



INFINET
wireless



Infinet Wireless

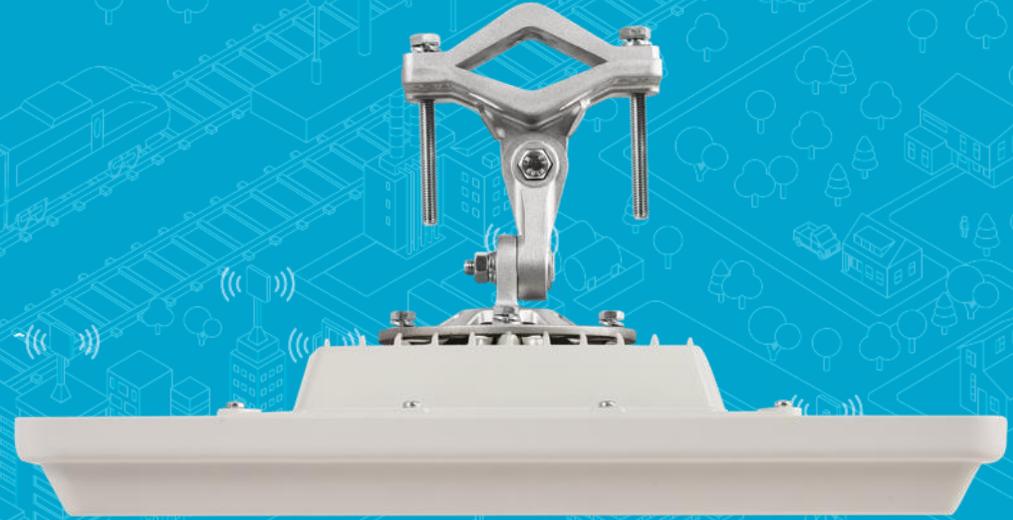
Fixed Wireless Access For
Electricity Industry

About



Infinet Wireless

The world's leading developer and manufacturer of Broadband Wireless Access solutions which are used to create carrier-grade wireless backbones and access networks for service providers.



More than 500,000
deployments in
over 130 countries



2,300 square
meters of own
production facilities



180
employees



30 offices around
the world, in the
strategically
important
countries



100+ major
distributors all over
the world

Infinet Solutions Provides Connectivity to the Electricity Industry



Electricity generation

Mining companies, law enforcement authorities.



Electric power transmission and distribution

Transport Agencies, Railways, Metro systems.



Electricity supply

Private vessels, ports, military vessels.

Applications



Electricity generation

- Point-to-Point solutions for communication with remote substations.
- Point-to-Multipoint solutions for CCTV monitoring at power station facilities.
- Point-to-Multipoint solutions for redundancy of data links across automation systems.

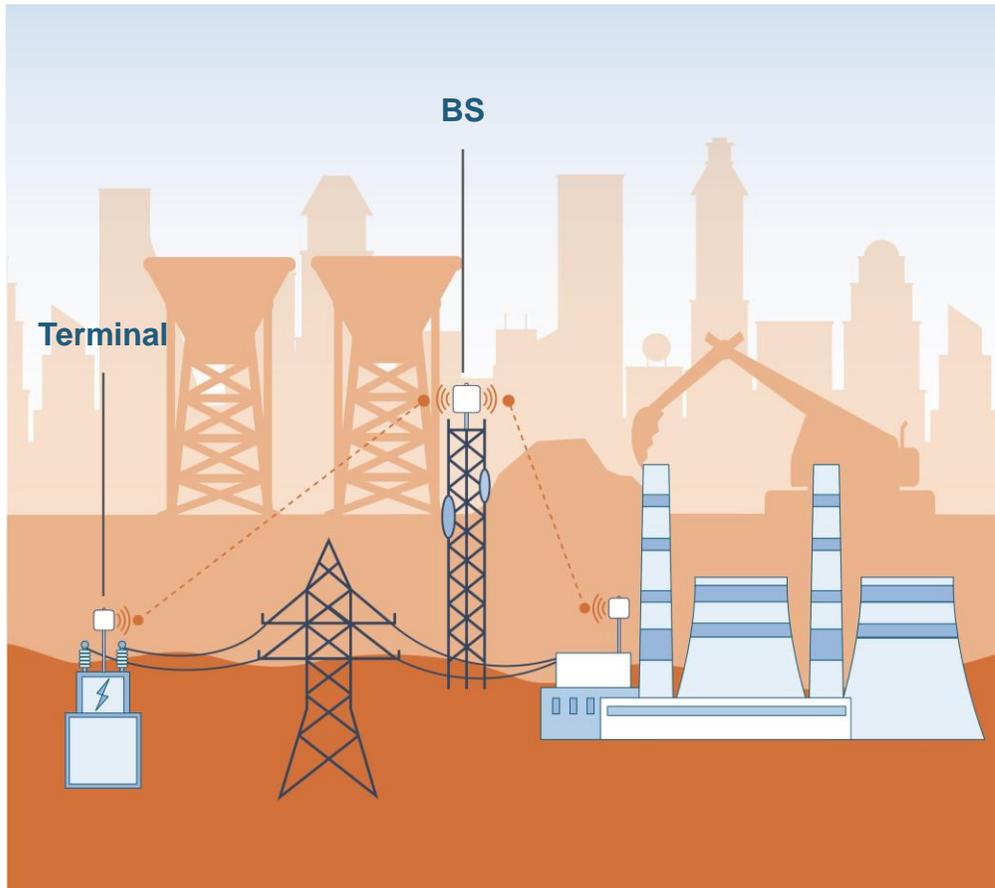
Electricity power transmission and distribution

