DATA SHEET

THE FUTURE OF BROADBAND IS NEXT-GENERATION FIXED WIRELESS ACCESS (ngFWA)

Overcoming the Limitations of Traditional FWA

TARANA
BROADBAND REINVENTED®



Large portions of both developed and especially developing economies remain underserved in an ongoing digital divide that makes real broadband ever more urgent, as evolving modes of work, education, commerce, health care, and entertainment increase dependence on great connectivity. Copper-based fixed access networks are increasingly exhausted. Wireless alternatives continue to fail in the face of the significant technical challenges in carrier-class fixed access, including pervasive obstructions, spectrum scarcity, interference, changing conditions, and unworkable deployment models.

Tarana innovation has solved all these problems. Our next-generation platform is powered by the results of more than 10 years of focused R&D, and crafted from its custom silicon up to its cloud-based service automation with a completely fresh approach to fixed wireless. Extensively validated by tier-1 operators and well proven in carrier scale networks, our fundamental advances in multi-radio performance completely transform the economics of delivering gigabit-class access. The next-generation solution features the base node (BN), remote node (RN), and Tarana Cloud Suite (TCS) for management.

- Up to 1.6 Gbps Aggregate Capacity per Link[1]
- Up to 6.4 Gbps Capacity per Sector[1]
- Up to 25.6 Gbps Capacity per Cell (4 BNs)[1]
- Up to 512 Clients per Sector[3]
- Up to 2,048 Clients per Cell (4 BNs)[3]
- 5 or 6 GHz (unlicensed) or 3 GHz / CBRS (licensed)
- More Affordable than Fiber
- Works in NLoS and nLoS
- Cancels Interference

