

# Ethernet-over-SDH as an Ideal Access For IP/VPN Networks

Tellabs' Ethernet-over-SDH helps turn your SDH network into a highly efficient data network. Not only does it help reduce your operating expenses, it also opens up profitable new revenue streams — helping you realize the full potential of your existing SDH network.

A key application of Tellabs' Ethernet-over-SDH solutions is to create a highly cost-effective access network to the IP VPN network, as an alternative to today's traditional PDH/SDH access network. This application utilizes the network much more efficiently, minimizes expenses for interfaces and footprint and provides faster provisioning to your subscribers.

In most IP VPN networks today, access from business subscribers to the MPLS network is accomplished via the PDH/SDH access network to the multi-protocol label switching (MPLS) Provider Edge (PE) routers. However, this solution has several disadvantages:

- High interface cost — PDH/SDH interfaces on routers are often expensive in comparison to Ethernet interfaces.
- Poor scalability — the traditional steps in bandwidth in PDH/SDH (2 Mbps, 34 Mbps, 155 Mbps etc.) are not particularly flexible or scalable.
- High equipment cost — each and every subscriber needs to be individually connected to the PE router. This requires bulky and expensive PE routers to accommodate all these interfaces.

- Higher expense for rental of space at colocation site/PoP — all these PE routers require more space than Ethernet equipment.
- Slow and expensive changes in provisioning — if a subscriber wants to upgrade a connection, a field engineer usually has to visit the subscriber to change the interface. Typically, these changes need to be scheduled weeks in advance.

Tellabs' Ethernet-over-SDH provides you with solutions that readily deals with all of these problems. It enables the following key benefits:

- Cost-effective Ethernet interfaces on PE/CPE (Customer Premises Equipment) devices.
- Subscriber bandwidth can be tailored in steps as little as 64 kbps, as opposed to the traditional inflexible PDH/SDH steps.
- Multiple subscribers can be served using a single, cost-effective Ethernet interface at the PE, as opposed to multiple, expensive PDH/SDH interfaces.
- A minimum number of Ethernet interfaces at the PE means that the PE does not have to be an expensive, high-density access router.
- Fewer interfaces at the PE reducing footprint expenses.
- Changes in bandwidth can be carried out remotely via the centralized network management system for faster provisioning without the need for a site visit to swap a PDH/SDH line card.

Here are just some of the ways Tellabs can help you lower both your capital and operational expenses and increase your competitiveness through a more flexible and scalable VPN service.

