



Converged Optical Ethernet White Paper

**OnSite™ OS-10 Multi-Services
over SDH Provisioning**

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Introduction

Most service providers have existing SDH networks that have proven indispensable in serving revenue-critical TDM-based private line services. SDH is firmly established as the technology of choice for general-purpose transport in telecom networks because of its flexibility, reliability, ease of provisioning and multi-vendor interoperability.

The advancements of SDH technology, embodied in what is known today as μ MSPPs, enable network providers to provide emerging packet-based services over existing SDH networks.

Network operators can substantially benefit from Patton OnSite Series μ MSPP solution by offering enterprise customers with new, innovative services while extending the life of familiar operations methods and procedures.

The deployment of ultra-compact, cost-effective Patton μ MSPPs at the network edge opens up a host of new capabilities for service providers to increase the revenue generating potential of the network.

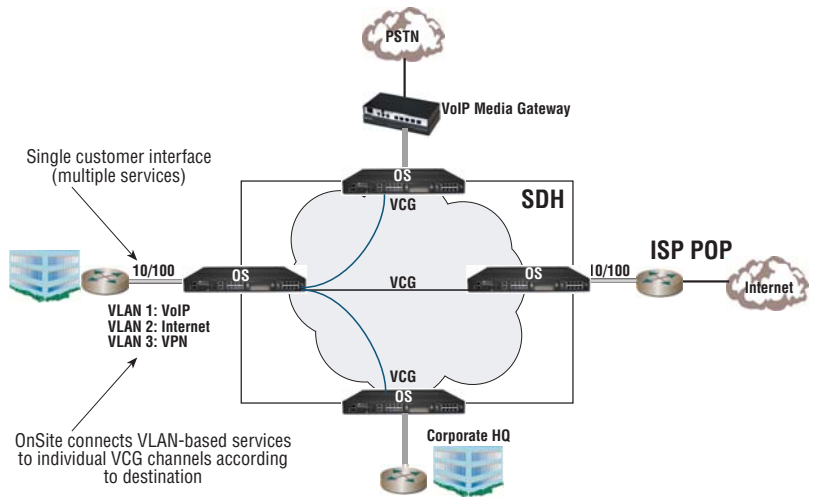


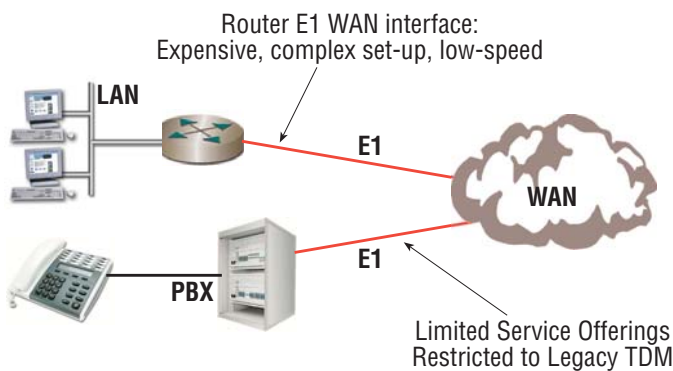
Figure 2 - LAN Extension Service by Mapping VLANs to VCAT Groups

OnSite's Ethernet Solution

Traditional TDM leased line services can now be extended or migrated to Ethernet-based leased line services, providing your subscribers with a range of tailored communications solutions while making more efficient use of the network infrastructure and preserving the benefits of SDH networks' reliability, scalability and manageability.

While the ability to offer Ethernet access services over the existing SDH infrastructure provides an immediate benefit to network providers, a larger opportunity lies in offering value-added Ethernet services such as:

Present Mode of Operation



Patton OnSite Solution

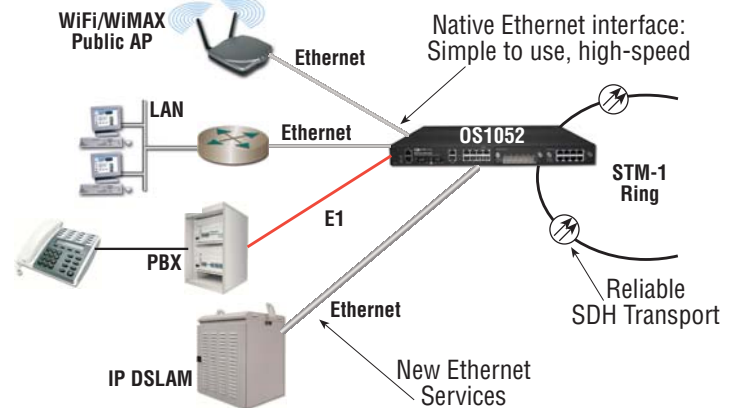


Figure 1 - Migration from PDH to Ethernet Leased Line Services Using the OnSite

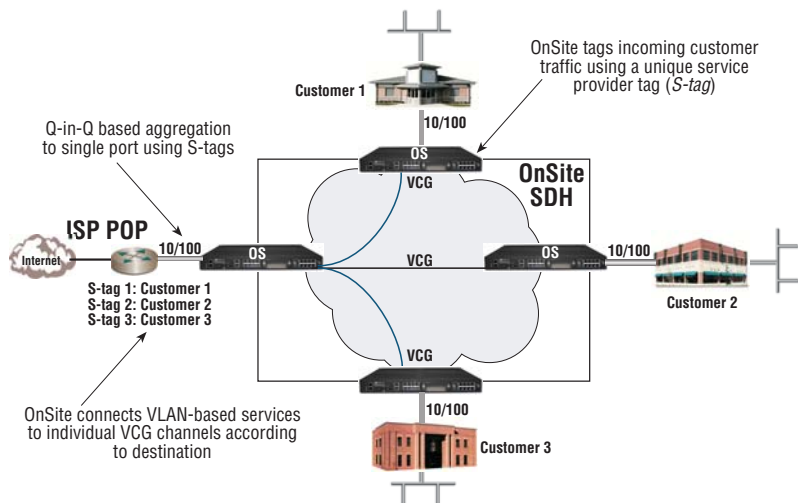


Figure 3- LAN Extension Service Using VLAN Trunking

- Point-to-point as well as point-to-multipoint Ethernet services
- Variable access rates with fine granularity and QoS
- Support for customer and service provider VLAN schemes
- Performance and scalability, and carrier-class reliability

Using the Patton OnSite platforms, service providers can offer simple point-to-point LAN extension services by mapping Ethernet traffic at the port or VLAN level to VCAT groups (VCGs). For example, a service provider could configure Ethernet ports as VLAN access ports, and map customer VLANs to VCGs to extend VLAN traffic between two customer sites, as shown in Figure 2.

Service providers can also provide VLAN trunking across the SDH network by configuring an Ethernet service provider tag (S-tag) to carry traffic for multiple VLANs between two customer sites, as shown in Figure 3.

The OnSite solution allows service providers to support multiple customers, each with multiple LANs, and each with different access rate and QoS requirements for their specific applications. The Patton OnSite Series supports:

- **Rate limiting function** that enables service providers to define for each LAN connection (port or VLAN) sustained and peak information rates with very fine granularity (64 kbit/s).
- **8 classes of service (CoS)** to set up a service class for a particular VLAN or application by mapping Ethernet port or VLAN or IEEE 802.1p to a specific CoS. For example, a video conferencing application for a particular VLAN could be mapped to the high class of service category with sustained information and peak information rate set to 1 Mbit/s.
- **VLAN tag adding, stripping and change**, enabling service providers to offer a flexible VLAN scheme to their customer. Furthermore, support for conversion of tagged to untagged Ethernet frames and vice versa provides LAN connectivity between sites that supports VLAN and sites that do not support VLANs.

Ethernet service evolution is assured by the OnSite's hybrid packet and SDH switching architecture. Ethernet services are supported by an on-board network processor that can process IP packet and its content in addition to Ethernet frames. Network processor solution enable network operator to set up advanced security and traffic management policies based on IP header information and user application content itself.

Ethernet over SDH Features

- Native Ethernet interfaces
- 8 classes of service with per port, VLAN or p-bit classifications
- Per port or VLAN traffic shaping and policing
- VLAN stacking (Q-in-Q)
- VCAT and LCAS

Conclusion

Patton OnSite Series platforms enable network operators to significantly lower operating expenses, while increasing their competitiveness. The resulting solution is cost-effective, flexible and attractive to business subscribers. One of the key advantages of the Patton OnSite μ MSP solution is the ability to migrate legacy TDM leased line services to high-speed Ethernet interfaces that can deliver higher bandwidth capabilities at a fraction of the cost of scaling traditional PDH or SDH services.