[1]With the G2 BN and RNm [3]With future software release



RNm
Multi-band
3, 5, 6 GHz

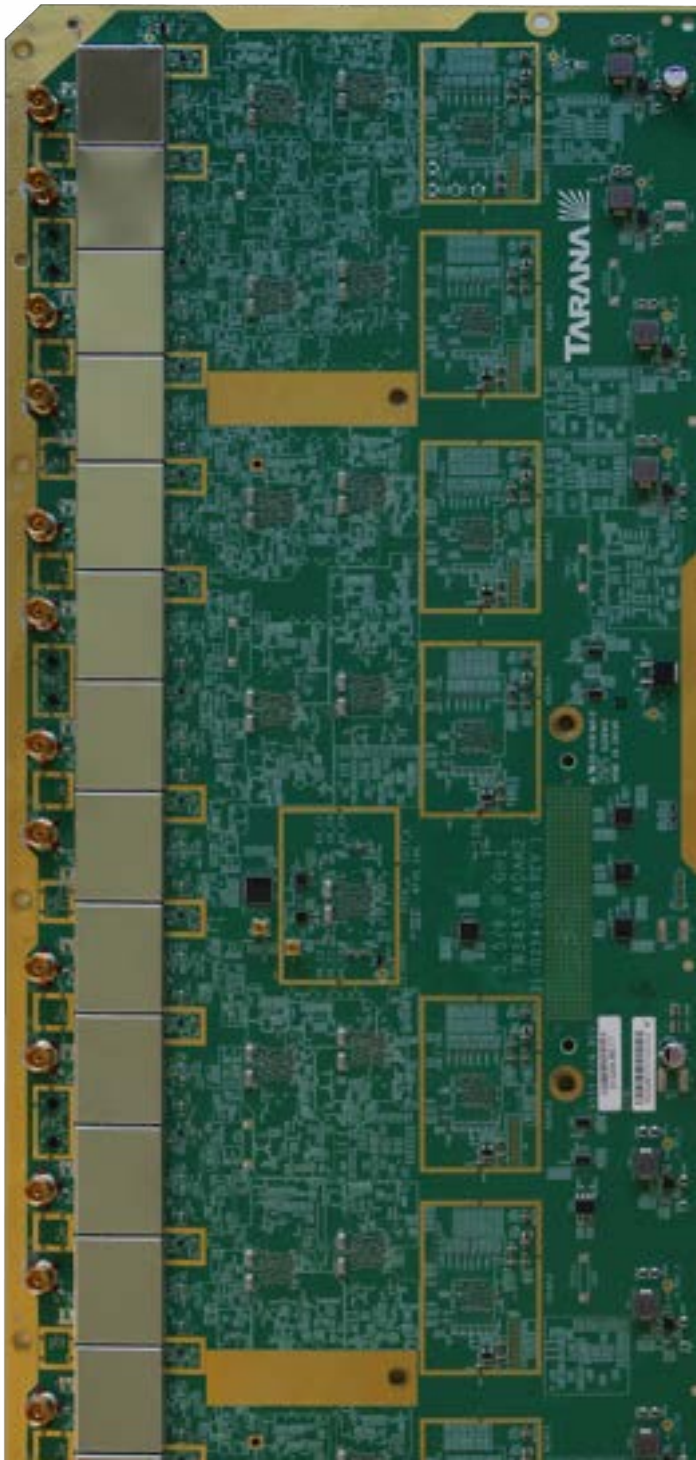
G2 BN
Multi-band
3, 5, 6 GHz

Next-Generation FWA (ngFWA)

Short for next-generation fixed wireless access, ngFWA is an entirely new technology that addresses the drawbacks of traditional fixed wireless access (FWA). Existing FWA approaches are based on technologies that fulfill their original purpose well (4G/5G for mobility and Wi-Fi for indoor networks), but are not as successful at scalable fixed access in mainstream markets. ngFWA delivers fiber-class speeds, high capacity, NLoS/nLoS capabilities, interference cancellation, quick time to market, cost efficiency, and more. To offer fast, affordable access more broadly, the industry needs this new generation of FWA to augment last-mile fiber by meeting a clear set of new requirements.

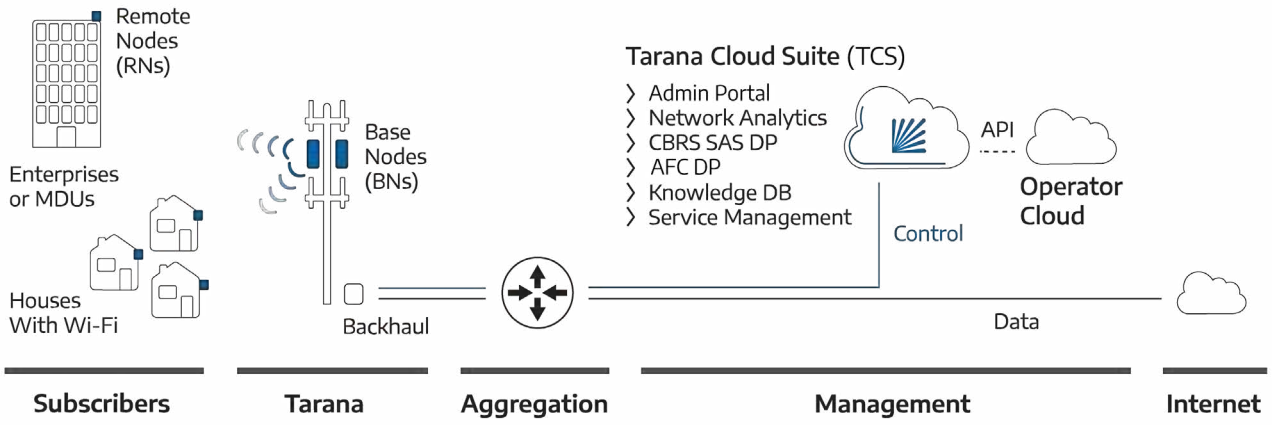
ngFWA Defined

- Fiber-class (100 Mbps to 1 Gbps) per-household speeds and low latency at long range, with support for nearly symmetric service where desired
- High capacity per neighborhood for economically scalable deployment
- Solid connections despite obstacles in the way (like other houses, trees, and vehicles moving on the streets) and interference from other wireless networks
- Consistent service quality throughout the neighborhood, to support clean subscription plan marketing, sales, and fulfillment
- High-quality service delivery in licensed and unlicensed spectrum
- Simple, quick, and easy installation



Network Architecture

Simple, Ethernet-based network architecture, supported by the Tarana Cloud Suite (TCS), enables multiple subscriber access models for highly cost-efficient residential and enterprise service.



Tarana Cloud Suite (TCS)

TCS powers efficient network planning, zero-touch provisioning, SDN management, and support automation.