- Point-to-Multipoint solutions for data acquisition from remote locations for automated electrical power fiscal metering systems.
- Point-to-Point solutions for communication with regional electricity grids (e.g. distribution zones, regional dispatch offices).
- Point-to-Point links between relays of mobile wireless communication networks.

Electricity supply

- Point-to-Multipoint solutions for telemetry data acquisition from users' electricity supply meters.
- Point-to-Multipoint solutions to organize links as an alternative to leased lines.
- Point-to-Multipoint solutions link Smart Grid systems.

Communication With Transformer Substations



Applications

- Region/citywide single infrastructure for the connection between remote sites.
- Telemetry data acquisition, and real-time video streams.
- Robust communication at distances of up to 30 km in Point-to-Multipoint topology.

Infinet Wireless Solutions

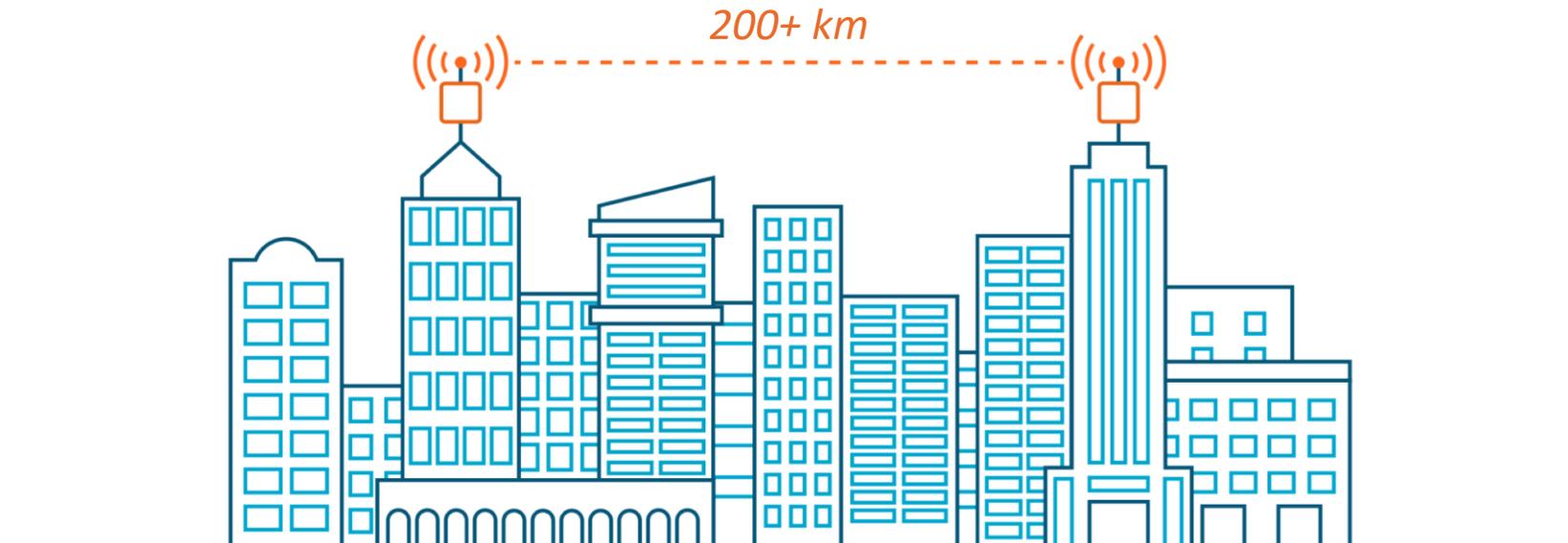


A complete range of wireless solutions for both PtP and PtMP fixed wireless deployments

Point-to-Point Wireless Solution



- 1 Real throughput – **up to 1 Gbps**
- 2 Single hop distance – **200+ km**
High-gain external antennas
- 3 Unlimited number of hops
- 4 Full QoS support
- 5 LOS/nLOS/NLOS connectivity
- 6 Flexible frequency planning



Quanta 5 & Quanta 6 – high-powered spectral efficient PtP solutions



- 1 Outstanding performance in high interference environments
- 2 Consume 30% less spectrum for the same capacity
- 3 Transmit power in a top-speed mode is 6 dB higher than other solutions

Quanta 5 & Quanta 6 help to build a high capacity last mile or a backhaul in a noisy environment.

