



TCS Release Notes 2023-03

10-0040-001

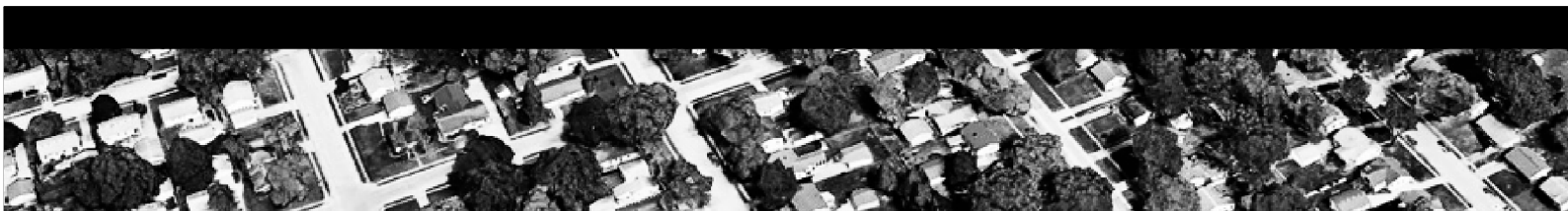


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This document is intended for system administrators and engineers interested in the design, daily management, operations, and troubleshooting of Tarana G1 networks including base nodes, remote nodes, and the Tarana Cloud Suite (TCS).

To benefit from this document, the reader must have a good working knowledge of radio frequency (RF), wireless systems, and networking concepts.

The G1 products are designed to be installed and used by trained professionals and require that such professionals adhere to all relevant regulatory, safety, and telecom industry best practice guidelines for outdoor radios. This document assumes that the Tarana G1 base node and remote nodes are installed onsite and are connected to the TCS.

For the most up-to-date documentation and videos, see our support portal at:

<https://support.taranawireless.com/hc/en-us>

Remote Node Rehoming

Primary base nodes provide a consistent and predictable network topology. However, when a remote node loses its connection to its primary base node, the remote nodes must connect to another base node, and network operation can become inefficient. Rehoming devices back to their primary base node re-establishes the preferred network topology and restores network efficiency.

Customer Application

Primary base nodes are the base nodes defined in TCS as the preferred connections for remote nodes, and each remote node can have only one primary base node. If a base node becomes unresponsive or restarts, then the remote node loses its connection to the base node. To regain the connection, the remote node can scan for, select, and connect to a different base node.

The administrator can filter the list of remote nodes in TCS to view remote nodes that are not connected to their respective primary base node. Administrators can then select one or more of the remote nodes from the list, and then prompt them to re-establish their connection to their primary base node. To reconnect a remote node to its primary base node, both devices must be connected to—and visible in—TCS.

Feature Description

Base nodes sometimes lose their network connection or become unresponsive, especially during weather or power events. When a base node comes back online after a network absence, remote nodes configured to use it as a primary base node do not automatically detect it and attempt to reconnect by default. Instead, the administrator must prompt the remote node to seek out and connect to the base node explicitly. As a result, the number of remote nodes connected to non-primary base nodes can grow over time.

To view the remote nodes that are not currently connected to their primary base nodes, do the following:

1. Log in to TCS with Op Admin privileges.
2. Navigate to **Devices > List**.
3. Select the **Devices Not Connected to Primary BN** option in the filter drop-down list.

When you can see the affected remote nodes in the table, you can prompt the remote nodes to reconnect to their primary base node by doing the following:

1. Select the check boxes of the devices you want to reconnect to their base node.
2. Select **Network Operation (()) > Connect to Primary BN** from the drop-down list.
3. Select Confirm in the warning dialog to confirm that the network impact of the action is acceptable.

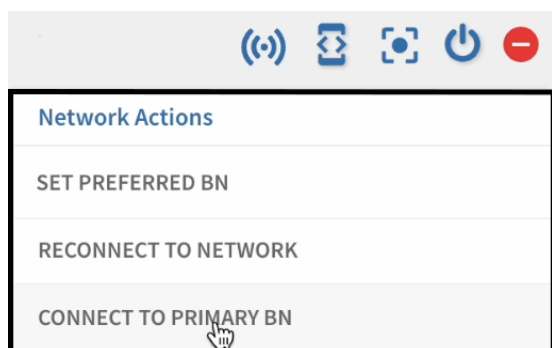


Figure 1: *Connect to Primary BN* is a new network action

If you attempt to reconnect a remote node to a base node that is not connected to TCS at that time, then TCS returns a message dialog listing the disconnected base nodes and the affected remote nodes.