Subscriber Service Activation

- API support for zero-touch deployment configuration
- Infrastructure authentication
- SLA management

Management and Maintenance

- 24 x 7 x 365 KPI monitoring and management, including historic data
- Fault logging, correction, and reporting
- Firmware and configuration management automation
- End-user login and management with role-based access
- Remote speed test and baseline operations

Radio and Network Planning Integration

- Spectrum management — CBRS, SAS, and AFC domain proxy
- Integration with leading network planning software
- RF utilization heatmap and capacity usage for each sector
- AFC spectrum availability

Fault Management and Network Analytics

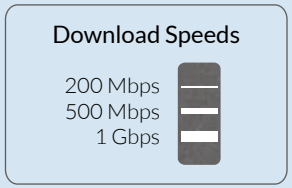
- Alarms and historic events with e-mail alerts and webhook notifications
- Fault analysis and recommended actions
- Insight- and timeline-based event reporting
- Map-driven network analysis

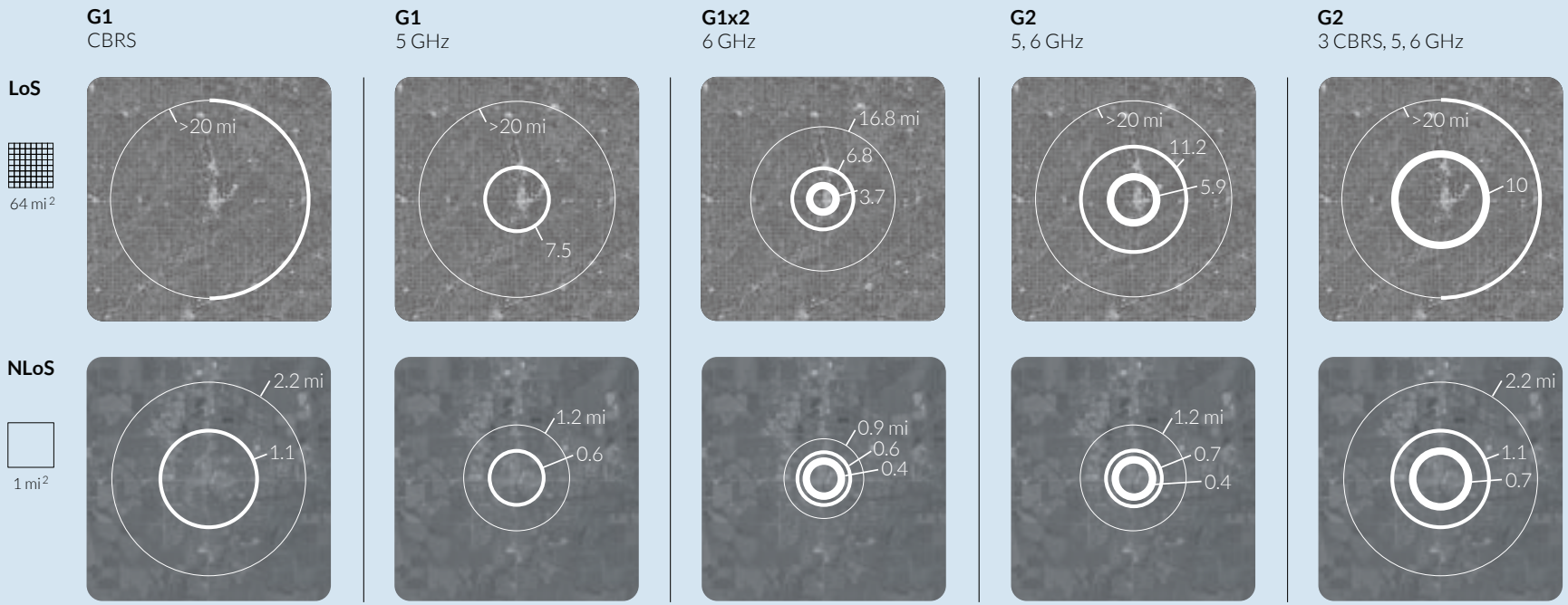
REST API for Carrier System Integration

- Device inventory and network topology
- Subscriber provisioning and billing integration
- Geo-mapping information

G1, G1x2 (4-Carrier Mode), and G2 Rate-Range Profiles

- Mason City, IA (~10k households)
- 40 m vertical asset
- 1.75:1 DL/UL ratio (others also available)





Degree of Link Obstruction

- RN Interference
- Link Interference

35 dB EPL

NLoS

nLoS

0 dB

As measured by Tarana Cloud Suite (TCS) using G1.



