TARANA

BROADBAND REINVENTED

G1 Device Software Release Notes 1.205.007

vRN-G1-2023-10-v4

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Note: For the most up-to-date manuals, please download the latest version of this document on our customer portal: support.taranawireless.com

Intended Audience

This document is intended for use by system administrators and engineers interested in the design, daily management, operations, and troubleshooting of a Tarana G1 network including Base Nodes, Remote Nodes, and the Tarana Cloud Suite (TCS).

It is assumed that the reader has a good working knowledge of radio frequency (RF), wireless systems, and networking concepts.

The G1 products are designed for installation and use by trained professionals and require adherence to all relevant regulatory, safety, and telecom industry best practice guidelines for outdoor radios. It is assumed that the Tarana G1 Base Node and Remote Nodes have been installed onsite and are connected to the TCS.

Models Supported by Release 1.205.007

Frequency	Device Type	Part Number	Description
5.8 GHz	BN	30-0134-001	5.8 GHz Base Node
	RN	30-0128-001 30-0150-001 30-0160-001	5.8 GHz Residential Node
3.5 GHz	BN	30-0141-001	3.5 GHz CBRS Base Node
	RN	30-0142-001	3.5 GHz CBRS Residential Node
6 GHz	BN	30-0171-001	6 GHz Base Node
	RN	30-0170-001	6 GHz Residential Node

Backward Compatibility

BN ---> / RN	0.988	0.989	0.997	1.205
0.988	✅	✅	✅	✅
0.989	✅	✅	✅	✅
0.997	✅	✅	✅	✅
1.205	✅	✅	✅	✅

- Any device with current software revision 0.988 or higher can be directly upgraded to 1.205.007.
- 1.205.007 is the minimum required software version for 6 GHz devices (30-0171-001 and 30-0170-001).
- Deprecated SW versions : Support / Defect fixes for the following versions will be deprecated:
    - 0.988 - December 31, 2023
    - 0.989 - March 31, 2024

Security Fixes

None

Key Features

#	Description
1	**Support for the new BN and RN part numbers that operate in the 6 GHz spectrum** - UNII-3, UNII-5, UNII-4* and UNII-7 bands - 2 x 40 MHz operation (x1) - Backward compatibility with 5 GHz in the UNII-3 and UNII-4* bands - Integration with domain proxy for AFC operation - Updated Air Interface Protocol (AIP) for increased number of channels in 6 GHz - RN alignment optimization using LEDs (applicable to 30-0170-001 only) - Integrated GPS module on 6 GHz RNs for fixed client mode (36 dBmi)
2	**RN Install Process Improvements** - Priority list for faster search during RN installation - Single-click traffic test on the RN - accessible from the sidebar - Traffic test provides DL/UL SINR for the link being tested - Help page to provide RN Installation Guidance (see details here) - Improvements to entering the install parameters
3	**DeviceUI Enhancements** - Option to toggle the Ethernet port on the RN - Option to turn off port 80 (post-install) - Reset Configuration for BN and RN - Auto logout after 20 mins for security reasons - Auto populate latitude and longitude on 6 GHz RNs
4	**Support for UNII-2C frequencies** - For customers in Nigeria. 5470 MHz - 5725 MHz operation

*Operators need to have an STA from the FCC to operate in UNII-4 (5.850–5.895 GHz)

Other Enhancements

#	Description
G1-19207	Data Path Latency Reduction: RN datapath queue sizes are optimized to reduce the latency.
G1-20021	Metrics sent from the BN for telemetry streaming now include packet counters and MAC address table of the RNs
G1-22523	Radio down alarm is implemented on the BN along with reasons for the reset

Defects Fixed

#	Description
G1-22122	The azimuth value reported on the Device UI was empty when set to 0 from TCS.
G1-21979	Occasionally, the Speed Test launched from TCS would fail.
G1-21096	In rare situations, using untagged data VLAN caused a broadcast storm when the DHCP offers were broadcast.
G1-20949	In rare situations, changing the management VLAN caused incorrect network configuration.
G1-20620	When frequency 5865 MHz was used, the path loss reported was incorrect.
G1-20252	The RN tilt values reported by the BN to TCS were incorrect.
G1-19774	In rare situations, the certificate rotation on the devices failed.
G1-19905	In rare situations, the calibration software caused RNs to reboot.
G1-19650	On clicking the refresh button, the Device UI would display a 404 error.
G1-18885	In some cases, the BN Device UI did not display the RNs in the Connection Summary.
G1-18861	The RN MAC address table was not populated on the BN Device UI.
G1-18934	When one of the carriers was disabled due to lack of grant, the reported aggregate bandwidth was incorrect.
G1-21537	In very rare situations, BNs did not connect back to TCS after a network outage.
G1-21817	If STP packets were accidently sent in the uplink, this caused a network outage.

