



WIRELESS NETWORK SOLUTIONS

Point-to-Point 600 Series

Wireless Ethernet Bridges – Rel. 08-50



High-Performance Connectivity Virtually Anywhere

You Shouldn't Need a License to Speed.

With wireless Ethernet bridging, you typically have needed a license to go fast. Because a license reserved a part of the radio spectrum just for you, wireless links encountered less interference, and, as a result, could go farther, faster and with greater reliability.

Motorola changed all that with its unlicensed Point-to-Point (PTP) 600 Series Wireless Ethernet Bridges. Operating in the 5.4, 5.8 and 5.9 GHz radio frequency (RF) bands, PTP 600 solutions combine the speed and reliability of licensed wireless with the flexibility of the unlicensed space, sparing you the delay and expense of applying for a license to set up IP and circuit-switched wireless networks.

In addition, the PTP 600 family of bridges includes the PTP 25600, PTP 45600, PTP 48600 and PTP 49600 systems which operate in the 2.5, 4.5, 4.8 and 4.9 GHz licensed frequencies. PTP 25600 bridges are designed to support a variety of Educational Broadband Service (EBS) applications, while PTP 45600 and PTP 48600 systems are designed for U.S. Federal and North Atlantic Treaty Organization (NATO) uses. The PTP 49600 is designed to meet the stringent connectivity requirements of public safety communications.

All PTP 600 bridges provide you the capability to establish high-throughput, carrier-grade, spectrally-efficient, low-latency connectivity in challenging environments and severe weather conditions.

Choice and Flexibility

Included in Motorola's Wireless Network Solutions portfolio, PTP 600 Series solutions include several models to meet your specific business objectives, application requirements and path conditions:

- **PTP 54600, PTP 58600 and PTP 59600:** With up to 300 Mbps Ethernet data rate and dual built-in antennas, the 5.4, 5.8 and 5.9 GHz full-speed systems are the perfect choice for non-line-of-sight, long-distance line-of-sight and high-interference environments where high throughput is a major requirement and/or dual T1/E1 capability is needed.

- **PTP 54600 and PTP 58600 Lite:** These bridges are ideal solutions in situations requiring T1/E1 capability and/or more speed and bandwidth than is provided by the PTP 300 and PTP 500 Series bridges. With up to 150 Mbps data rate, the Lite versions are software upgradeable to 300 Mbps as throughput requirements increase.

- **PTP 25600:** With speeds up to 300 Mbps, the PTP 25600 systems offer 2.5 GHz license holders a dedicated broadband Internet connection that can enable sophisticated learning applications.

- **PTP 45600 and PTP 48600:** With up to 300 Mbps, PTP 45600 and PTP 48600 systems are optimized to meet the needs of U.S. Federal and NATO agencies with 4.4 to 4.6 or 4.7 to 5.0 GHz licenses. PTP 45600 and 48600 bridges provide outstanding throughput, reach and reliability, making them excellent solutions for tactical and longer, permanent fixed deployments, even in tough environments and weather conditions.

- **PTP 49600:** Operating in the 4.9 GHz band at speeds up to 200 Mbps, these bridges deliver the performance, reliability and security that public safety agencies demand to meet their rigorous connectivity requirements.

All models within the PTP 600 family of solutions are available in Integrated and Connectorized versions. The Integrated systems have multiple built-in antennas, while the Connectorized systems can be fitted with separately-purchased, external antennas. Over distances up to 124 miles (200 km) and in extremely adverse environments, including deep non-line-of-sight, the Connectorized solutions let you connect previously inaccessible locations with a higher level of reliability and speed than comparable wireless solutions.

In addition, PTP 600 systems offer selectable channel sizes and varying data rates to provide even greater flexibility and choice.

Motorola recommends that regulatory conditions for radio-frequency bands be confirmed prior to system purchase. PTP 25600, 49600 and 59600 systems ship with a 5 MHz channel bandwidth. Additional channel widths may be unlocked through the purchase of license keys.

