



# Converged TDM and IP- Based Broadband Solutions White Paper

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

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## Overview

Patton's OS-10 series of  $\mu$ MSPP platforms enable you to meet the full range of leased line access network requirements for business users. The OS-10 series is a family of high value access platforms designed to deliver current and emerging telecom and data communication services, addressing the changing requirements of service providers - both fixed line and wireless - and enterprise customers. Enterprise end users from government, financial, utilities and natural resource exploration industries, among others, all benefit from OS-10 solutions in their networks.

TDM is reliable, proven and understood, and it continues to deliver solid performance with guaranteed bandwidth for voice and data applications. Mission-critical services such as banking, highway control, defense and other government services continue to rely on TDM. When TDM is combined with Ethernet packet-switched technology on the same platform, as with Patton's OnSite series  $\mu$ MSPP, you have the flexibility to deliver reliable, revenue-generating leased line services while ensuring a smooth migration as the network evolves.

## Traditional TDM Leased Line Services over SDH

E1/T1 leased lines have been the workhorse of the public network access for the past two to three decades. Private networks are still being built, supporting enterprise

voice and data requirements. The growing popularity of corporate LANs and the need to connect these LANs across the WAN led to the deployment of multi-protocol routers which increased the need for low-cost, flexible accommodation of E1/T1 service offerings. These early PDH networks were built capable of offering E1 and E3 services and often used proprietary fiber solutions to obtain the distance to reach the nearest aggregation point in the network.

With the advent of the  $\mu$ MSPP over the past two years, cost-effective SDH access could now be delivered to the network edge and the first fiber touch point in the access network have begun to transition to PDH over SDH. Not only have these new platforms increased the scale and ability of service providers to roll-out revenue generating services more efficiently, but the underlying qualities of an SDH infrastructure have provided reliability and manageability benefits for greater operational results. Overall PDH/SDH benefits include:

- **Manageability** - easy to deploy, provision, manage and maintain
- **Availability** - field-proven with >99.999 percent reliability
- **Profitability** - cost-effective and revenue-ready for today's TDM leased line and tomorrow's Ethernet leased line, Ethernet VPLS and similar applications

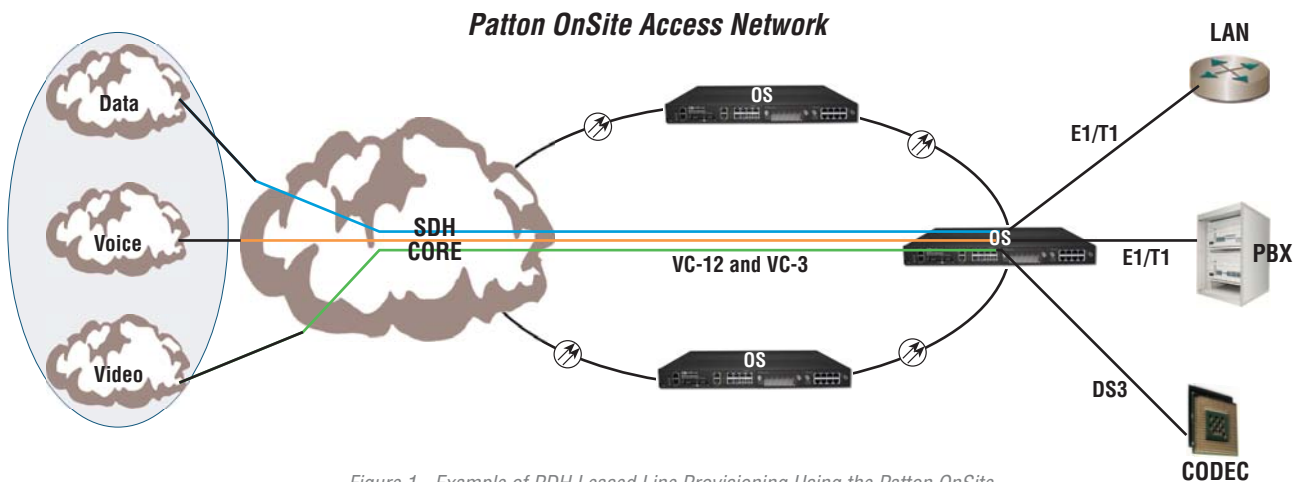


Figure 1 - Example of PDH Leased Line Provisioning Using the Patton OnSite

All platforms in the Patton OS-10 series support interface access and transport of E1/T1 services over SDH. The OnSite OS1063, in particular, is the platform of choice for applications that require a high count of E1 drop ports. The OS1063 is the industry's only  $\mu$ MSP capable of delivering 63 E1 ports (in both 120 and 75-ohm options) in a one rack-unit platform. You can deploy the OS1063 in hub or POP sites with a high concentration of E1 drop ports up to the full STM-1 trunk capacity of 63 E1. The OS-10 maps E1/T1 traffic into VC-12/VC-11 payloads for transparent connectivity across an existing SDH network. interfaces that can deliver higher bandwidth capabilities at a fraction of the cost of scaling traditional PDH or SDH services.