Customizable Installation Parameters

Setting the installation parameters is an important part of the installation and startup process. Base nodes detect and report some parameters automatically—but not all, and remote nodes detect no parameters automatically. When installation parameters are entered incorrectly or omitted during the installation process, inaccurate reporting is the result, and the administrator must be able to correct the installation parameters to remedy the problem. Administrators can now correct the installation parameters within TCS.

Customer Application

Base nodes and remote nodes have the following five installation parameters: latitude, longitude, height, tilt, and azimuth. Base nodes use sensors to determine the latitude, longitude, tilt, and height above mean sea level (AMSL), so the administrator must enter values for azimuth. Because the height ASML is not intuitive, the admin can now also add a value for height above ground level (AGL). Remote nodes do not use GPS, so administrators must enter the five values manually. Omitting the latitude and longitude settings can cause the device to appear at the intersection of the Prime Meridian and equator off the coast of Africa.

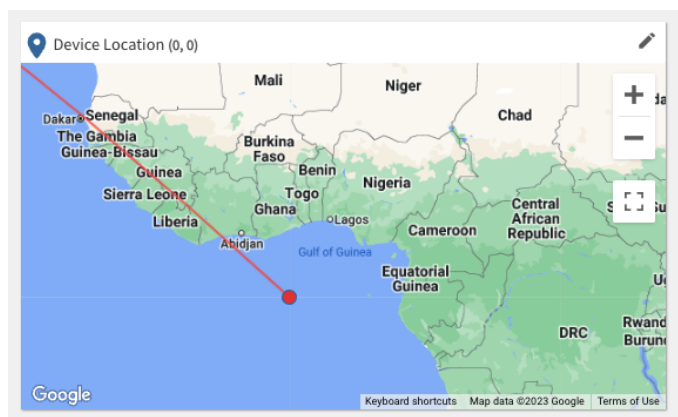


Figure 2: The Device Location widget contains a map.

Feature Description

You can view all five values in the Devices table under the columns Location, Azimuth, Height, and Tilt. Additionally, you can change the values on the single device page using the Edit Location tool.

BN - DEVICE INSTALLATION PARAMETERS

Latitude

38.81264877319336

Longitude

19.81264877319336

Tilt

25

deg

Azimuth

27

deg

Height (AGL)

350

m

Height (AMSL)

1350.54

m

CANCEL

UPDATE

RN - DEVICE INSTALLATION PARAMETERS

Latitude

38.81264877319336

Longitude

19.81264877319336

Tilt

25

deg

Azimuth

27

deg

Height (AGL)

350

m

CANCEL

UPDATE

Figure 3: Change the installation parameters using the Edit Location tool.

Height AGL (m)	Height AMSL (m)
101	701
89.8	897
80	462
75.8	180

Figure 4: You can also verify installation height values in the Devices table under the Height (AMSL) and Height (AGL) column headings.

To change the installation parameters, do the following:

1. Log in to TCS with Op Admin privileges.
2. Navigate to **Devices > List**.
3. Select the serial number of the device whose installation parameters you want to change.
4. Select **Edit** (✎) on the Location widget.
5. Enter the correct values in the dialog, and then select **Update**.

API Enhancements

APIs provide programmatic access to configuration- and status-related parameters. TCS now includes the new API calls in the Northbound (NB) API. You can view the API reference at the following URL:

<https://support.taranawireless.com/hc/en-us/articles/8847476686999>

Customer Application

Companies that deploy layers of networking tools often use APIs to collect and centralize monitoring and control. TCS APIs provide programmatic interfaces based on the REST protocol to allow simple integration with third-party monitoring and management tools.

Feature Description

Base Node Configuration

You can now make the following configuration changes to a base node using the NB API:

- **Carrier0 and Carrier1:** Base nodes transmit and receive on two carriers, Carrier0 and Carrier1. Each carrier has a bandwidth of 40 MHz, the center of which is called the center frequency and is the value used for the carrier parameters. Carrier0 and Carrier1 frequency bands cannot overlap.
- **Country:** To accommodate management across multiple regulatory domains, you can enter the country code using this parameter.
- **Height:** This value refers to height above ground level (AGL). Base nodes can determine their height above mean sea level (AMSL) using GPS, and this ASML height is not configurable. However, you can use the API to assign a value for the height above ground level, which is more practical in most cases, and does not affect the ASML value received from GPS. Because only base nodes retrieve the ASML height value from sensors, remote nodes lack this value. Nevertheless, you can assign an AGL height value for remote nodes using this API.
- **Azimuth:** Use this parameter to assign the correct azimuth value of a base node or remote node as measured from true north.
- **Tilt:** You can use this value to assign the tilt of a base node or remote node. Base nodes can retrieve the approximate tilt from GPS, but you can replace this value with one that has previously been measure with an accurate digital level. Remote nodes do not communicate with GPS, so you must assign a tilt value here.
- **CPI ID:** You can use this value to track the certified professional installer (CPI) ID of the installer who installed and set up the base node or remote node.
- **DHCP Relay:** You can set this option using the Add Sector or Update Sector API to activate DHCP Option 82.

