Point-to-Point 800

Licensed Ethernet Microwave

Making Connections with Wireless Bridges

Striking the Right Balance

More bandwidth, more bandwidth, more bandwidth! This is a cry that's heard around the world. Today's converged multi-service networks need extreme capacity, availability and reliability with low latency and true affordability. Fulfilling these demands takes a real balancing act. Motorola's PTP 800 Licensed Ethernet Microwave solutions strike just the right balance of performance and cost.

Motorola expanded its offerings to include the Point-to-Point (PTP) 800 Series Licensed Ethernet Microwave solutions which complement an extensive line of point-to-point unlicensed and licensed solutions that operate in shared radio frequencies. PTP 800 Licensed Microwave products are specifically designed to satisfy the demand for Internet Protocol (IP-based) solutions that are optimized to provide customers with reliable, high-throughput connectivity at an affordable price. Operating in the 6 to 38 GHz[1] radio frequency (RF) bands with up to 368 Mbps throughput (full duplex) and user-configurable channel bandwidths from 7 to 56 MHz, PTP 800 systems serve a wide variety of enterprise and carrier network applications, including:

- Ethernet data, voice and video backhaul
- Building-to-building connectivity
- Leased-line replacement
- Video surveillance
- Network redundancy
- WiMAX/LTE backhaul
- Data overlay networks

Choice and Flexibility

PTP 800 Licensed Microwave solutions are available in several models that correspond to the various RF bands between 6 and 38 GHz, allowing you to address your local regulatory guidelines[2] and application requirements. All models within the PTP 800 family of products integrate easily with your existing network infrastructure to complement your previous investment in legacy systems.

Effective System Design

Optimized hardware design significantly reduces deployment time and cost, while the Compact Modem Unit's extremely small, physical footprint greatly reduces rack-space requirements. Designed with a split-mount architecture that includes an Outdoor Unit (ODU) and a Compact Modem Unit (CMU), the ODU and CMU are connected by a single intermediate frequency (IF) cable. While the ODU is frequency dependent, the CMU is frequency and capacity independent to simplify system support, maintenance and management.

"Capacity As You Grow" Throughput

Recognizing that demand for bandwidth to transport data, voice, video and multimedia grows during the life of a network, PTP 800 links let you purchase the throughput you need today and increase your throughput capacity as your needs grow. This flexibility can reduce your initial capital expenditure by not having to pay for tomorrow's needs with today's budget.

All PTP 800 Compact Modem Units are shipped with a factory-set 10 Mbps capacity cap, meaning that throughput will be restricted to a maximum of 10 Mbps at the user Ethernet port. When you require more than 10 Mbps, you can upgrade the throughput capacity from 10 Mbps to 20, 30, 40, 50, 100, 150, 200, 300 Mbps or to full capacity (368 Mbps full duplex) without any change to the hardware.

Single-step or step-by-step capacity upgrades can be implemented at the time of system purchase or anytime after deployment. With a single-step upgrade, you can upgrade capacity from 10 Mbps to any throughput between 20 Mbps and full capacity. If you want the flexibility to upgrade throughput over time, you can upgrade capacity in a series of steps. As an example, you might upgrade from 10 to 20 Mbps, then from 20 to 50 Mbps and finally from 50 Mbps to full capacity. This flexibility allows you to match your throughput capacity to your enterprise application requirements or, for carriers and service providers, to your developing demand and revenue stream. In addition, you can assign different throughput capacities to the up and down links.

"Zero-Downtime" Adaptive Modulation

While certain organizations such as carriers may choose to operate PTP 800 systems in a Fixed Modulation mode, the system's dynamic Adaptive Coding and Modulation[3] (ACM) feature can provide performance benefits for many IP-based applications. When the ACM mode is selected, the system automatically "up shifts" and "down shifts" the modulation and/or coding rate as radio path conditions change, enabling radio transmitters and receivers to negotiate the highest mutually sustainable data rate.