NEW Octopus SDR



Quanta 70 – interference-less last mile access



- 1 Advanced radio signal processing algorithms ensure the wireless link robustness to precipitation
- 2 Extremely accurate and easy adjustment on azimuth and elevation thanks to precision mounting kit and RSSI indicator
- 3 Small form factor model allows low visual impact deployments

Quanta 70 has been designed for the last mile access and “light” trunk channels in the 70.5–76 GHz frequency range with the throughput of up to 480 Mbps.

NEW

Octopus SDR



InfiLINK Evolution – next generation system for last mile access



- 1 Works in 4.9–6.4 GHz frequency bands
- 2 Thanks to a built-in firewall and rich security features, traffic safety is under control
- 3 Create expert-level network design with advanced switching and routing features

InfiLINK Evolution allows building stable high-capacity last mile access in 4.9–6.4 GHz bands. It comes with network router functionality, security features, traffic shaping and prioritization.



Infinet Wireless Point-to-Point Portfolio at a Glance



Product Family	Key Features	Frequency Bands
InfiLINK XG 1000 	<ul style="list-style-type: none">• Transmit power up to 25 dBm• Net throughput up to 1 Gbps• 2xGigabit Ethernet & SFP interfaces• TDD sync	<ul style="list-style-type: none">• 5 GHz
Quanta 5 & Quanta 6 	<ul style="list-style-type: none">• Transmit power up to 27 dBm• Net throughput up to 650 Mbps• Gigabit Ethernet & SFP interfaces	<ul style="list-style-type: none">• 5 GHz• 6 GHz
Quanta 70 	<ul style="list-style-type: none">• Transmit power up to 11 dBm• Net throughput up to 480 Mbps• Gigabit Ethernet & SFP interfaces	<ul style="list-style-type: none">• 70 GHz
InfiLINK Evolution 	<ul style="list-style-type: none">• Transmit power up to 25 dBm• Net throughput up to 670 Mbps• Gigabit Ethernet interface	<ul style="list-style-type: none">• 5 GHz• 6 GHz

InfiLINK XG 1000 Product Portfolio



Models	Xm			Um
				
5 GHz	23 dBi 25 dBm	26 dBi 25 dBm	28 dBi 25 dBm	2x type-N 25 dBm
Capacity	QAM16: up to 370 Mbps; QAM64: up to 630 Mbps; QAM256: up to 1000 Mbps			
Channel Widths	2x10/2x20/2x40 MHz			
Duplex Modes	TDD Hybrid FDD			
TDD Sync	Via built-in or external (ANT-SYNC) GPS receiver			
Ethernet	2x Gigabit Ethernet, SFP interface			
Distance	10–20 km (max 25 km)	12–30 km (max 40 km)	15–40 km (max 50 km)	60+ km

Quanta 5 & Quanta 6 Product Portfolio



	Q5-18 Q6-18	Q5-23	Q5-25 Q6-25	Q5-28 Q6-28	Q5-E Q6-E
Models					
5 GHz	18 dBi 27 dBm	23 dBi 27 dBm	25 dBi 27 dBm	28 dBi 27 dBm	2x type-N 27 dBm
6 GHz	18 dBi 27 dBm		25 dBi 27 dBm	28 dBi 27 dBm	2x type-N 27 dBm
Capacity	650 Mbps				
Instant DFS	Supported, 5 GHz only				
Channel Widths	3.5/5/7/10/14/15/20/28/30/40/50/56 MHz				
Duplex Modes	TDD, Hybrid FDD (5 GHz only)				
Network Functionality	VLAN, QoS				
Ethernet	1x Gigabit Ethernet	Combo: 1xGE(RJ45), 1xSFP			
Distance	Up to 20 km	Up to 40 km	Up to 60 km	Up to 80 km	200+ km

Quanta 70 Product Portfolio



	Q70-39	Q70-50
Models		
Frequency range	70.5–76 GHz	
Antenna gain Transmit power	39 dBi 11 dBm	50 dBi 11 dBm
Capacity	480 Mbps	
Channel Widths	125 MHz	
Duplex Mode	TDD	
Interference Mitigation Techniques	ARQ	
Network Functionality	VLAN, QoS	
Ethernet	Combo: 1x Gigabit Ethernet port (RJ45), 1x SFP	
Distance	Up to 10 km	Up to 20 km