Mobile Install App

The Tarana Install app streamlines the installation process for RNs (remote nodes), cutting install times and reducing the likelihood of errors without the need to carry around a laptop. The app is designed to work independently of any tool, providing ease of use and convenience for installers. With the app, a technician can easily:

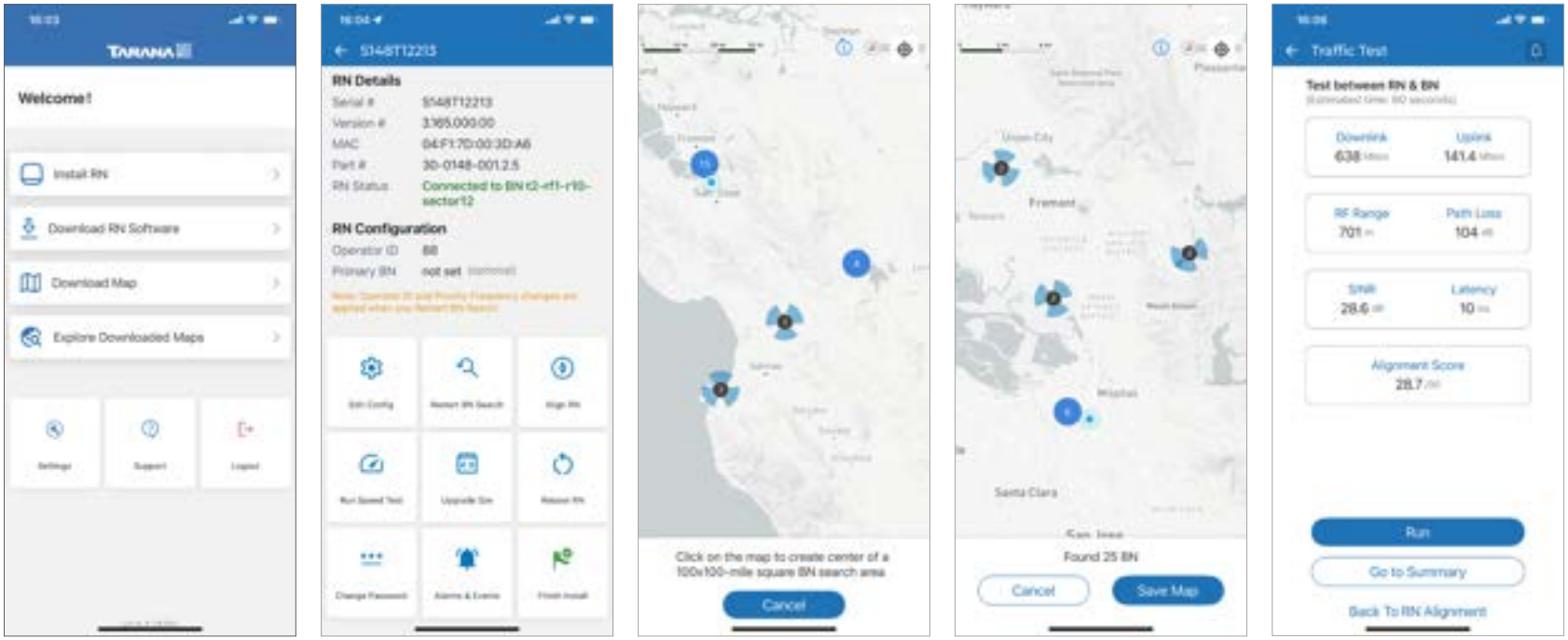
- Scan, connect, align, and install RNs
- Download a map of the installation area and save it for offline use
- Determine nearby base nodes on the map
- Set primary base node
- Update firmware
- Set a preferred frequency list to search
- Test link performance
- Integrate with TCS and manage CPI ID information

Get the Install App

Download on the App Store

GET IT ON Google Play

All of this is performed from the convenience of an iOS or Android device using a wired or wireless connection.



ngFWA Performance in the Real World

As the chart below shows, our operators are taking full advantage of the interference cancellation and non-line-of-sight performance features of our platform to deliver fiber-class throughput even in challenging situations.