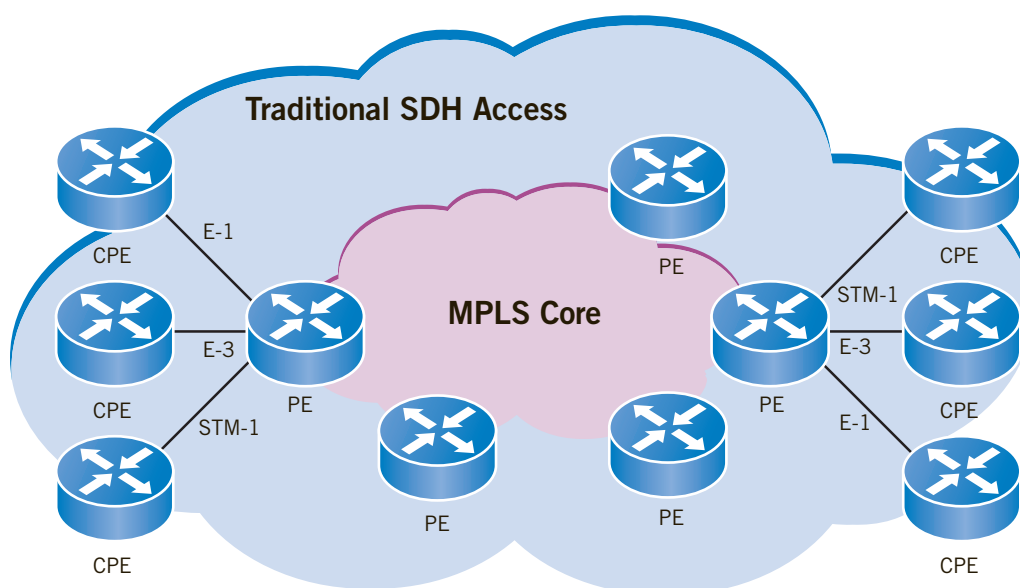


Figure 1: Traditional SDH Access Solution — High Number of PDH/SDH Interfaces

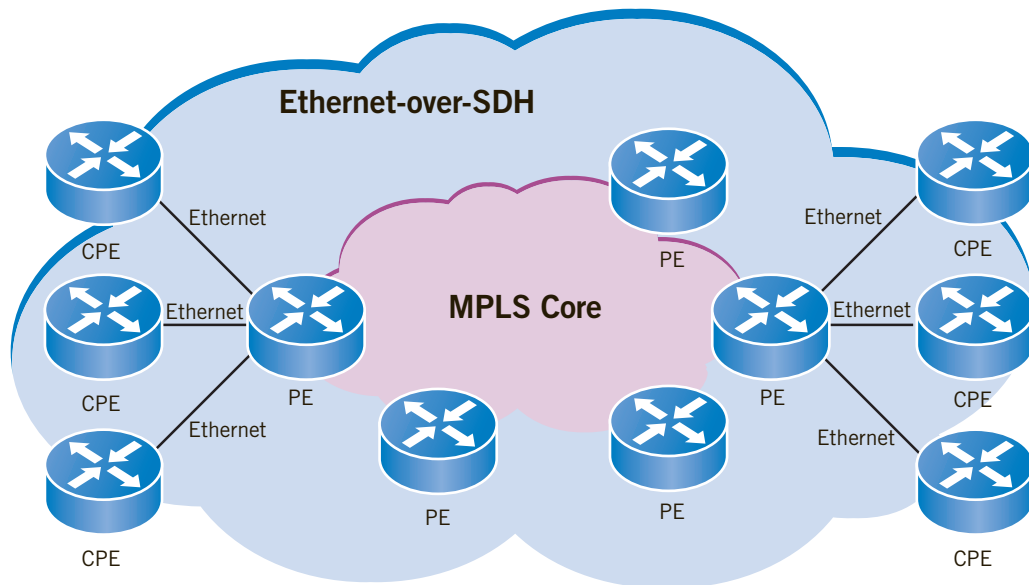


Figure 2: Ethernet-over-SDH Access With a Low Number of Cost-effective Ethernet Interfaces

## Lower Your Capital Expenses

Using cost-effective Ethernet interfaces on routers and PDH/SDH equipment as alternative to expensive PDH/SDH interfaces is the key to lowering capital costs. However, an Ethernet-over-SDH solution from Tellabs also provides other advantages.

For example, the fine granularity in bandwidth assignment, as low as 64 kbps, means that the subscriber takes up no more bandwidth than he actually needs. In other words, you can provide a better match between service and customer need rather than forcing subscribers to accept whatever your PDH/SDH technology can provide. As a result, it is feasible to establish an SLA so that the subscriber pays only for the needed capacity and the network operator can use the network much more efficiently.

Another important part of the Tellabs Ethernet-over-SDH solution is that the number of individual interfaces at the PE router can be reduced dramatically. A high number of expensive PDH/SDH interfaces are reduced to a small number of cost-effective Ethernet interfaces. Tellabs can do this using IEEE 802.1q/p Virtual Local Area Network (VLAN), which means that subscriber traffic is VLAN encapsulated when it is delivered to the PE. The PE can then distinguish traffic from different customers using the VLAN ID as the discriminator and the result is effectively as if subscriber traffic is delivered on their own physical interface.

Tellabs' Ethernet-over-SDH solutions also supports the bursty data applications enabling you to over-subscribe the network. Over-subscription will utilize your network more efficiently and help you avoid the need for expensive network upgrades, as the number of subscribers increases.

However, over-subscribing the network is not particularly interesting to subscribers, except to the extent that the cost of their service can be kept competitive. Rather, they want a guarantee that they will receive the service they are paying for, and this is exactly what Quality-of-Service (QoS) makes possible.

Tellabs' solution supports QoS similar to ATM. This way access from subscribers can be provisioned according to the end-to-end needs, for instance best-effort service or burst service. The consequence will be that you as an operator can over-subscribe in the access network and you can do this with the QoS the subscriber requests.



## Benefits at a Glance

Here are some of the many benefits that you, as an operator, will gain from a Tellabs Ethernet-over-SDH access network to your IP VPN core:

- Cost-effective Ethernet interfaces on PDH/SDH equipment and on PE/CPE (Customer Premises Equipment).
- Subscriber bandwidth can be tailored in steps as little as 64 kbps, as opposed to the traditional inflexible PDH/SDH steps.
- Multiple subscribers can be served by a single, low-cost interface at the PE, as opposed to multiple, expensive PDH/SDH interfaces.
- Fewer Ethernet interfaces minimising footprint expenses.
- Changes in bandwidth can be carried out via centralized network management system, without the need for a site visit.
- Provisioning of more bandwidth is done faster and with lower operational costs.

## Tellabs Products for Ethernet-over-SDH

Tellabs® 6315 Metro Ethernet Node  
 Tellabs® 6325 Edge Node  
 Tellabs® 6340 Switch Node  
 Tellabs® 6345 Switch Node  
 Tellabs® 6350 Switch Node

## More Information

Using Ethernet-over-SDH for Managed Bandwidth Services Application Note.

### North America

Tellabs  
 One Tellabs Center  
 1415 West Diehl Road  
 Naperville, IL 60563  
 U.S.A.  
 +1 630 798 8800  
 Fax: +1 630 798 2000

### Asia Pacific

Tellabs  
 3 Anson Road  
 #14-01 Springleaf Tower  
 Singapore 079909  
 Republic of Singapore  
 +65 6215 6411  
 Fax: +65 6215 6422

### Europe, Middle East & Africa

Tellabs  
 Abbey Place  
 24-28 Easton Street  
 High Wycombe, Bucks  
 HP11 1NT  
 United Kingdom  
 +44 870 238 4700  
 Fax: +44 870 238 4851

### Latin America & Caribbean

Tellabs  
 1401 N.W. 136th Avenue  
 Suite 202  
 Sunrise, FL 33323  
 U.S.A.  
 +1 954 839 2800  
 Fax: +1 954 839 2828

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 74.1009E Rev. D 02/07