InfiLINK Evolution Product Portfolio



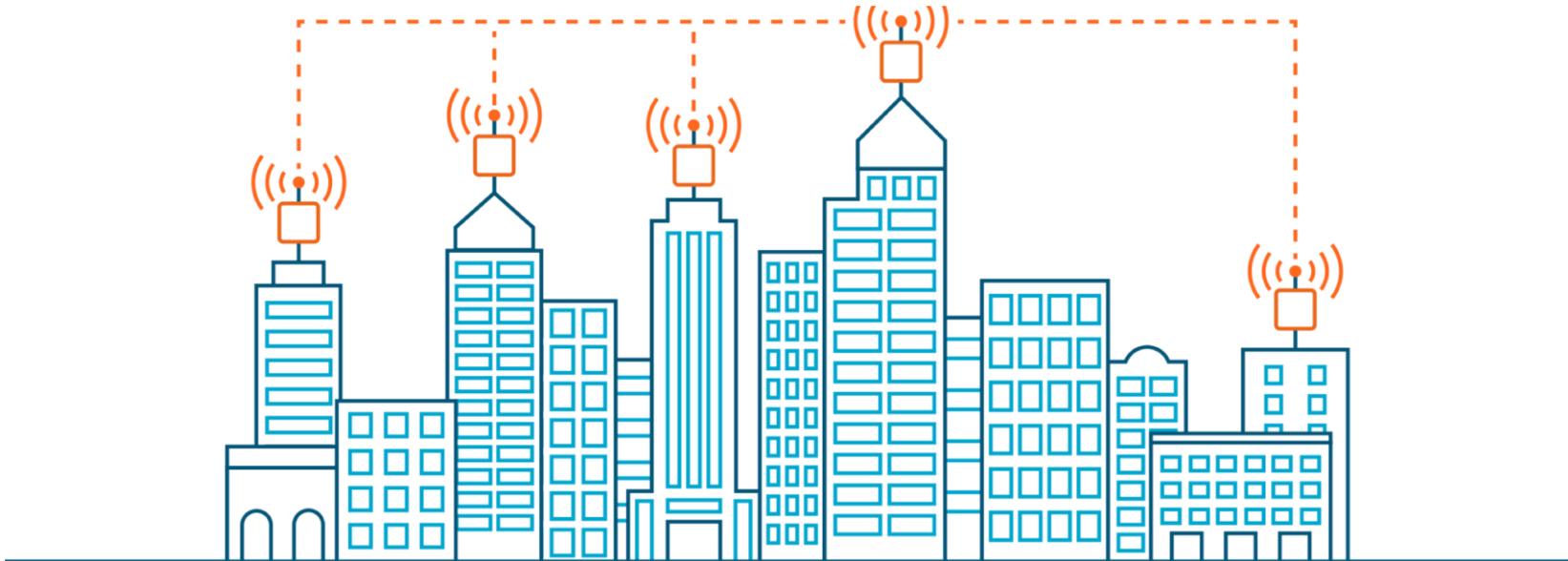
	E5-ST18 E6-ST18	E5-ST23	E5-ST25 E6-ST25	E5-ST28 E6-ST28	E5-STE E6-STE
Models					
5 GHz	18 dBi 25 dBm	23 dBi 25 dBm	25 dBi 25 dBm	28 dBi 25 dBm	2x type-N 25 dBm
6 GHz	18 dBi 25 dBm		25 dBi 25 dBm	28 dBi 25 dBm	2x type-N 25 dBm
Capacity	670 Mbps				
Channel Widths	20/40/80 MHz				
Duplex Modes	TDD				
Interference Mitigation Techniques	ARQ				
Network Functionality	VLAN, QoS				
Ethernet	1x Gigabit Ethernet				
Distance	Up to 10 km	Up to 15 km	Up to 20 km	Up to 30 km	40+ km

* Roadmap item

Point-to-Multipoint Wireless Solution



- 1 BS sector coverage: up to **40 km**
- 2 Sector Capacity: up to **800 Mbps**
- 3 Subscriber terminal capacity: in excess of **670 Mbps**
- 4 **TDD** synchronization and frequency reuse
- 5 **QoS** support
- 6 Sophisticated **L2/L3/L4 networking** functionality
- 7 **Interference mitigation** tools



InfiMAN Evolution – highly secured next-generation PtMP solution



- 1 Subscriber terminals work in 4.9–6.4 GHz frequency bands
- 2 Thanks to a built-in firewall and rich security features, traffic safety is under control
- 3 Value for money thanks to advanced switching and routing features
- 4 Compatible with base station sectors and subscriber terminals of the previous generation
- 5 Cost-effective base station for low-density sectors

InfiMAN Evolution allows to build stable high-capacity connectivity in 4.9–6.4 GHz bands. It comes with rich network router functionality, security features, traffic shaping and prioritization.