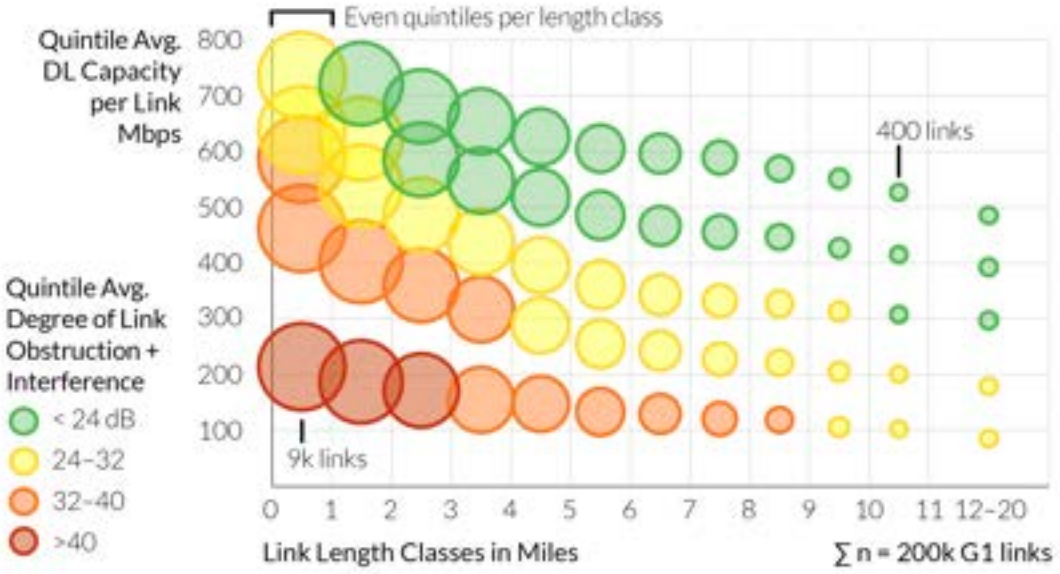
Tarana's ngFWA platform is now powering over 300 networks across 24 countries and nearly every U.S. state. To see what this means in practice, we analyzed 200k production links as reported through the Tarana Cloud Suite (TCS). Links are grouped into mile-wide length classes, and then further grouped into quintiles based on link performance and challenges.

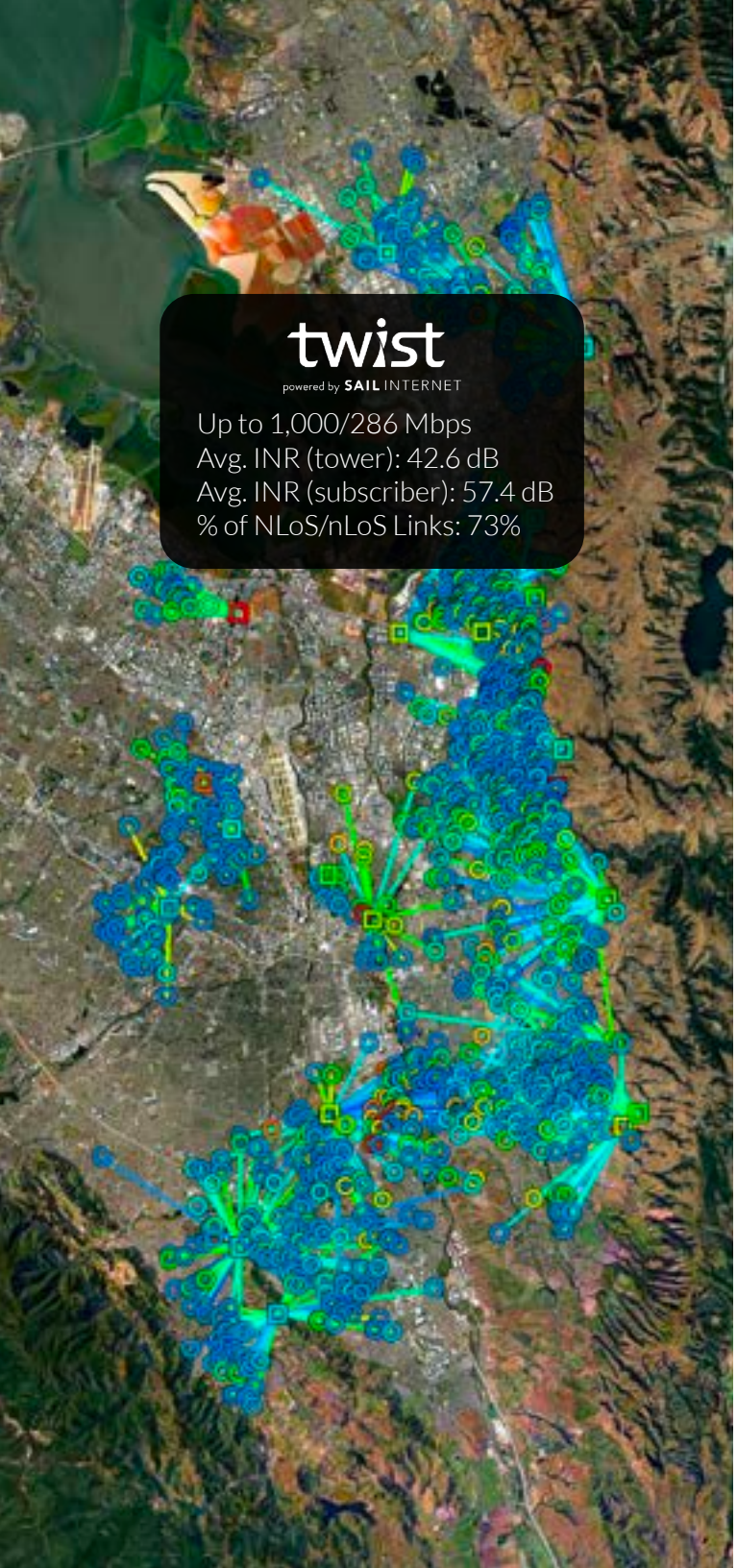
The results highlight our unique differentiators:

- High capacity at long distances: Even at ranges of 10+ miles, operators are consistently delivering multi-hundred Mbps downlink speeds.
- Strong performance under interference and obstruction: Despite non-line-of-sight conditions and interference, we see 500+ Mbps on many links.
- Predictable performance: High throughput is not limited to "ideal" cases, but is rather the norm for Tarana ngFWA links.

Across the sampled 200k connections, the average capacity is an unprecedented 450/108 Mbps for all conditions and links. For our ISPs, ngFWA is enabling fiber-class service today even in environments where legacy fixed wireless access fails. This, in turn, brings new revenue opportunities by reaching more subscribers faster, at lower cost, and without sacrificing reliability.

G1 Capacity Profile (200k Links)





Increasing Competition with ngFWA

Tarana's ngFWA delivers fiber-class broadband at wireless economics, giving our ISPs a faster, lower-risk way to enter and compete in established markets without waiting the years typically necessary for fiber builds.

With Tarana, overbuilders can:

- Get to market faster: Tarana's ngFWA can be deployed in months, not years, with lightweight permitting and rapid turn-up. This means paying customers are brought online quickly and accelerate revenue.
- Scale from rural to urban: With support for up to 250 subscribers per sector with G1, Tarana can support everything from rural to dense, urban deployments that require thousands of subscribers per tower.
- Deliver performance that sells: Gigabit-class speeds, very low latency, and high reliability enable premium tiers and sticky service that stands up to wireline competitors.

Field-proven in Dense, Competitive Markets

Twist overbuilds in urban neighborhoods where consumers often have little choice in broadband providers. Using Tarana G1 in x2 mode, Twist is delivering an average of 650/152 Mbps in busy, interference-heavy areas like the San Francisco Bay Area — a level of performance that creates real switching opportunities and keeps churn low.

The Twist network would not be possible without Tarana's hallmark innovations:

- Advanced interference cancellation for crowded RF environments
- Non-line-of-sight (NLoS) performance through foliage and around buildings
- High-capacity sectors that maintain throughput at scale
- Wireless economics that shorten payback and keep expansion flexible

Specifications

General

G1 radio network platform	Base node (BN) Remote node (RN) Tarana Cloud Suite (TCS)
Topology	Scheduled, concentrated multi-point
Duplexing	TDD
Downlink/uplink ratios (configurable network-wide)	Network profile 1 (up to 15 km range) → 4.5:1 Network profile 2 (up to 30 km range) → 4:1 Network profile 5 (up to 15 km range) → 2.67:1 Network profile 6 (up to 15 km range) → 1.75:1
SLA profiles	Configurable per RN
Modulation	QPSK 1/2 to 256QAM 7.35/8 UL/DL
Spectral efficiency	30 bps/Hz per BN, up to 90 bps/Hz per band, configuration dependent
Range (full rate, frequency dependent)	NLoS (non-line-of-sight) – up to 3 km (varies depending on vertical asset height, frequency band, morphology, and target cell-edge data rate) LoS (line-of-sight) – up to 30 km (varies depending on vertical asset height, frequency band, morphology, and target cell-edge data rate)
Recommended frequency reuse factor	Universal frequency reuse (k=1), enabled by advanced self-interference cancellation
Beamforming	Auto-convergent, retro directive
Interference management	Self-interference cancellation, Advanced Burst Interference Cancellation (ABIC)
VLANs	Per BN or RN for user data, and management VLAN, Subscriber VLAN pass through
QoS	DSCP, VLAN 802.1p
Latency	<5 ms (one way average)
Max Ethernet MTU	2,048 bytes; 1792 bytes for the G2 BN-3+6
Compliance	RSS-247, FCC 15E, FCC Part 96, WINNF-TS-0122
Standards and safety	IEC 62368-1, IEC 60529, IEC 60950-1, IEC 60950-22
Data plane security	RF link encryption, AES-128
Tarana Cloud Suite (TCS)	Scalable microservices based multi-tenant network management Zero-touch provisioning and control of radios with streaming telemetry Firmware and configuration management 24x7x365 KPI monitoring and management Fault management and historical events Network analytics SAS and AFC domain proxy Northbound Rest-API for customer and operator portal (B/OSS)
Operating temperature range	-40°C to 55°C (-40°F to 131°F)

