Converged 2G/3G Mobile Network Solutions White Paper

OnSite™ OS-10 Multi-Service over SDH Provisioning

PATTON
Electronics Co.

Network Access
& Connectivity

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Connectivity Requirements

For years, mobile network operators have relied on E1 leased lines to backhaul traffic from cellular base station sites to mobile switching centers. With the Patton OnSite series of µMSPP platforms, you can build and manage your own transmission network at a fraction of the cost of leasing E1 lines from another carrier.

An OnSite STM-1 access ring is the perfect solution to connect between 8 to 12 base stations to a centralized BSC or RNC site. The STM-1 ring supports up to 63 E1 links - sufficient for the typical 2G and 3G base station requirements of 4 to 8 E1s - and provides the required redundancy and protection against fiber cuts and station node failures.

From day one, the OnSite access ring is ready for a managed transition and coexistence between 2G and 3G mobile networks. The OS-10 not only supports basic connectivity of voice and data traffic over E1 signals but also has built-in Ethernet and packet intelligence for the emerging 4GIP- based mobile network.

The OS-10 series platforms provide flexible scalability and superior cost-performance within limited space. The ultra-compact 1U system is perfect for the constrained space of typical base station sites. Moreover, its low-power consumption and use of natural convection cooling reduces operational costs and increases system reliability.

Synchronization

In mobile network applications, reliable synchronization is critical for service quality. Without proper distribution of synchronization signals to the base stations, dropped calls and other service impairments may occur. With an OnSite access ring, you can configure the OS-10 to retime E1 traffic signals to the recovered system clock from the STM-1 line. Retiming is an important feature to avoid the impairments associated to SDH pointer adjustments. You can also configure the OS-10 to provide redundant synchronization output signals at 2.048 MHz to the base station.
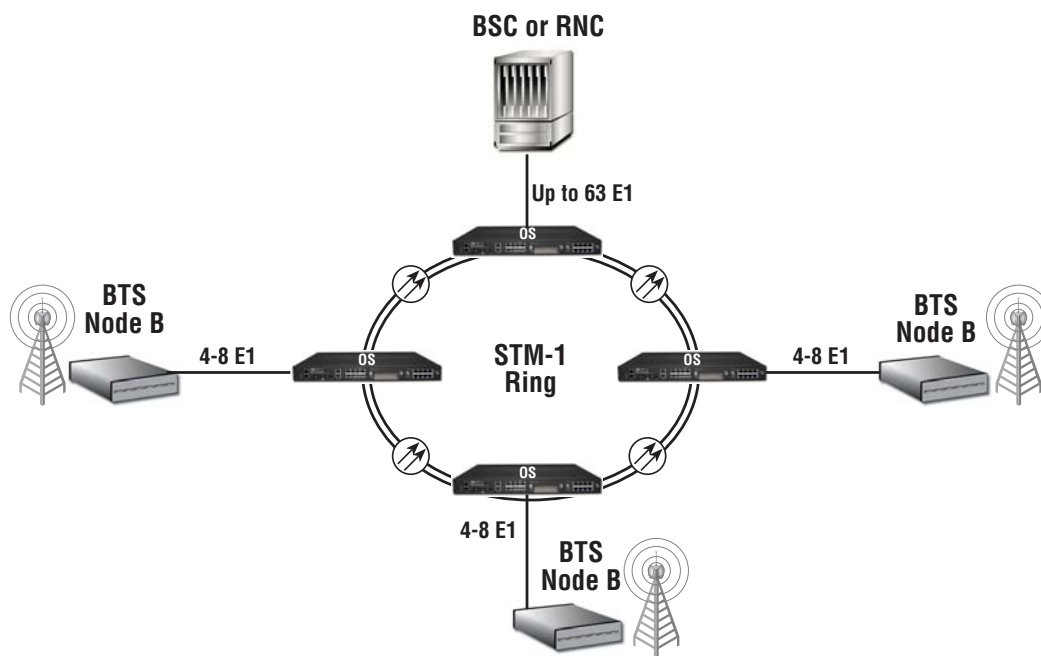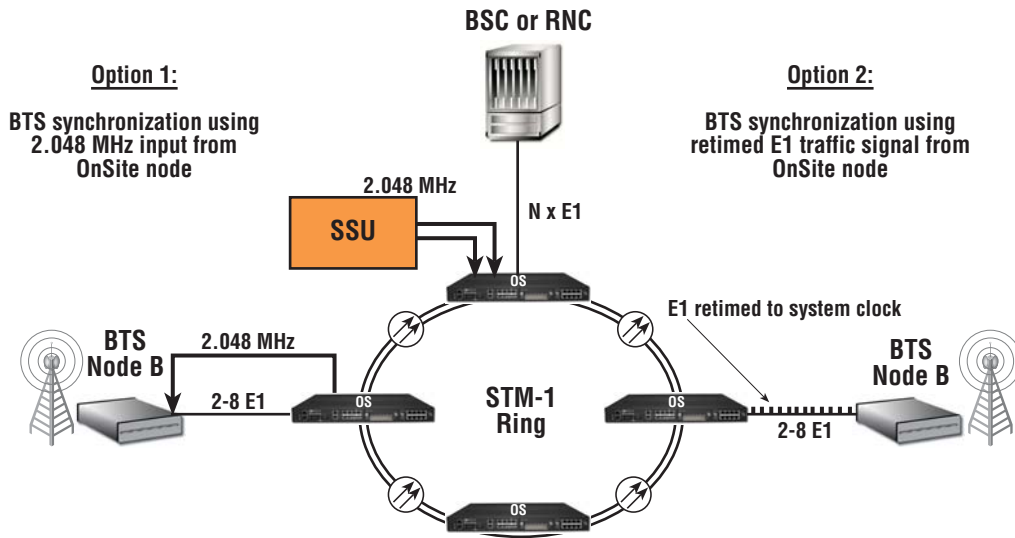