Base Station Sectors InfiMAN Evolution at a Glance



Product Family	Key Features	Key Features
InfiMAN Evolution E-BSI 	<ul style="list-style-type: none"> • Integrated 90 deg sector antenna • Sector throughput up to 800 Mbps • Gigabit Ethernet interface & SFP & SYNC 	<ul style="list-style-type: none"> • 5 GHz • 6 GHz
InfiMAN Evolution E-BSI-L 	<ul style="list-style-type: none"> • Integrated 90 deg sector antenna • Sector throughput up to 360 Mbps • Gigabit Ethernet interface & SFP & SYNC 	<ul style="list-style-type: none"> • 5 GHz
InfiMAN Evolution E5-BSQ 	<ul style="list-style-type: none"> • Integrated 90 deg sector beamforming antenna • Sector throughput up to 800 Mbps • Gigabit Ethernet interface & SFP & SYNC 	<ul style="list-style-type: none"> • 5 GHz
InfiMAN Evolution E-BSE 	<ul style="list-style-type: none"> • External antenna • Sector throughput up to 800 Mbps • Gigabit Ethernet interface & SFP & SYNC 	<ul style="list-style-type: none"> • 5 GHz • 6 GHz
InfiMAN Evolution E-BSE-L 	<ul style="list-style-type: none"> • External antenna • Sector throughput up to 360 Mbps • Gigabit Ethernet interface & SFP & SYNC 	<ul style="list-style-type: none"> • 5 GHz

InfiMAN Evolution Base Station Sectors



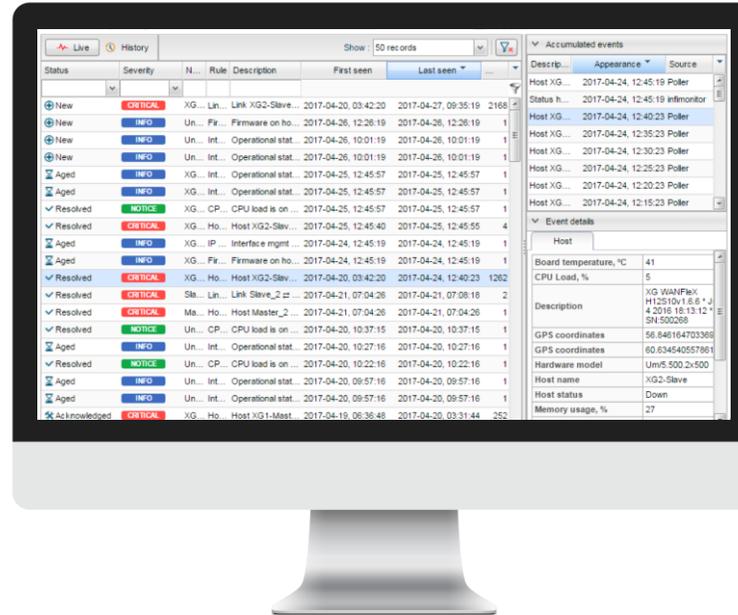
	E5-BSI E6-BSI	E5-BSQ	E5-BSE E6-BSE	E5-BSI-L	E5-BSE-L
Models					
5 GHz	16 dBi, 90° 27 dBm	21 dBi, 90° 25 dBm	2x type-N 27 dBm	16 dBi, 90° 27 dBm	2x type-N 27 dBm
6 GHz	16 dBi, 90° 25 dBm		2x type-N 25 dBm		
Capacity	Up to 800 Mbps, net			Up to 360 Mbps, net	
Channel Widths	20/40/80 MHz			20/40 MHz	
Modulation coding schemes	9 MCS – from BPSK 1/2 to QAM256 5/6				
Duplex scheme	TDD				
Ethernet	Gigabit Ethernet & SFP & SYNC				

InfiMAN Evolution Subscriber Terminals



	E5-ST18 E6-ST18	E5-ST23	E5-ST25 E6-ST25	E5-ST28 E6-ST28	E5-STE E6-STE
Models					
5 GHz	18 dBi 25 dBm	23 dBi 25 dBm	25 dBi 25 dBm	28 dBi 25 dBm	2x type-N 25 dBm
6 GHz	18 dBi 25 dBm		25 dBi 25 dBm	28 dBi 25 dBm	2x type-N 25 dBm
Capacity	20/50/670 Mbps, net (20/50/670 Mbps bitrate) – license upgradeable				
Channel Widths	20/40/80 MHz				
Modulation coding schemes	9 MCS – from BPSK 1/2 to QAM256 5/6				
Duplex scheme	TDD				
Ethernet	1x Gigabit Ethernet				