[1] PTP 800 models operating in the 6 to 38 GHz frequencies will be available in a series of product releases.
[2] Local regulatory requirements should be confirmed prior to system purchase.
[3] Adaptive Coding and Modulation will be available in PTP 800 Release 2.

During good weather conditions, the radio will "up shift" to a higher modulation level and/or higher coding rate to improve the spectral efficiency and increase user throughput and link availability. If a link's Signal-to-Noise Ratio (SNR) falls below the threshold that the link can sustain, as can occur during heavy rain, the radio will "down shift" to a lower modulation level and/or lower coding rate. The resulting improvement in receive sensitivity enables the link to continue operating. ACM and enhanced quality-of-service (QoS) control allow high-priority traffic such as voice and real-time services to pass across the link without difficulty.

With exceptionally smooth change steps from QPSK to 256 QAM, errorless coding and modulation technology, and a hitless algorithm, you will experience no service interruption as the modulation steps from one level to another. Many comparable systems need several seconds to adjust the modulation mode which causes outages as the radios switch modes.

"No Surprises" Link Planning

With Motorola's PTP LINKPlanner tool you can accurately predict and optimize link performance before purchase. LINKPlanner lets you perform calculations for both licensed and unlicensed PTP systems,[4] plan and optimize a single link or multiple links simultaneously, conduct "what-if" scenarios and instantly see the effects of changes, obtain a detailed performance report, and see an overview of your wireless network via Google™ Earth, all helping to optimize the speed of deployment. To simplify the planning process, LINKPlanner provides easy-to-use pull-down menus and automatically loads path terrain profiles and environmental factors such as rain fade.

In addition, LINKPlanner has a configuration feature that gives you a complete licensed-microwave Bill-of-Materials (BOM) to greatly simplify the ordering process. Once a link is optimized to your requirements, LINKPlanner provides a detailed performance report with information you can use to apply for a license.

End-to-End Wireless Management

Motorola's One Point Wireless Manager is an optional feature-rich tool that simplifies management functions and reduces the time required to manage the wireless network. A map-based view of the wireless network allows you to respond to problems faster and more easily.

PTP 800 systems also contain embedded web servers to manage a link either locally or remotely and are designed to easily integrate with Web- or SNMP-based network management systems. In addition, PTP 800 systems support both in-band and out-of-band management functions. The local 10/100 Base T port is available for out-of-band management and local access to the radio when the out-of-band feature is enabled.

Complete Ethernet Backhaul Portfolio

Motorola offers a comprehensive portfolio of IP-optimized, point-to-point Ethernet connectivity and backhaul solutions designed to give you the flexibility to meet virtually any path challenges, business requirements and budgetary guidelines. The PTP 800 Licensed Ethernet Microwave solutions integrate seamlessly with our PTP unlicensed and shared-license (2.5, 4.5, 4.8 and 4.9 GHz) Wireless Ethernet Bridges which provide an extensive family of line-of-sight, non-line-of-sight (NLOS) and long-range line-of-sight (LOS) solutions. The wide range of performance characteristics and costs lets you configure the solution that best meets your unique situation and requirements.

Put PTP 800 Radios To Work For You

Today's network operators are either planning to migrate, or are in the process of migrating, to an IP-based network. Because PTP 800 Ethernet bridges are optimized for IP, they can help you initiate an easy, smooth migration path to a future-proof solution that supports a host of connectivity and backhaul applications in a wide variety of customer markets.

Enterprises: The PTP 800's feature set is ideally suited for a variety of business-critical functions such as building-to-building connectivity, disaster recovery, backhaul, redundancy and/or additional capacity for wired networks, last-mile fiber extensions and video surveillance. Whether backhauling traffic from video cameras or connecting a headquarters location to a branch office or service center, the PTP 800 offers the capacity, reliability and affordability that businesses want.

