

ALL-PACKET MOBILE BACKHAUL SOLUTION

Address Subscriber Growth, Migration Plans, and Service Innovation

Wireless communication requirements are increasing the demand on backhaul networks. With 3G and 4G implementations wireless networking has quickly evolved from a voice-only communications to a full multimedia experience leveraging intelligent handheld devices plus delivering “over the air” connectivity to residences, businesses, academic institutions and others for their communications needs.

The delivery of ubiquitous Internet access using wireless technologies, such as LTE and WiMAX with speeds comparable to DSL or cable internet services, is a growing trend. Bandwidth intensive applications, the need to deliver a high quality of experience, and the focus on improving ARPU in competitive markets is driving wireless and backhaul service providers to define key requirements for their backhaul network:

- Increase capacity and scalability leveraging fiber infrastructure paired with Ethernet and WDM technologies
- Deliver a highly available packet infrastructure with low latency, low jitter, and low frame loss capabilities
- Provide an implementation that supports IP over Ethernet and addresses eNodeB-to-eNodeB requirements

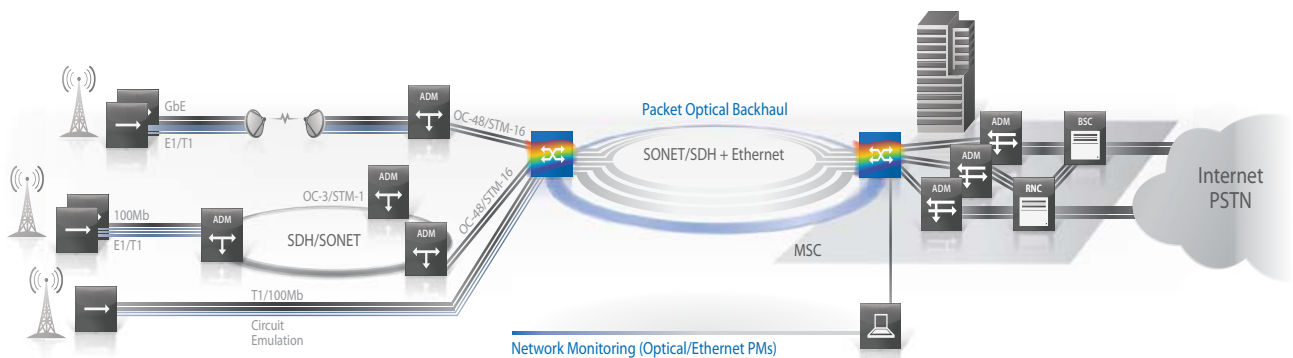
- Enable a network capable of maintaining the timing and synchronization requirements of 2G and 3G networks
- Offer a service-centric management solution for SLA monitoring, fault isolation, and policy management

3G Wireless Backhaul Solutions

Third generation (3G) mobile systems support more bandwidth-intensive wireless user capabilities, such as mobile email, text messaging, image sharing, and web surfing. This increased focus on data-oriented traffic has circuit-switched nodes being overlaid with packet nodes which cause an increased use of physical fiber infrastructure and more capital and operational expenses.

Enabling the convergence of TDM transport (SONET/SDH) with Ethernet-based data connectivity is key to making efficient use of optical fiber-based backhaul infrastructure. A variety of access technologies, such as wireless and circuit emulation are necessitating an open, transparent approach to aggregation and backhaul. Packet optical converge Layer 0/1/2+ to simplify the overall complexity of the backhaul network and tie network capacity directly to service delivery. This approach also enables transparent connectivity and simplifies the introduction of Ethernet as a transport technology in core and aggregation backhaul networks.

3G Wireless Backhaul Architecture



BTI Solution Fundamentals for 3G Backhaul

- Scales the network with WDM “virtual fiber” that facilitates TDM-based connectivity consolidation
- Enables an integrated and cost-effective approach for Ethernet-based data traffic overlay
- Provides an access technology agnostic infrastructure and support for T1/E1 over Ethernet
- Offers highly available, pay-as-you-grow, and outside plant deployable network elements
- Delivers a 4G-ready network underpinning that can evolve to address future technology integration

4G Wireless: All-Packet Backhaul Solutions

Fourth Generation (4G) wireless strategies introduce efficient IP/Ethernet-based, high-speed broadband network interfaces at the tower site. The enhanced capacity that an all-packet network offers will greatly expand the data capabilities of the network to address the anticipated onslaught of traffic driven by video, enhanced Internet connectivity, and access to cloud-based services via intelligent handheld devices.

Building on deployed packet optical systems capabilities focused on the 3G core and aggregation networks, BTI Systems offers Carrier Ethernet-based tower access solutions to deliver an ideal evolution blueprint to address the packet-based infrastructure of 4G backhaul. Wireless providers and backhaul operators will realize a significant cost advantage with a solution aimed to address the scalability, packet delivery predictability, service resiliency, and topology flexibility requirements driven by the new 4G network.

BTI Solution Fundamentals for 4G Backhaul

- Enables a Carrier Ethernet foundation for interoperability, standardized MEF UNI and MEF-certified service architectures
- Provides end-to-end OAM with ITU-T Y.1731 for latency, jitter, throughput performance measurements and fault isolation
- Delivers network resiliency with end-to-end network Ethernet Rapid Protection Switching (ITU-T G.8032 ERPS)
- Offers cross-card LAG for redundant and highly available handoffs at the tower, eNodeB, and MME/SG location
- Proven transparent delivery of IEEE1588v2 protocol for network-wide clock distribution in 2G/3G networks

BTI Systems: Building Complete Backhaul Solutions

Wireless and backhaul service providers are defining packet-focused blueprints and evolving backhaul networks to address increased subscribership and the next generation of mobile Internet services. Carrier Ethernet-based infrastructure supports higher bandwidth rates, more attractive cost per Mbit, and simplifies backhaul network architectures significantly. The strategic deployment of BTI Systems’ packet optical for 3G backhaul today, complemented by available Carrier Ethernet access solutions for the tower will deliver the packet-based, high-speed broadband network required for the 4G evolution.

4G Wireless Backhaul Architecture