At the E1/T1 level, you can connect the following equipment to the OS-10 series platforms:

- PBX switches
- Routers
- Primary rate multiplexers
- DXC (digital cross-connect) 1/0 nodes
- Voice compression equipment
- Digital loop carriers

You can also equip the OS-10 platforms with a 3-port T3/E3 expansion module for interconnection of equipment such as:

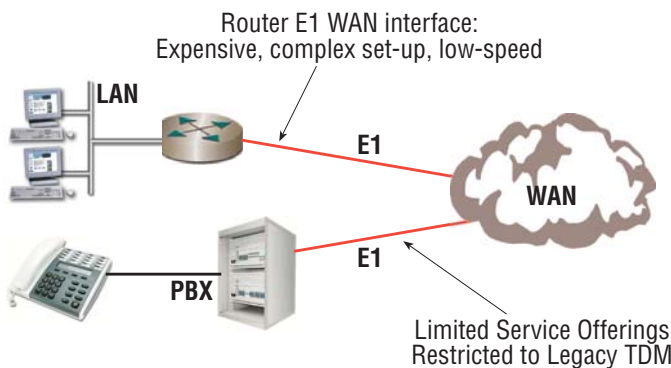
- Legacy M13 multiplexers
- ATM switches
- Routers
- Video Codecs

## Transition to Emerging Ethernet Lease Line Services

The deployment of small form factor, cost-effective  $\mu$ MSPs at the network edge opens up a host of new capabilities for service providers to increase the revenue generating potential of the network. Patton OS-10 Series  $\mu$ MSP solutions can significantly extend the life of the existing SDH network.

Traditional TDM lease 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. One of the key advantages of Patton's OS-10 Series  $\mu$ MSP solutions is the ability to migrate leased line services to high-speed Ethernet interfaces that can deliver higher bandwidth capabilities at a fraction of the cost of scaling traditional PDH/SDH services. Not only does this significantly lower your operating expenses, it also increases your competitiveness, since the resulting solution is cost-effective, flexible and extremely attractive to business subscribers.

### Present Mode of Operation



### Patton OnSite Solution

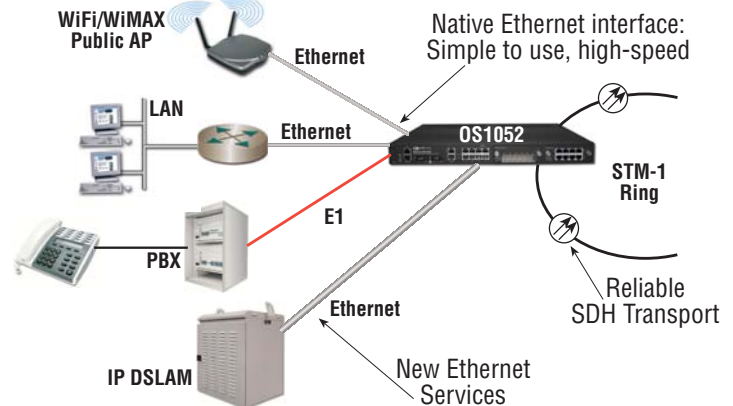


Figure 2 - Migration from PDH to Ethernet Leased Line Services Using the OnSite

**Network Efficiency** - with the OS-10 Ethernet private line capabilities, the bandwidth available to the customer is provided in increments of 2 Mbps. This means that a subscriber who needs a 10 Mbps leased line service can receive exactly this capacity. The final result is better network utilization, and a service that matches the subscriber's demands. OnSite delivers this functionality through the use of standards-based-virtual concatenation (VCAT). VCAT addresses the flexibility and scalability limitations in traditional SDH networks.

The Patton OS-10 leads the industry in the creation of VCAT groups (VCGs) for Ethernet leased line services. You can create up to 34 VCGs in a single one rack-unit platform at the STM-1 level.

**Differentiated Services** - OnSite's Ethernet services can be extended to provide multiple service offerings through a single customer interface. Through the use of VLAN technology, you can now offer your customers multiple services with different service level

agreements and multiple connectivity paths across the SDH network.

Applications from corporate VPNs, to internet access, adoption of business VoIP services, and similar emerging requirements are all easily accommodated along-side the traditional business leased line.