Education: PTP 800 solutions offer schools, colleges and universities an extremely affordable alternative to connect school districts, link rural schools, provide wireless building-to-building and campus connectivity, connect video surveillance cameras and backhaul data, voice and video communications. PTP 800 links provide high-capacity and reliable connectivity to support a host of applications such as student registration, online testing and performance tracking, distance learning, audio and video presentations, virtual field trips and home schooling.

Typical Customers:
- Educational Agencies
- Healthcare Providers
- Banks and Financial Institutions
- County, State, Local Government
- Transportation Agencies
- Utility Companies
- Oil and Gas Companies
- Service Providers
- Wireless carriers
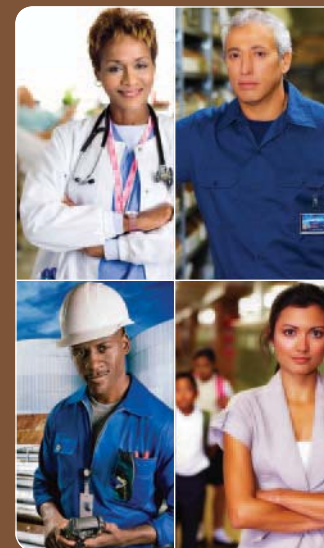
[4] PTP LINKPlanner may not perform calculations for the entire PTP portfolio.

Mega capacity, high reliability, exceptional value

Outdoor Unit

Compact Modem Unit

[5] Packages may not be available in certain geographic regions.

State, Local and County Government: Building-to-building and campus connectivity, backhaul for a spur or video surveillance cameras and network redundancy for wired networks are examples of the many administrative applications that state, county and local agencies need to govern and serve citizens. PTP 800 solutions deliver the performance, availability and cost-effectiveness that these government agencies require.

Service Providers: PTP 800 solutions can help service providers grow their subscriber networks by establishing or enhancing services in underserved areas, connecting nodes, and expanding services to high-value customers. Providers will find that PTP 800 links can support a variety of point-to-point applications such as high-capacity IP rings, last-mile access, and high-performance microwave backhaul and connectivity where unlicensed spectrum is congested.

Carriers: The explosive growth in demand for data capacity in wireless, fixed and converged Next Generation Networks requires a quick response that can be met with a point-to-point solution designed specifically for streamlined planning, ordering and deployment. PTP 800 systems can fulfill a variety of requirements that include rapidly connecting high-value customers to a core fiber network, providing a data overlay from an existing legacy network or building a new Next Generation Network.

Exceptional Value
Everyone wants the most value for their investment. When it comes to value, the PTP 800 shines with impressive features that can significantly reduce capital and operating expenditures, including:

- "Capacity as you grow" throughput scalability
- Optimized system design and installation that reduces deployment man-hours
- Errorless and Hitless ACM that can maximize spectral efficiency, improve throughput and increase availability without service interruption
- Easy, flexible management options that integrate with your existing network management activities
- PTP LINKPlanner tool that helps you design and optimize a link prior to deployment and provides a complete BOM
- Motorola's One Point Wireless Suite that gives you a common set of tools to make wireless network design and management faster and easier (optional)
- Licensing service packages[5] that save you time and simplify RF licensing procedures
- Complete backhaul portfolio that gives you tremendous flexibility to configure the solution that is ideal for your business needs, path conditions and budget

Motorola Wireless Broadband
PTP 800 Licensed Microwave solutions are included in Motorola's comprehensive portfolio of reliable and cost-effective wireless broadband solutions which, together with our WLAN solutions, provide and extend coverage both indoors and outdoors. The Motorola Wireless Broadband portfolio offers high-speed Point-to-Point, Point-to-Multipoint, Mesh, Wi-Fi and WiMAX networks that support data, voice and video communications, enabling a broad range of fixed and mobile applications for public and private systems. With Motorola's innovative software solutions, customers can design, deploy and manage a broadband network, maximizing uptime and reliability while lowering installation costs.

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