same failover menu. See image above, option #4.

Data Limit Failover

Set a total amount of data use that you want to limit your SIM #1 to use before it forces a failover to SIM #2. This limit will not stop SIM slot #1 from being used in the event of a connection failure on SIM #2, but it will override scheduled failback and the general failback setting.

```
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > Data Limit Failover ]

Enter the number of megabytes (MBs) to be used before failover to SIM2.
Valid inputs are whole numbers between 0 and 1000000 (1 terabyte).
Entering '0' will disable Data Limit Failover. Failback will occur at
the start of the next billing period for SIM1 unless manual failover
is performed.

Note: Connection Failback is ignored once failover to SIM2 has occurred
due to SIM1 exceeding the defined data use limit. To use SIM1 prior to
its next billing period, you must raise or remove its limit before
manually failing back, else you will be failed over to SIM2 continuously.
User defined failover schedules will also be ignored if SIM1's data limit
has been exceeded for the current billing period.

DATA USED: 500.60 MB

Enter threshold in MBs, go [B]ack, or E[x]it: 5000
```

Enter the amount of data in MB, total that you want to allow your InvisaGig to use on SIM slot #1 before it fails over to use SIM #2 until your billing period is lapsed to a new ‘month’ (1000 MB = 1 GB)

```
Enter threshold in MBs, go [B]ack, or E[x]it: 5000
SIM2 failover will occur at ~5000 MBs. Press [Enter] to return.
```

This will show on your Automatic failover settings and on the Modem Status page

DATA LIMIT USED: 501.07 / 5000 MB

Scheduled Failover

```
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > Scheduled Failover ]

Schedule days/times for automatic failover to the secondary carrier (SIM2).
Outside of these defined windows, the primary carrier (SIM1) will be used.
Start and end times must be entered in 24 hour UTC format.

Note: Connection and Data Limit Failovers take precedence over schedules.
Schedules will take precedence over Connection Failback (if enabled).

Current Day & Time: Wednesday 22:49 UTC

1) Sunday [No Schedule]
2) Monday [No Schedule]
3) Tuesday [No Schedule]
4) Wednesday [No Schedule]
5) Thursday [No Schedule]
6) Friday [No Schedule]
7) Saturday [No Schedule]
C) Clear All Days
B) Back
X) Exit
Select a day to modify, [C]lear all, go [B]ack, or E[x]it:
```

Enter the number corresponding to the day of the week to set a failover and failback timed schedule. This schedule will automatically fail over to the secondary carrier (SIM2) at the time entered first, and then automatically fail back to the primary carrier (SIM1) at the time entered second.

NOTE: All time use, output, and entries on the InvisaGig is in 24 hour UTC format. Please do not forget this, as it can confuse if not understood.

```
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > Scheduled Failover > Sunday ]

Modify schedule for Sunday (current: No Schedule)
Enter new start time (HH:MM), or [Enter] to clear: 12:00
Enter new end time (HH:MM): 20:00

Current Day & Time: Thursday 15:35 UTC

1) Sunday [12:00 - 20:00]
2) Monday [No Schedule]
3) Tuesday [No Schedule]
4) Wednesday [No Schedule]
5) Thursday [No Schedule]
6) Friday [No Schedule]
7) Saturday [No Schedule]
C) Clear All Days
B) Back
X) Exit
Select a day to modify, [C]lear all, go [B]ack, or E[x]it:
```

Repeat for all days that you wish to set a schedule

```
Current Day & Time: Thursday 15:36 UTC

1) Sunday [12:00 - 20:00]
2) Monday [11:00 - 15:30]
3) Tuesday [11:00 - 15:30]
4) Wednesday [11:00 - 15:30]
5) Thursday [11:00 - 15:30]
6) Friday [12:00 - 20:30]
7) Saturday [No Schedule]
C) Clear All Days
B) Back
X) Exit
Select a day to modify, [C]lear all, go [B]ack, or E[x]it:
```

To clear or change the schedule for a single day, select the day, and the either press enter/return without an entry, or enter the new schedule to overwrite the previous schedule.

```
1) Sunday [12:00 - 20:00]
2) Monday [11:00 - 15:30]
3) Tuesday [11:00 - 15:30]
4) Wednesday [11:00 - 15:30]
5) Thursday [11:00 - 15:30]
6) Friday [12:00 - 20:30]
7) Saturday [No Schedule]
C) Clear All Days
B) Back
X) Exit
Select a day to modify, [C]lear all, go [B]ack, or E[x]it: 4
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > Scheduled Failover > Wednesday ]

Modify schedule for Wednesday (current: 11:00 - 15:30)
Enter new start time (HH:MM), or [Enter] to clear:
```

```
Current Day & Time: Thursday 15:41 UTC

1) Sunday [12:00 - 20:00]
2) Monday [11:00 - 15:30]
3) Tuesday [11:00 - 15:30]
4) Wednesday [No Schedule]
5) Thursday [11:00 - 15:30]
6) Friday [12:00 - 20:30]
7) Saturday [No Schedule]
C) Clear All Days
B) Back
X) Exit
Select a day to modify, [C]lear all, go [B]ack, or E[x]it:
```