Offering leased line services via Ethernet/IP transport on an OS-10 enabled network yields the following benefits:

- Preserve your investment in the existing TDM/SDH network
- Cost savings in equipment and leased line consolidation
- Realize the benefits of IP over Ethernet as a more service-flexible transport medium
- Graceful migration to a converged IP network - opening up new profitable service opportunities with the addition of packet-switched technology

**Ethernet Private Line**

- Native Ethernet interface
- No protocol conversions

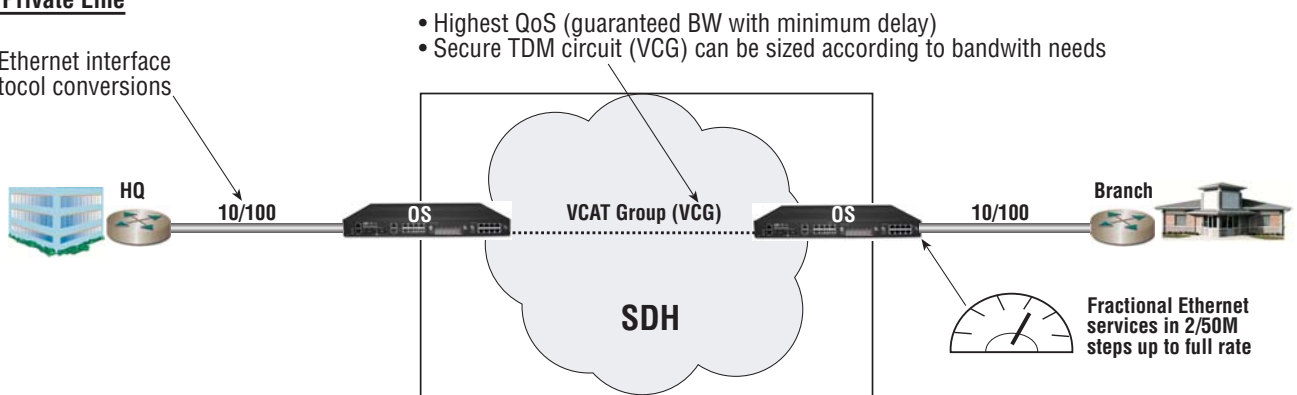


Figure 3 - Ethernet Private Line Services Using the OnSite

## Summary

- **Protects investment in current infrastructure and services-** enables customer networks to take up emerging technologies, while supporting existing profitable services including TDM. Allows easy migration to higher speed interfaces and services from the current installed base - facilitating a seamless transition from TDM to packet services
- **Cost savings through network optimization-** a family of multi-service, multi-technology  $\mu$ MSP platforms that deliver advanced capabilities for global carrier and enterprise customers, including TDM, Ethernet, SDH and additional services
- **Simplified and cost effective operation-** fully network managed by the industry-leading OnSite Element Management System - a user-friendly support tool for end-to-end installation, maintenance and rapid service turn-up and delivery
- **Reliability-** Field-proven performance, with greater than 99.999 percent availability, letting service providers offer low-risk service level guarantees

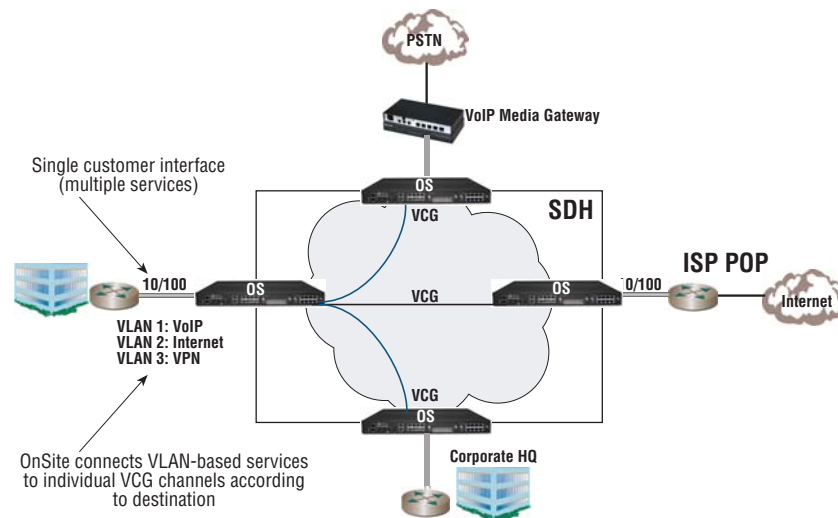


Figure 4 - LAN Extension Service by Mapping VLANs to VCAT Groups