

Tellabs® Optical Solutions Create a New Networking World for Enterprise Services

This business case demonstrates how Tellabs® Optical Solutions enable service providers to dynamically and cost-effectively offer new, enhanced enterprise services.

For many enterprises, finding the best communication services to meet their evolving needs is a continual process of shopping around, comparing prices and juggling technology requirements with the realities of IT/communications rooms. But what if a service provider could make it easy for enterprise customers to add, remove or grow any type of service without deploying additional shelves, sub-racks or network connections?

Imagine the solution fitting into a single equipment bay (or less) and offering support for any combination of services, from low-speed electrical services up to many 40Gbps wavelengths, basic connections or Ethernet line and local area network (LAN) services. To top it off, the solution should cost less than the suite of data, voice, video and business services the enterprise buys from multiple service providers today. Tellabs has just such a solution.

This business case illustrates how service providers can create a new, more competitive portfolio of enterprise services with Tellabs Optical Solutions.

The Realities of Enterprise Services

Most service providers only dream of being able to offer differentiated enterprise services with the flexibility and scale to meet all of their customers' service needs via a single platform. Today, most new services are complicated to launch, requiring a mix of fresh definitions, support software, training, connections and network/customer premises equipment.

This all adds up to a great deal of investment and time before any revenue is generated, often with expectations of only a marginal return on investment (ROI).

Enterprises struggle with a similar set of challenges when selecting telecom services. While there's no shortage of services from which to choose, the parameters of offerings vary widely between service providers, making it difficult to solve evolving business needs.

Enterprise customers want highly reliable, simple services with on-demand, flexible provisioning to support unpredictable

requirements. Bandwidth — size and cost — should not be a barrier to supporting business operations.

That's where dynamic optical networking from Tellabs comes in.

What is Dynamic Optical Networking?

The phrase “dynamic optical networking” can have multiple meanings. For Tellabs, dynamic optical networking is an integrated transport and multiservice delivery solution that includes:

- Reconfigurable (ROADM-based) optical network layer
- Flexible intelligent services layer for Ethernet, SONET/SDH, SAN, video, OTN, and other services
- Optical control plane and networking management
- Integrated Ethernet and TDM switching
- Highly available systems for unsurpassed service resiliency
- Automated optical power management
- Integrated optical spectrum analyzer and other testing features
- High scalability at the optical transport, switching, and services layers

Be More Competitive By Changing the Game

In tough economic times, service providers and enterprises seek to cut costs and improve revenues by doing things more efficiently. So, something needs to change in the way enterprise services are offered.

Tellabs meets the needs of service providers and enterprises with a new approach to how networks are built and services are defined.

Think of the way enterprise services are currently offered like eating in a shopping mall food court. There are lots of choices, but no one vendor has everything you want. Suppose you want a slice of pizza. You head to the pizza vendor and order a slice with the toppings you're craving. Want fries with your pizza? Head over to the burger stand and bring another tray back to your table loaded with fries. Similarly, today's enterprise services come from a host of different vendors, require different network connections, and use multiple pieces of equipment.

With Tellabs Optical Solutions, the service offering is more like going to a fine restaurant. You select and pay for exactly what you want without leaving your table. Courses are served in the order you desire

Tellabs Optical Solutions benefit both service providers and enterprises by making it easier to dynamically provision new services at a lower cost.

with the table cleared between each offering. You get exactly what you want. Just like with dynamic optical networking from Tellabs, where all services are delivered over a single fiber pair with the option to add and drop services—all within a single delivery platform.

Based on the experience of existing Tellabs optical customers, the new approach produces better profit margins, increases customer retention and simplifies new client acquisition.

Acquiring Enterprise Services	
The Way it Was	The Way it Can Be
The services an enterprise selects drive network connections and deployed equipment.	Modules and pluggable interfaces are simply inserted into existing equipment to change available features for enterprise customers.