Wireless Network Solutions

Motorola's unrivaled wireless network solutions include indoor WLAN, outdoor wireless mesh, point-to-multipoint, point-to-point networks and voice over WLAN systems, giving customers the agility and seamless connectivity they need to grow their business or better protect and serve the public. Combined with powerful software for wireless network design, security, management and troubleshooting, Motorola's solutions deliver trusted networking and anywhere access to organizations worldwide.

Reliable, High-Speed Wireless Ethernet Bridges for Challenging Non-Line-of-Sight and Long-Range Line-of-Sight Environments, Including Those Over Water

Channel Widths ¹	Max. Ethernet Data Rate
PTP 45600, 54600, 58600 and 59600 Full-Speed Systems	
5 MHz Channel	Up to 40 Mbps
10 MHz Channel	Up to 84 Mbps
15 MHz Channel	Up to 126 Mbps
20 MHz Channel ²	Up to 168 Mbps
30 MHz Channel	Up to 300 Mbps
PTP 54600 and 58600 Lite Systems	
10 MHz Channel	Up to 42 Mbps
15 MHz Channel	Up to 63 Mbps
30 MHz Channel	Up to 150 Mbps
PTP 48600 and 49600 Systems	
5 MHz Channel	Up to 48 Mbps
10 MHz Channel	Up to 100 Mbps
20 MHz Channel	Up to 200 Mbps
PTP 25600 Systems	
5 MHz Channel	Up to 40 Mbps
10 MHz Channel	Up to 84 Mbps
15 MHz Channel	Up to 126 Mbps
30 MHz Channel ³	Up to 300 Mbps

Interference Mitigation

PTP 600 Series solutions employ a unique combination of technologies that together enable the robustness and high performance of your links, even in very challenging environments.

- **Multiple-Input Multiple-Output (MIMO):** Each radio radiates multiple beams from the antenna, the effect of which significantly protects against fading and increases the probability of making a successful connection.
- **Intelligent Orthogonal Frequency Division Multiplexing (i-OFDM):** *Intelligent* OFDM sends transmissions over multiple frequencies, or sub-carriers, enabling high spectral efficiency, high resistance to multi-path interference and fading, and instant fade recovery.
- **Advanced Spectrum Management with i-DFS:** *Intelligent* Dynamic Frequency Selection (i-DFS) is at the heart of our exceptional spectrum

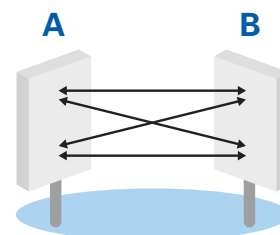
management capabilities. During operation, the PTP 600 bridge samples the band up to 1,200 times a second and automatically switches to the clearest channel. The time-stamped database alerts you to any interference that exists and provides statistics that help you pinpoint the channels that offer the clearest data paths, creating virtually interference-free performance in the band.

- **Adaptive Modulation:** Transmitter and receiver negotiate the highest mutually sustainable data rate – then dynamically “upshift” and “downshift” the rate as conditions change to provide the maximum performance possible within the current power limits.
- **Time Division Duplex (TDD) Synchronization:** TDD capability synchronizes transmit and receive signals and enables efficient frequency reuse, allowing network operators to colocate multiple radios on a rooftop or tower with greatly reduced interference. Each TDD-enabled link requires a Motorola PTP-SYNC Synchronization Unit to provide the PTP 600 with an accurate timing reference.

Very High Throughput

With 256 QAM modulation, PTP 600 systems deliver a faster data stream using less of the available band. In non-adverse environments, multiple transceivers at each end of the link allow you to send two parallel data streams at once – in effect doubling throughput. The transceivers can also send redundant streams, offering greater range than comparable solutions, especially over water or in non-line-of-sight conditions.

Effective Spectrum Utilization: PTP 600 bridges monitor all available channels and dynamically select those over which they can sustain the highest data rate and the most reliable availability. This means the bridges are very likely to find a clear channel without operator intervention, even in a crowded space, allowing the transmitter and receiver to automatically use the frequency with the highest throughput. Also, you can manually lock the frequency (in either direction) and restrict each link to specified frequencies.