Base Nodes (BNs)

		G1 BN-3	G1 BN-5	G1 BN-6	G2 BN-3+6
Frequency support (subject to local regulations)		3.550–3.700 GHz (US CBRS, Cat B)	5.150–5.250 GHz (UNII-1 FCC/ISED) 5.725–5.850 GHz (UNII-3 FCC/ISED) 5.850–5.895 GHz (UNII-4 FCC)[3]	5.725–5.850 GHz (UNII-3 FCC/ISED) 5.850–5.895 GHz (UNII-4 FCC)[3] 5.925–6.425 GHz (UNII-5 FCC) 6.525–6.865 GHz (UNII-7 FCC)	3.550–3.700 GHz (US CBRS, Cat B) 5.725–5.850 GHz (UNII-3 FCC/ISED) 5.850–5.895 GHz (UNII-4 FCC)[3] 5.925–6.425 GHz (UNII-5 FCC) 6.525–6.865 GHz (UNII-7 FCC)
Throughput (aggregate PHY maximum)	Per link	800 Mbps	800 Mbps	800 Mbps / 1.6 Gbps[1, 2]	1.6 Gbps[1, 2]
	Per BN	2.4 Gbps	2.4 Gbps	2.4 Gbps / 3.2 Gbps[1, 2]	6.4 Gbps
	Per cell (4 BNs)	9.6 Gbps	9.6 Gbps	9.6 Gbps / 12.8 Gbps[1, 2]	25.6 Gbps
Maximum number of RNs	Per BN	250	250	250	512[4]
	Per cell (4 BNs)	1,000	1,000	1,000	2,048[4]
Channel bandwidth		80 MHz (2 x 40 MHz)	80 MHz (2 x 40 MHz)	80 MHz (2 x 40 MHz) / 160 MHz (4 x 40 MHz)[1, 2]	160 MHz (4 x 40 MHz)
MU-MIMO streams (maximum)	Per BN	6	6	6 / 4[1, 2]	8
	Per cell (4 BNs)	24	24	24 / 16[1, 2]	32
Antenna		Fully integrated			
Model numbers		G1-BN3ASI001	G1-BN5ASI002	G1-BN6ASI002	G2-BNF356900
Weight		42 lbs (19 kg)	42 lbs (19 kg)	42 lbs (19 kg)	48.6 lbs (22 kg)
Dimensions (H x W x D)		16.6 x 21.2 x 5.1 in (422 x 539 x 130 mm)	16.6 x 21.2 x 4.7 in (422 x 539 x 119 mm)	16.6 x 21.2 x 4.7 in (422 x 539 x 119 mm)	19 x 24.5 x 6 in (483 x 622 x 152 mm)
Power consumption (typical at 55°C)		275 W	275 W	275 W	420 W
Power input		-48V DC typical (-44 to -58V DC operating range)			
Mounting		Saddle clamp, band clamps for pole mount (2.375–5 inches OD); mount weighs 12 lbs			
Form factor		Outdoor micro enclosure with fully-integrated antenna, RF, GPS, and baseband; 360° coverage with 4 BNs			
Interfaces		Dual 10 Gbps SFP+ and single 1 Gbps data interfaces, additional 1 Gbps management Ethernet interface, -48V DC power			
Environmental rating		IP67			

[1] With the RNm [2] In x2 (4-carrier) mode with select 6 GHz product models [3] Operators need to have an STA from the FCC to operate in UNII-4 (5.850–5.895 GHz) [4] With future software release

Remote Nodes (RNs)