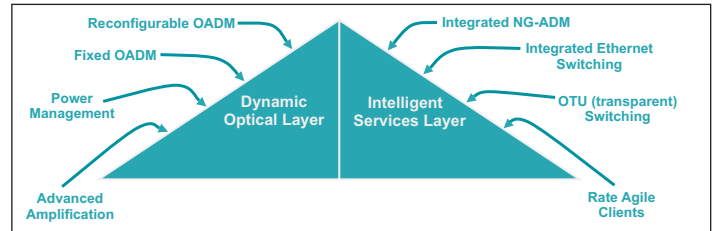
With the flexibility of the Tellabs solution, services can be priced to be insensitive to distance, with flat or slowly changing usage charges that make it easier for enterprise customers to manage their businesses. Enterprises are able to easily add more bandwidth and new services as needed like long distance, switched services, LAN services, storage area network (SAN) services, video broadcast and more.

What is the Tellabs® Optical Networking Solution?

Put simply, Tellabs Optical Networking is the combination of two highly evolved and flexible layers, an intelligent services layer and a dynamic optical layer.

- The **intelligent services layer** consists of a wide range of options, supported by modules. Pick only the hardware and software modules that enable the required services. The intelligent services layer utilizes technologies like a flexible and efficient packet and TDM mapping and aggregation structure to combine multiple services of different types into 10Gbps, 40Gpbs, and later 100Gbps* optical wavelengths.
- The **dynamic optical layer** is a reconfigurable and expandable optical switching layer that is like an infinite network of highways, with routes to anywhere, with no stop lights or traffic congestion. This dynamic optical layer never needs to be overbuilt, because it can support additional connections and higher bandwidth wavelengths over the same fiber infrastructure without impacting existing services. The dynamic optical layer utilizes DWDM, ROADMs and dynamic control plane technologies to provide the lowest CapEx and OpEx structure for transporting and delivering services.

Components of both the intelligent services layer and the dynamic optical layer are incorporated in the Tellabs® 7100 Optical Transport System (OTS) and the Tellabs® 7100 Nano Optical Transport System (OTS). Along with the dynamic optical control plane and network management systems, they form the heart of the dynamic optical networking solution. Additional Tellabs products can also play an integral part of the solution.



The flexibility to easily provision new enterprise services is enabled by the features of the intelligent services layer and the dynamic optical layer.

Benefiting Service Providers and Enterprises

Tellabs Optical Solution benefits both service providers and enterprises. Where traditional networks ride a fairly steep cost curve as bandwidth increases, Tellabs flattens the curve by only requiring new modules for adding or enhancing services. This lower cost curve enables greater profitability for the service provider, that can be passed on to enterprises as more services for the same price or lower cost services. Due to the lower incremental cost for service growth, service providers should see a corresponding increase in ROI as the service deployments increase. The Tellabs goal is to see the service provider's ROI for a given enterprise customer increase drastically as the network services delivered increase (see Figure 1). For obvious reasons, costs cannot go all the way to zero or the ROI ever reach infinity.

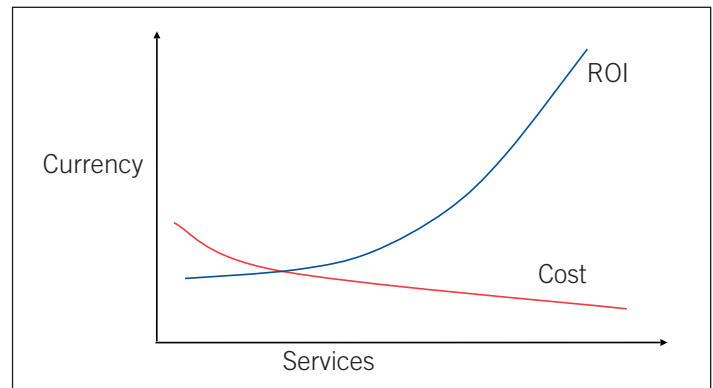


Figure 1.