InfiMONITOR



Key features

Host data

- Display of key parameters values in real time

Link data

- Ability to view detailed information about downlink and uplink streams

Incidents

- Display of events in the feed with priority and object for which the event was created
- Ability to assign individual rules for creating events for different groups of hosts
- Email notifications about events to the employees in charge

Charts

- Charts with different parameters for hosts and links within arbitrary period of time

Automatic discovery

- Automatic discovery and adding of hosts and links from the same MINT network

Management & Operations



Unit Level

Web GUI

- ▶ Device settings
- ▶ Detailed statistics and diagnostics data
- ▶ Visual spectrum analysis, antenna alignment and throughput measurement

- ▶ Maintenance:
 - configuration/firmware upload/backup
 - factory reset
- ▶ Secure access using HTTPS protocol

Telnet/SSH

- ▶ In-depth configuration, diagnostics, monitoring and maintenance for advanced users, full functionality available

Network Level

InfiMONITOR – monitoring system

- ▶ Display of the wireless network structure with metrics about hosts and links in real time on the network map
- ▶ Creation of diagrams based on different parameters of hosts and links
- ▶ Automatic tracking of changes and creation of events according to the configured rules
- ▶ Email notifications to the employees in charge about critical events
- ▶ Lists of hosts and links with ability to view values of all parameters
- ▶ Automatic discovery of hosts and connections between them using WANFlex OS features, which provide information on neighboring hosts