- **Circuit ID:** When you activate DHCP Option 82, you must also set this field. Tarana devices use this value to identify one another in a DHCP Option 82 environment.

Network Configuration

Network configuration involves creating and configuring the network topology of Tarana devices. At the top level, a region encompasses the largest area. Regions are divided into markets, which can include entire cities. Markets are divided into sites, each of which marks the geographical location of a single tower or mast. A site can possess multiple cells, and each cell is defined by one to four base nodes sharing the same frequency band. Each base node constitutes a single sector. You can use the API to create, update, and remove network entities.

User Management

In this context, a user is any person who logs in to TCS to perform any function. You can now add, update, and remove users using the API with Op Admin credentials. In addition, you can get the details of one or all existing users and resend the authentication credentials of a user.

Retailer Management

A retailer is a regional service provider that manages customer remote nodes. With Op Admin credentials, you can add, update, and remove retailers using the API as well as get the details of one or all existing retailers.

Usability Enhancements

The following are minor functional, workflow, and visual enhancements to TCS.

Lifetime Peak Throughput

TCS now displays the lifetime peak throughput in megabits per second (Mbps) in the device table under the columns Life Time DL Peak (Mbps) and Life Time UL Peak (Mbps).

RN		BN		0008		Connected Devices	
<input type="checkbox"/>		Serial Number	Hostname	Life Time DL Peak (Mbps)	Life Time UL Peak (Mbps)		
<input type="checkbox"/>		S126F1202200008	sector42	838.21	150.103		

You can also find the lifetime peak throughput of the sector on the base node single device page in the Device Performance widget, which contains the base node and carrier operating details also.

BN Performance		
	DL	UL
Current Rate (Mbps)	0	0
Life Time Peak (Mbps)	838.21	150.103

Message Appearance Improvements

Success messages and error message in TCS have been improved for appearance and readability.

Other Enhancements

The following are minor optimizing or reliability enhancements to TCS.

Parameter Sourcing Improvements

TCS has been improved to ensure the following reported installation parameters are consistent between devices and TCS:

- Latitude
- Longitude

- Height
- Tilt
- Azimuth
- CPI ID

Tilt Tolerance

The tilt tolerance of base nodes has been increased to prevent small changes in tilt due to wind loading or maintenance activity from causing disruptions in service.

Fixed Issues

ID	Description
TCC-11138	When TCS did not receive a spectrum inquiry response from the Spectrum Access System (SAS) within a specified amount of time, the grant was considered unsuccessful and TCS did not re-attempt a spectrum inquiry.
TCC-11172	When carrier grants were suspended, TCS removed grant information.
TCC-11159	When the grant for one base node carrier is terminated, the base node was unable to get a new grant.
TCC-10898	When a device reported an invalid RSSI, TCS sent a heartbeat request that caused SAS to respond with a response code of 102 (Missing Parameter).
TCC-10340	When an administrator attempted to view a remote node web UI, TCS sometimes connected to the incorrect remote node.
TCC-10137	Administrators could set primary base node settings even when the feature was inactive.

Known Limitations

Description
Base nodes cannot accept remote node connections when a grant exists only on Carrier1. Workaround: Set the preferred frequency from Spectrum Management, and then reacquire spectrum.
Remote nodes cannot connect to the base node if the spectrum provided by the SAS for the remote node is different from the base node spectrum. Workaround: Using Spectrum Management, update base node spectrum to match what is available at the remote node.
After an administrator attempts to reacquire spectrum, the CBRS Summary card displays old information. Workaround: The card updates when the spectrum reacquisition is completed in about 30 seconds.
When a remote node disconnects from one base node and connects to another base node on different frequencies, a new grant can take up to 20 minutes. Workaround: Select Reacquire Spectrum to request a new grant immediately.

About Tarana

Tarana Wireless, Inc. is the performance leader in fixed wireless access network solutions, powered by a number of industry-first and well-proven breakthroughs in perfect, multidimensional optimization of radio signals. Its Gigabit 1 fixed access system overcomes previously insurmountable network economics challenges for service providers in both mainstream broadband and underserved markets, using free unlicensed spectrum. The company is headquartered in Milpitas, California, with additional research and development in Pune, India. For more information, visit taranawireless.com.