To clear the entire schedule, enter ”C” at the main schedule prompt, then confirm you wish to do so.

```
1) Sunday [12:00 - 20:00]
2) Monday [11:00 - 15:30]
3) Tuesday [11:00 - 15:30]
4) Wednesday [No Schedule]
5) Thursday [11:00 - 15:30]
6) Friday [12:00 - 20:30]
7) Saturday [No Schedule]
C) Clear All Days
B) Back
X) Exit
Select a day to modify, [C]lear all, go [B]ack, or E[x]it: C

[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > Scheduled Failover > Clear All ]

Are you sure? (y/n): y
All schedules cleared. Press [Enter] to return.

Current Day & Time: Thursday 15:38 UTC

1) Sunday [No Schedule]
2) Monday [No Schedule]
3) Tuesday [No Schedule]
4) Wednesday [No Schedule]
5) Thursday [No Schedule]
6) Friday [No Schedule]
7) Saturday [No Schedule]
C) Clear All Days
B) Back
X) Exit
Select a day to modify, [C]lear all, go [B]ack, or E[x]it:
```

Disable Automatic Failover

To completely disable all automatic failover settings, select this option, and confirm:

```
Active SIM: SIM1 | Carrier: AT&T
ICCID: 8901                    | Phone#: 1
APN: broadband | IP Type: IPV4V6
AUTOMATIC FAILOVER: [CONNECTION + DATA + SCHEDULE]
DATA LIMIT USED: 565.77 / 5000 MB
CONNECTION FAILBACK: 1 Hour

1) SIM1 User Profile: 'ATT1LTE'
2) SIM2 User Profile: 'TMOBIZ1'
3) Connection Failback
4) Data Limit Failover
5) Scheduled Failover
6) Disable Automatic Failover
B) Back to SIM Selection
X) Exit to Connection Configuration
Make a selection: 6
[ Main Menu > Connection Configuration > SIM Selection > Automatic Failover > Disable ]

This will disable Automatic Failover.
Are you certain you wish to proceed? (y/n):

Active SIM: SIM1 | Carrier: AT&T
ICCID: 89014                   | Phone#: 1
APN: broadband | IP Type: IPV4V6

1) Enable Automatic Failover
B) Back to SIM Selection
X) Exit to Connection Configuration
Make a selection:
```

NOTE: Disabling the automatic failover, after setting options like Connection Failback, Data Limit Failover, and Scheduled Failover will NOT erase the specific settings previously entered for these features; it will only disable their use. After re-enabling Automatic failover, you will be required to select the configuration profiles for each SIM slot again, but the previously entered settings for Connection Failback, Data Limit Failover, and Scheduled Failover will be present without having to re-enter those configurations.

Telemetry Interface

InvisaGig provides basic telemetry data about the device and its connection in JSON format. This information can be accessed via '**http://[ig_ip_address]/telemetry/info.json**' ('[ig_ip_address]' is '192.168.225.1' by default, also note the 'http' **not** 'https'). The JSON output is updated once per minute and includes device details, time & temperature, active SIM connection details, and cell information. If

you would like to view the raw data from a browser, it is recommended to use a browser extension which can properly format the output for best readability (ex. 'JSON Viewer' in the Chrome Web Store). **NOTE:** This telemetry data does not output the unique identifier for your modem nor SIM card, strictly cell data for your connected bands and cell site info including cell signal metrics, as well as your SIM slot data usage tracking info. Example below. [Some details removed for privacy]

// 20250911155844

// http://xxx.xxx.xxx.xxx/telemetry/info.json

{
 "device": {
  "company": "InvisaGig Technologies",
  "model": "IG62",
  "modem": "rm520",
  "igVersion": "1.0.13",
  "localIp": "192.168.225.1",
  "ipptMac": "xx:xx:xx:xx:xx:xx"
 },
 "timeTemp": {
  "upTime": 235,
  "timeDate": "Thu Sep 11 20:58:01 UTC 2025",
  "temp": "34c"
 },
 "activeSim": {
  "slot": "SIM1",
  "networkMode": "LTE:NR5G",
  "conStatus": "REGISTERED",
  "carrier": "AT&T",
  "apn": "broadband",
  "ipType": "IPV4V6"
 },

```
"dataUsed": {
  "SIM1": {
    "billingDay": 7,
    "billingPeriod": {
      "startDate": "2025-09-07",
      "endDate": "2025-10-06"
    },
    "startEpochMs": 1757203200000,
    "endEpochMs": 1759708800000,
    "txMBytes": 252.05,
    "rxMBytes": 340.29,
    "totalMBytes": 592.34
  },

  "SIM2": {
    "billingDay": 21,
    "billingPeriod": {
      "startDate": "2025-08-21",
      "endDate": "2025-09-20"
    },
    "startEpochMs": 1755734400000,
    "endEpochMs": 1758326400000,
    "txMBytes": 544.20,
    "rxMBytes": 897.31,
    "totalMBytes": 1441.51
  }
},
"lteCell": {
```