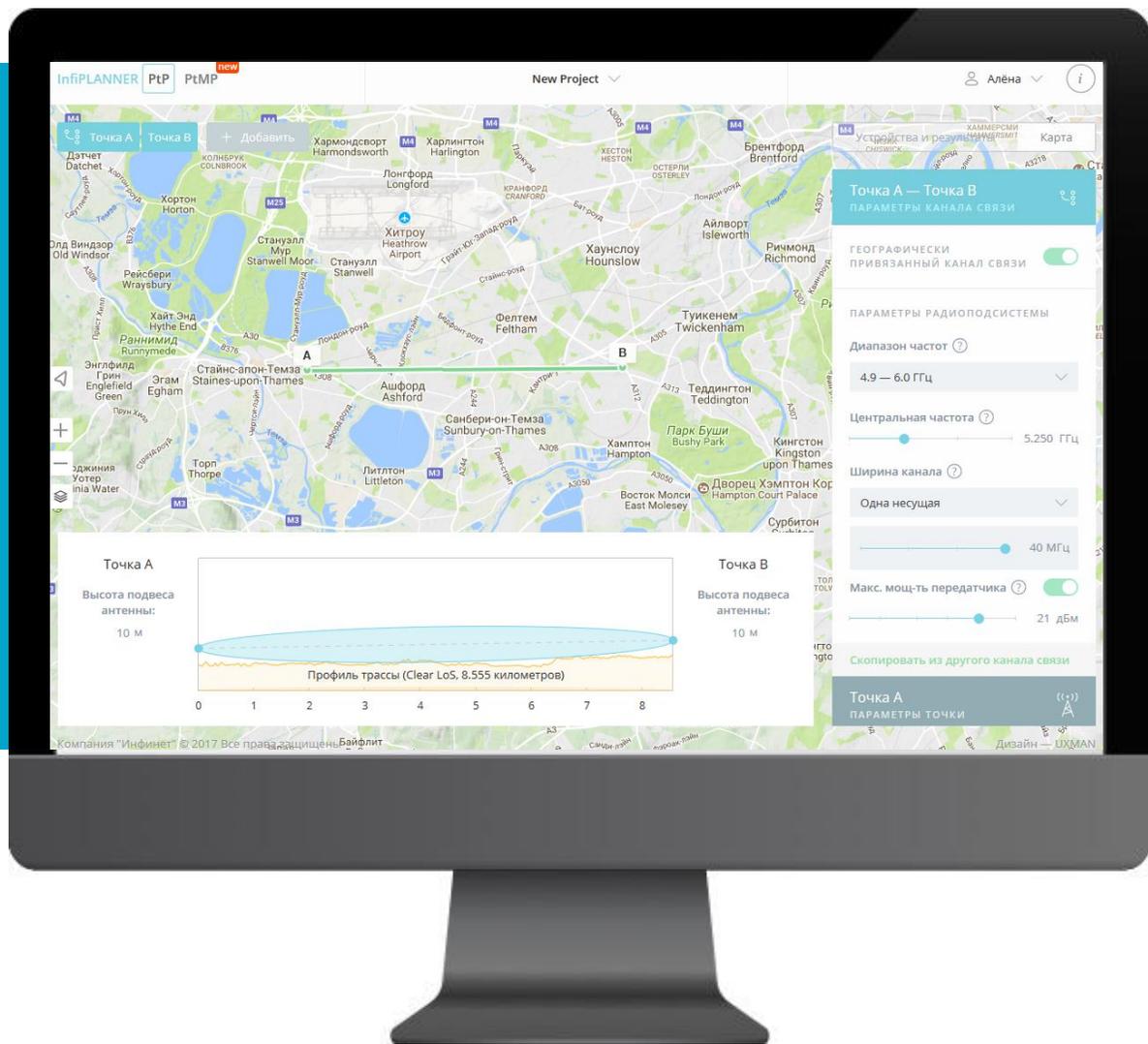
Radio Planning



InfiPLANNER

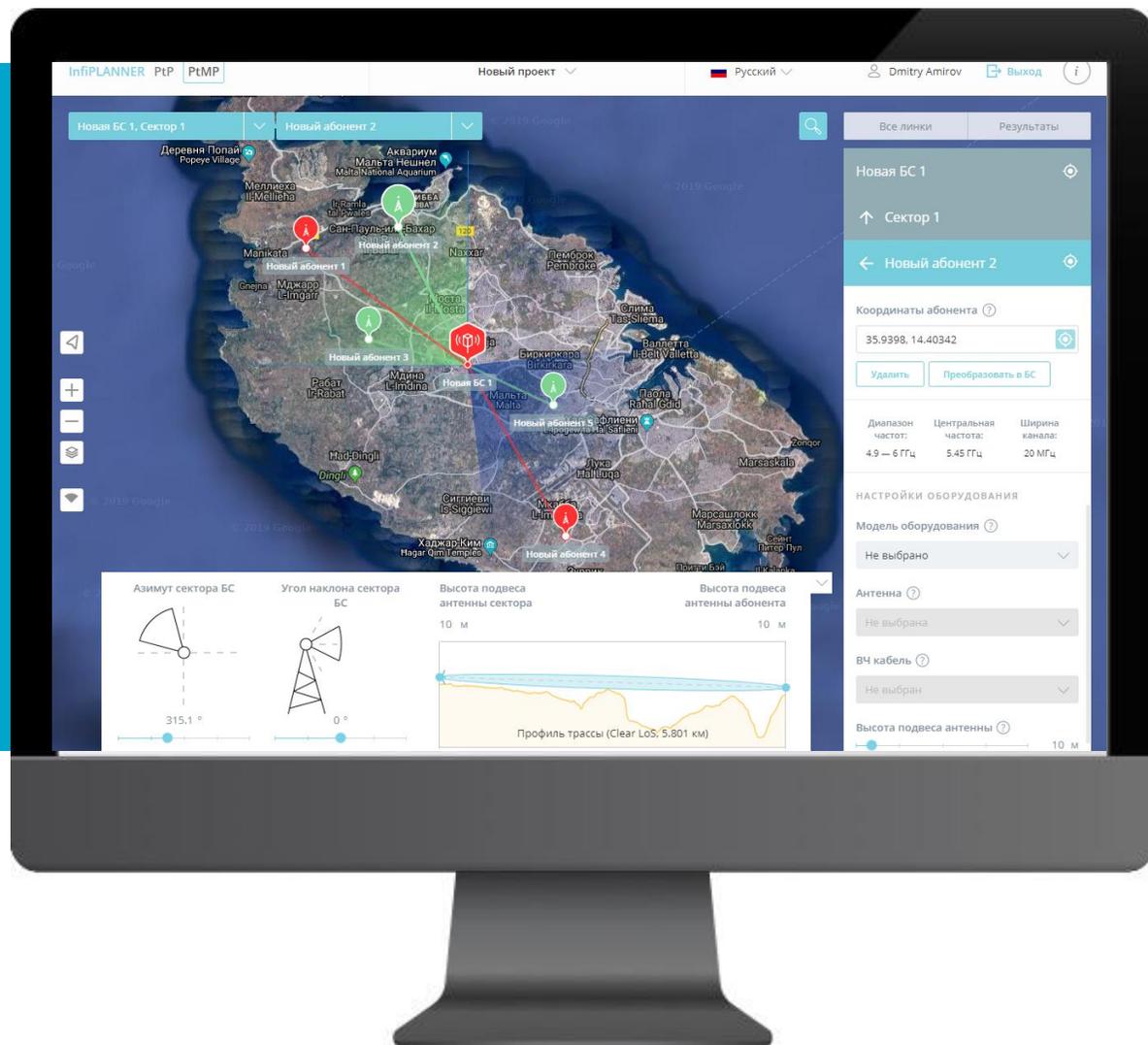
- ▶ Web-based PtP & PtMP estimation tool
- ▶ Key features:
 - Visual planning based on Google Maps integration
 - Complex radio propagation model ITU-R and Longley-Rice
 - Relief and Fresnel zone visualization
 - Throughput, link availability and expected modulation estimations
 - Detailed reporting
 - Assembling guide in PDF (PtP mode only)
- ▶ Available at <http://infiplanner.infinetwireless.com>