Figure 1 - Cell Site Backhaul Using the OnSite

Figure 2 - Synchronization of Base Stations Using the OnSite

Topological Flexibility

The modular OS-10 series platforms provide the required flexibility to expand your network coverage beyond the initial topological requirements. You can start building your mobile access network with a basic ring topology, but as customer demand justifies the placement of additional base stations in nearby sites, you can easily use the STM-1 expansion module to extend transmission coverage as a point-to-point spur or along a linear chain.
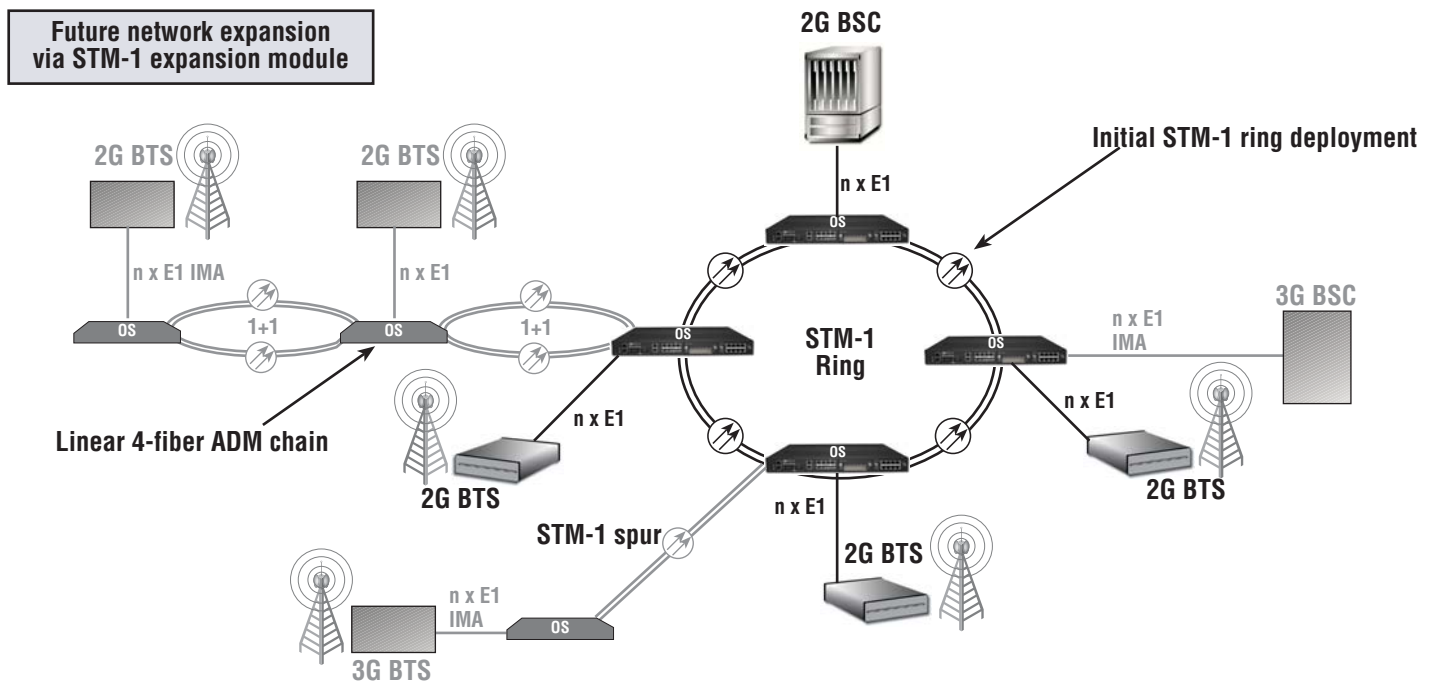