"lteCid": 43xxxx08,
"lteTid": 16xxx1,
"lteLac": 8xx2,
"ltePci": 3xx,
"lteFreq": 5330,
"lteBand": 14,
"lteUlbw": "10 MHz",
"lteDlbw": "10 MHz",
"lteStr": -76,
"lteQal": -10,
"lteRss": -49,
"lteSnr": 21,
"lteCqi": 14
},
"nsaCell": {
"nsaPci": null,
"nsaStr": null,
"nsaQal": null,
"nsaSnr": null,
"nsaFreq": null,
"nsaBand": null,
"nsaDlbw": "null",
"nsaScs": "null"
},
"saCell": {
"saCid": null,
"satid": null,
"saLac": null,

```
  "saPci": null,
  "sacFreq": null,
  "saBand": null,
  "saDlbw": "null",
  "saStr": null,
  "saQal": null,
  "saSnr": null,
  "saScs": "null"
},
"carAgg": {
  "lte": [
    {
      "band": 2,
      "freq": 900,
      "pci": 166,
      "bw": "20 MHz",
      "state": "inactive"
    },
    {
      "band": 66,
      "freq": 66686,
      "pci": 10,
      "bw": "10 MHz",
      "state": "inactive"
    },
    {
      "band": 66,
      "freq": 67086,
```

```
      "pci": 310,
      "bw": "10 MHz",
      "state": "inactive"
    },
    null,
    null
  ],
  "nr5g": [
    null,
    null,
    null,
    null,
    null,
    null,
    null,
    null,
    null,
    null,
    null,
    null,
    null,
    null,
    null,
    null
  ]
 }
}
```


(json output format subject to change with updates)

Technical Terms Glossary

IP Address (IPv4, IPv6) – Internet Protocol address used within a local network or the wider Internet to identify a connected client device.

Bridge Mode / IP Passthrough (IPPT) – Mode for assigning the cellular carrier assigned IP address directly to the connected device which provides a more direct connection to the Internet.

MAC Address – The Media Access Control address is the unique identifier assigned to network interfaces. In IP network communications, the MAC will be associated with a specific client IP address.

DNS – The Domain Name System translates server names and websites into their associated IP address so that client devices can connect to them.

Firmware – Low level programming that controls the most basic functionality of a device.

Software – Higher level programs that provide intuitive interfaces that allow users to interact with a device.

SIM – The Subscriber Identity Module is a small chip (integrated circuit) which stores cellular subscriber identity and the associated key(s) which are used to identify and authenticate customers to a particular cellular network. SIM cards can be physical chips inserted into a modem device or digitally stored information on an embedded chip attached to a device's circuit board (eSIM).

APN – Access Point Names are gateways configured by cellular carriers which allow subscribers to access their network.

IMEI – The International Mobile Equipment Identity is the 15-digit unique identifier assigned to a modem device which identifies the manufacturer, model, and serial number of the device when connecting to the cellular network.

FSN – The Factory Serial Number is assigned by the manufacturer of the device to uniquely identify a device in their systems.

Tower – Towers, also known as cell sites, house the transmitter hardware (cells) which broadcast the cellular network to subscriber devices.

Cells – The specific antenna hardware that broadcasts on specific channels commonly referred to as bands.

Band – A specific radio frequency that broadcasts the cellular network.

BW – Bandwidth in the context of cellular bands, refers to the range, or 'width' of frequencies allocated to a specific broadcast channel.

LAC – Location Area Code, or region, is the physical area where a cell site is located and broadcasting to.

PCI – Physical Cell Identifier is an identifier assigned to a specific cell used when subscriber equipment is connected to the cellular network.

FREQ – An abbreviation for ‘frequency’, more specifically this refers to the ARFCN (see below).

ARFCN – Absolute Radio Frequency Channel Number is used to uniquely identify a specific carrier broadcast frequency.

PCC – The Primary Component Carrier is the first and main band used to connect to a cellular network.

SCC – Secondary Component Carriers are additional bands the modem may connect to in addition to the PCC to increase available bandwidth and speeds.

CA – Carrier Aggregation is the radio technology that allows a single cellular client to connect to multiple cells and aggregate their available bandwidth to increase overall bandwidth and connection speeds.

LTE – Long Term Evolution, otherwise known as 4G, is the fourth-generation cellular communications standard.

NR – New Radio, otherwise known as 5G, is the fifth-generation cellular communication standard. It can deliver faster speeds, lower latency, and higher bandwidth than LTE by itself.

5G NSA – Non-standalone 5G still uses an LTE band for its primary carrier (called the ‘anchor band’) but also connects to at least one additional NR band to improve the throughput of the connection.

5G SA – Standalone 5G uses only NR bands for connectivity which provides not only more bandwidth and faster speeds in many situations but also lower latency and improved energy efficiency as well. Standalone may not be available on all carriers or in all markets.

SCS – Subcarrier Spacing is a key parameter that affects the bandwidth and performance of a 5G network and is measured in KHz. It is the distance between two adjacent channels simultaneously broadcasting a cellular signal. This allows for a single transmission to carry more than one separate signal. This parameter is required for binding 5G SA tower cells.

Last update to this document was: 09/11/2025