	RN-3	RN-5	RN-6	RNv-6	RNm-3+6
Frequency support (subject to local regulations)	3.550–3.700 GHz (US CBRS, Cat B)	5.150–5.250 GHz (UNII-1 FCC/ISED) 5.725–5.850 GHz (UNII-3 FCC/ISED) 5.850–5.895 GHz (UNII-4 FCC)**	5.725–5.850 GHz (UNII-3 FCC/ISED) 5.850–5.895 GHz (UNII-4 FCC)[3] 5.925–6.425 GHz (UNII-5 FCC) 6.525–6.865 GHz (UNII-7 FCC)	5.725–5.850 GHz (UNII-3 FCC/ISED) 5.850–5.895 GHz (UNII-4 FCC)[3] 5.925–6.425 GHz (UNII-5 FCC) 6.525–6.865 GHz (UNII-7 FCC)	3.550–3.700 GHz (US CBRS, Cat B) 5.725–5.850 GHz (UNII-3 FCC/ISED) 5.850–5.895 GHz (UNII-4 FCC)[3] 5.925–6.425 GHz (UNII-5 FCC) 6.525–6.865 GHz (UNII-7 FCC)
Deployment morphology / Use case	LoS, nLoS, NLoS (Highest range)	LoS, nLoS, NLoS (Free licensed spectrum available)	LoS, nLoS, NLoS (Gigabit speeds & largest spectrum selection)	LoS, nLoS (Value offering & largest spectrum selection)	LoS, nLoS, NLoS (Gigabit speeds and largest spectrum selection)
Throughput (aggregate)	800 Mbps	800 Mbps	1.6 Gbps[1,2]	800 Mbps	1.6 Gbps[1,2]
Channel bandwidth	80 MHz (2 x 40 MHz)	80 MHz (2 x 40 MHz)	80 MHz (2 x 40 MHz) / 160 MHz (4 x 40 MHz)[1,2]	80 MHz (2 x 40 MHz)	80 MHz (2 x 40 MHz) / 160 MHz (4 x 40 MHz)[1,2]
MIMO streams	1x1, 2x2	1x1, 2x2	1x1, 2x2, 4x4[1,2]	1x1, 2x2	1x1, 2x2, 4x4
Model numbers	G1-RN3AHB012	G1-RN5AHB012 G1-RN5ASI012	G1-RN6AHB012	G1-RN6AHI042	GX-RN8356900
Compatible BNs (base nodes)	CBRS	5 GHz & 6 GHz	5 & 6 GHz (only UNII-3,4 for 5 GHz)	5 & 6 GHz (only UNII-3,4 for 5 GHz)	All G1 and G2 models
Weight	6 lbs (2.7 kg)	4.9 lbs (2.2 kg) (G1-RN5AHB012) 6.5 lbs (2.9 kg) (G1-RN5ASI012)	5 lbs (2.3 kg)	6 lbs (2.7 kg)	6.5 lbs (3 kg)
Dimensions (H x W x D)	11 x 12.5 x 3.3 in (279 x 318 x 84 mm)	11.5 x 11.2 x 2.9 in (292 x 284 x 74 mm) (G1-RN5AHB012) 11 x 12.5 x 3 inches (279 x 318 x 76 mm) (G1-RN5ASI012)	10.3 x 11.3 x 2.1 in (262 x 287 x 53 mm)	17.5 x 8.7 x 2.2 in (445 x 221 x 56 mm)	11.5 x 11.8 x 2.9 in (292 x 300 x 74 mm)
Power consumption (typical at 55°C)	45 W	40 W	40 W	32 W	50 W
Power input	48V 802.3bt PoE, type 3, part #44-0027-001 or #44-0037-001 (For G1-RN5ASI012, use 48V PoE part #44-0017-001)				48V 802.3bt PoE, type 3, part #44-0037-001
Mounting	Band clamp for pole mount (1.5–2.5 inches OD); mount weights 1.2 lbs				

[1] With G2 BN [2] In x2 (4-carrier) mode with select 6 GHz product models [3] Operators need to have an STA from the FCC to operate in UNII-4 (5.850–5.895 GHz)

Remote Nodes (RNs) (cont.)

	RN-3	RN-5	RN-6	RNv-6	RNm-3+6
Form factor	Outdoor, single enclosure with fully-integrated antenna, RF, and baseband				
Antenna	Fully integrated				
Interfaces	1 Gbps Ethernet interface with PoE support, RJ45 pinout T568B				
Environmental rating	IP66	IP66	IP66	IP66	IP67

Tarana's mission is to accelerate the deployment of fast, affordable, and reliable internet access around the world. Through a decade of R&D and over $400M of investment, the Tarana team has created and continues to enhance a unique suite of next-generation fixed wireless access (ngFWA) technologies. Its G1 and G2 platforms deliver game-changing advances in broadband economics in mainstream and underserved markets, using both licensed and unlicensed spectrum. Tarana's ngFWA technology has been embraced by more than 300 service providers in 24 countries. Tarana is headquartered in Milpitas, California, with additional research and development in Pune, India.

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