Known Limitations

#	Description
G1-19650	Device UI does not load on browser refresh. Please login again.
G1-19069	While asymmetric grant allows RNs to have partial spectrum relative to the BN spectrum, in some cases there might be a brief (< 5 mins) link disruption.
G1-19700	The RFC2544 tests will report lower than expected throughput. This is a side effect of changing the buffer sizes for latency reduction. Deep/shallow buffer selection support will be added in a future release.
G1-22890	In some rare cases, upgrading the BN software could fail. Please reboot the BN and try again.
G1-22668	Running a Traffic Test on an RN will fail when another test is already in progress. Please wait for the earlier test to complete before trying again.
G1-21734	In heavy-interference environments, if a Speed test is executed to characterize link performance, the initial results might show lower than expected speeds. Please re-run the test multiple (4 to 5) times. The increased link utilization results in speeding up the link optimization.
G1-22245	When running a Round-trip Throughput Test from the BN Device UI, the latency is incorrectly reported. Please run the Round-trip Latency Test for latency measurements.

Appendix A: RN Installation Guidance

Operator ID	Unique operator ID assigned by Tarana. Please ensure that it is correctly configured (i.e. matches with the BN).
Primary BN (P-BN)	If primary BN (P-BN) is configured, this will be the BN preferred by the RN. If the P-BN is found, the RN will stop searching and connect to the P-BN. If the P-BN is not found by the end of search, the best BN with the highest search metric is selected, as shown in the BN Search History. [Diagnostics Page] **Note:** 1. Set the P-BN only if you know the exact BN that the RN should connect to. 2. Setting an incorrect P-BN will result in the RN waiting 15 minutes (default) to find the P-BN before moving on to alternate BNs. 3. Please delete the P-BN if you didn't intend to set it.
Priority Search List	RN's search time depends on the number of frequencies it has to scan. To shorten the search time, you can select specific frequencies that are used by the nearby BNs. If no BNs are found on the configured prioritized search list, the RN will continue doing the full search on the rest of the frequencies. **Note:** 1. The priority search list doesn't persist across reboots.
RN Search Process	1. The RN will only search for BNs matching the configured operator ID. 2. The RN will first search for its previously connected BN (any BN the RN was previously connected to for at least 6 minutes). 3. Next, the RN will start searching all the frequencies on the "Priority Search List" (if configured). If P-BN is found (if configured), it is selected. Otherwise, the BN with the highest search metric is selected. **Note:** 1. Clicking on 'Search for BNs' will skip step (2) above. 2. Tarana strongly recommends clicking on 'Search for BNs' once the RN is aligned with the intended BN.

Radio States	Searching: The RN will scan through all frequencies and select a BN to connect to. 5 GHz frequencies for full search: 36, Typical time: 3 minutes CBRS frequencies for full search : 29, Typical time: 2.5 minutes 6 GHz frequencies for full search : 55, Typical time 4.5 minutes Note: If the search takes more than 5 minutes, check if the RN is searching for the correct operator ID, is pointed in the right direction, and that the BN is transmitting. Then, click 'Search for BNs'. Calibrating: The RN will tune the transmit and receive radio chains. Typical time: 2 minutes Spectrum Authorization: For CBRS and AFC bands, the spectrum needs to be authorized before transmission. Typical Time: 1 minute Note: 1. If the CBRS SAS responds with IAP or ICP, the spectrum authorization might take longer. 2. If CBRS grants are not authorized, check if the install parameters and the CPI-ID are inputted correctly. Connected: The RN has successfully connected to the selected BN and a dedicated control channel is assigned. **Note:** 1. If the total time to connect takes more than 25 minutes or if the RN does not connect within this time, please contact Tarana Support.
Alignment	During the install, the RN should be aligned in the horizontal (azimuth) and vertical (tilt) direction to maximize the performance of the link. The 'Alignment Metric' gauges the optimal aiming of the RN towards the BN. Installers must aim to maximize this metric to the highest possible value. The minimum recommended value is “10” for the alignment metric. Range - 0 to 30. **Note:** 1. Changing the RN tilt during alignment may have more impact than azimuth. It is recommended to uptilt in steps of 1 degree, whereas the azimuth can be adjusted in steps of 10 degrees. 2. The alignment metric is a relative metric for aligning the RN at a given location and is not an absolute indicator of performance. The value of the alignment metric could be affected by interference. 3. The actual link quality should be estimated based on the Traffic Test results, which display DL/UL SINR, pathloss, and the DL/UL throughput with latency.

Configuration	All of the configurations can also be changed/updated from TCS. If any of the above configurations are changed from TCS, the configurations made at the device will be overwritten by the TCS configuration.