Data from A to B – or B to A – is sent on four channels, significantly increasing the likelihood that data will get through.

¹ Local regulations should be confirmed prior to system purchase, and an additional license key may be required for certain channel widths.

² Available on the PTP 45600 model only.

³ The 30 MHz channel is not FCC-authorized for use in the U.S.



Integrated



Connectorized

Typically, a PTP 600 system's performance means more productive users, less interference, lower cost of ownership and fewer connection points.

Additional Information

For more information, refer to the PTP 54600-58600 and PTP 59600 Specifications Sheets, as well as the PTP 25600, PTP 45600-48600 and PTP 49600 Data and Specifications Sheets.

More Range to Anywhere: Class-leading sensitivity and power output enable the links to go farther, regardless of conditions. Plus, Motorola combines MIMO, *intelligent*-OFDM and its advanced signal-processing algorithms to create four simultaneous channels between pairs of transceivers at each end of the link without losing spectrum efficiency.

More Ways to Use the Band: Innovative architecture combines an abundance of Ethernet and circuit-switched options. Whether your infrastructure is based on Ethernet over copper or multimode fiber, 10/100/1000 Base T or 1000 Base SX, or even T1/E1 ports that bundle circuit-switched connectivity with IP service, you can connect with a PTP 600 solution.

Reassuring Security

PTP 600 solutions can be configured with FIPS-197 compliant 128-bit or 256-bit AES encryption. The systems also offer a FIPS 140-2 Level 2 mode which can be activated via a license key, enabling tamper-evidence modules for highly sensitive informational environments such as exist in government, military, banking and financial organizations. (AES and FIPS 140-2 are optional features.)

End-to-End System Management

Easy to use and deploy, PTP 600 systems contain embedded web servers to manage a link either locally or remotely and are designed to easily integrate with Web or SNMP-based management systems and Motorola's One Point Wireless Suite.

Productivity Payoff

Motorola PTP 600 Series solutions are often the lower-cost option when you consider the impact of being able to:

- Connect in areas that were previously inaccessible
- Support more bandwidth-intensive applications such as multimedia and Voice-over-IP
- Reduce or eliminate recurring costs associated with leased T1/E1 lines
- Backhaul more local loops using a single link
- Expand video surveillance beyond the constraints of a wired network

Put PTP 600 Bridges to Work for You

Service Providers: With multi-level security, the ability to connect T1/E1 ports for bundled connectivity and high-speed WiMAX and LTE backhaul capability, PTP 600 systems support sophisticated convergent and multimedia applications, supplying services to large, wide-spread customer bases.

Enterprises: PTP 600 solutions support high-bandwidth enterprise applications in environments where wired networks are too expensive or impossible to implement, while efficiently using the frequency spectrum to reduce interference and boost performance for business-critical applications.

Vertical Markets: Whether migrating from an analog to a digital network, linking networks between buildings or deploying video surveillance, PTP 600 Series bridges offer high-throughput and reliability for multiple applications in a variety of markets, including government, utilities, transportation, healthcare and education.

2.5 License Holders:

For educational agencies with 2.5 GHz licenses, PTP 25600 bridges can support a variety of learning applications such as instant access to research, online work assignments, media-rich content and presentations, online testing and performance tracking, virtual field trips, and individual tutoring.

4.4 to 5.0 GHz License Holders:

U.S. Federal and NATO agencies can deploy PTP 45600 and PTP 48600 systems for uses such as battlefield communications, video surveillance, border security, tactical operations and telemetry or Land Mobile Radio (LMR) backhaul.

4.9 GHz License Holders:

PTP 49600 systems can supply public safety agencies with connectivity for disaster recovery and emergencies and cost-effectively backhaul traffic from 4.9 GHz hot spots and command centers as well as Motorola's ASTRO® 25 systems, Point-to-Multipoint systems and Mesh nodes.



MOTOROLA

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