InfiPLANNER



Point-to-Point

InfiPLANNER



Point-to-Multipoint

Case Study



TatAISenergo, Russia



Provides comprehensive IT infrastructure services to JSC Tatenergo and other companies in the power industry – including the design, construction, installation and the subsequent management and maintenance of IT Infrastructures.

Requirements

- Carrier-class equipment.
- Long-range links for operation in urban environments.
- Stable operation in low-temperatures.
- Transmission of a variety of traffic types.
- Support for E1 connectivity.



Service types

- Telemetry systems.
- Video surveillance.
- **7 BS (4 sectors with integrated antennae).**
- **100 subscriber terminals.**



Infinet solutions

- Point-to-Point links InfiLINK 2x2.
- Base stations and subscriber terminals InfiMAN 2x2.



Case Study



Donbasenergo, Ukraine



Video surveillance at the Donbasenergo power stations

Requirements

- Video surveillance system for monitoring the redevelopment of the power plant.
- Provide internet access to staff for remote monitoring of camera images .
- High reliability.
- Ability to install cameras and local switching nodes anywhere on the construction site.



Service types

- Video surveillance.
- Data transfer.



Infinet solutions

- InfiLINK 2x2 LITE – wireless Point-to-Point links with throughput of up to 300 Mbps.
- InfiMAN 2x2 Point-to-Multipoint base stations with throughput of up to 300 Mbps.
- Full integration with local switching nodes to provide access to the existing network data via InfiNet's wireless technology.

Case Study



ELECTROSET of Orekhovo-Zuyevsky District

ЭЛЕКТРОСЕТЬ
Орехово-Зуево

ELECTROSET provides electricity power transmission and distribution services to municipal institutions and residents. The main goal of the communications network deployment is a reduction in the costs associated with power outages for customers.

Requirements

- 100% coverage of the town (about 200 km²).
- Telemetry data acquisition from electricity supply meters and transmission to the single processing centre.
- Cost-effective solution.



Service types

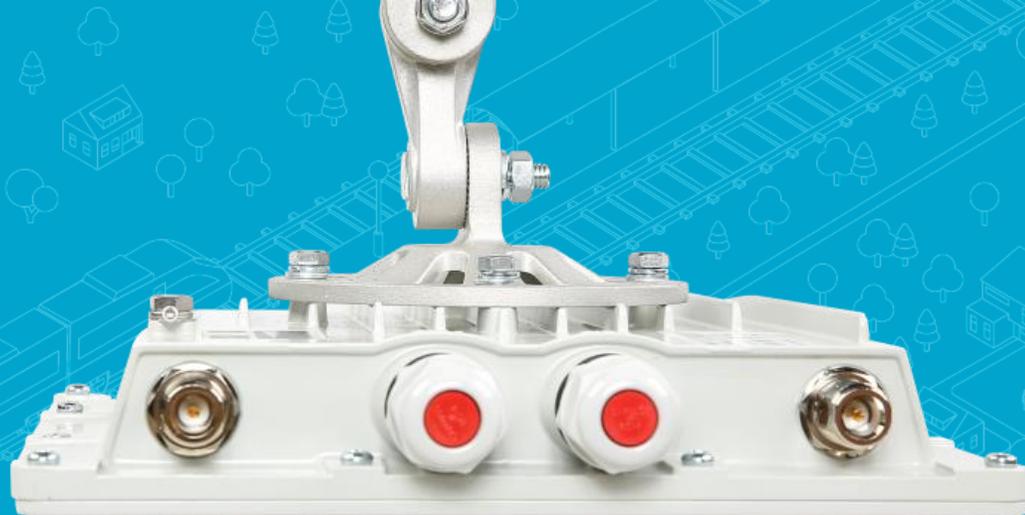
- Internet access.
- Telemetry.
- **Implemented more than 200 Infinet units.**



Infinet solutions

- InfiMAN 2x2 wireless links with throughput of up to 240 Mbps.

Infinet's highlights



The best quality solutions with the best performance



Thousands of successful deployments around the world



One of the world's Top 5 FBWA equipment manufacturers



Product development in our own world-class laboratory



Universal solutions for various industry sectors



INFINET
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