Figure 3 - Network Expansion through Topological Flexibility Using the OnSite

Multiservice Capability

Growing beyond the initial configuration and port capacity is no problem when using the OnSite OS-10. The flexible modular design allows the insertion of additional modules for services other than E1.

You can take advantage of your OnSite OS-10 access ring to support additional sources of revenue such as E1 leased lines for PBX and digital-loop carrier equipment and Ethernet leased lines for corporate LAN or VPN traffic. In addition, you can use the Ethernet interfaces to provide native connectivity across your OnSite network for customers that require Internet access through WiFi or WiMAX public access points (APs).
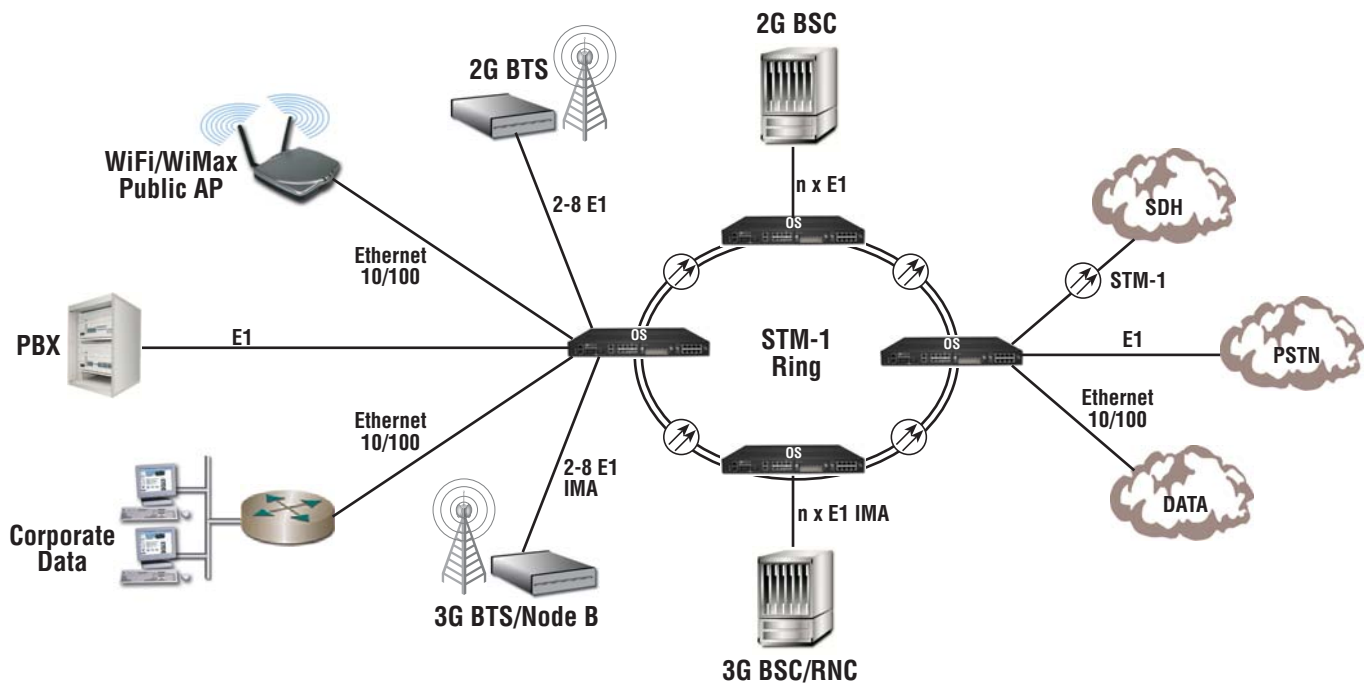

Figure 4 - Beyond Mobile Services - Revenue Expansion through the Multiservice OnSite Network