In traditional architectures, ROI stays the same, or even decreases, as higher bandwidth services are delivered (due to steep linear cost curve and lower profit margins at higher bandwidths). The Tellabs dynamic optical networking advantage in cost structure is achieved through efficient integration of service delivery features, low-cost optical transport, and highly automated control and management. In addition to simply driving costs down, the Tellabs solution helps generate additional revenues for the service provider that hit the top line of the budget sheet.

Tellabs Optical Solutions efficiently scale and grow from small edge points with only a few services, up to large core nodes with many high bandwidth services. In all cases, different features and services are enabled simply by inserting new modules/cards at the end points. In between, the aggregated services typically traverse across the all-optical switched optical network.

* Not yet available

Flexible service modules support traditional TDM, Ethernet, SAN, and native video services off the same module. The deployment of a Tellabs 7100 OTS into an enterprise with a single pair of fibers (or double for redundancy) makes them a part of the service provider's dynamic optical network for shared network services, or an independent dynamic optical network for dedicated network services.

Service providers can monitor and maintain the services delivered to the customer as they do the rest of their highly reliable network infrastructure. Different modules can be employed depending on individual needs, without requiring a new service provider connection or network element at each facility.

Enterprises no longer need a SONET/SDH ADM, an Ethernet switch, or any other stand-alone element for bandwidth delivery to facilities. The limitations of those independent network elements are no longer a concern, because the Tellabs solution grows and adapts with any enterprise business need.

Are Tellabs Optical Solutions right for you?

Tellabs Optical Solutions aren't just for extremely high bandwidth services. For example, it took three years for one Tellabs customer to fill its OC-48 ring. After deploying a Tellabs solution based on other benefits, that same service provider purchased their sixth 10Gbps circuit six months later because Tellabs made it easy to grow and sell service offerings.

In another case, a municipality provided a specific set of requirements to support a specified video surveillance network. Once the municipality understood the beneficial cost curve enabled by a Tellabs dynamic optical network, they quickly switched to a Tellabs 7100 OTS-enabled service provider, upgraded their requirements to support high definition cameras, and increased needed bandwidth by a factor of five. The result: a higher premium service at an affordable price.

Some service providers worry that they will cannibalize existing services if they switch to a Tellabs optical-enabled network. Tellabs' experience shows the opposite is true. Tellabs dynamic optical networking deployments can turn a service provider's network into a growth engine.

Where deployed equipment generates revenue from existing services and is not an economic burden, it can remain in place for as long as it is viable. In addition, the traditional services can often take advantage of some of the cost savings offered by Tellabs, putting them on a new bandwidth cost curve.

Tellabs enables up-selling of additional services that existing platforms are ill-equipped to support. Deploying the Tellabs 7100 OTS at an enterprise site plants a technology solution that bonds the customer to the service provider for a long time, given the wide range of service offerings, features, and scalability it offers. Dynamic optical networking also attracts new customers that were not compelled to leave their existing service providers for a slight variation on the services they are

already buying. Service differentiation is finally compelling enough to attract the new customers.

In addition to finding the new Tellabs-enabled services attractive, enterprise customers discover that new features and cost structures facilitate unprecedented growth in their businesses. They are no longer held back by marginal bandwidth and service features. For example, one service provider determined that in 2008, their customers on Tellabs 7100 OTS-based services grew at three to four times the rate of customers on any other technologies.

Committed to Service Providers and Enterprises

Tellabs partners with service providers and enterprises to ease the transition to the new network approach and definition of service offering. Tellabs offers training, joint selling support and collaboration on marketing material development.

Tellabs is best equipped to explain the technology advantages of dynamic optical networking, particularly when a service provider may be using competing solutions in their networks and might not feel comfortable pointing out the shortcomings of those other platforms. In short, Tellabs is partnering with its customers to bring about the transition to a dynamic optical networking revolution, one that improves service provider cost structures, enables new services, attracts new customers, and adapts to those customer needs for bandwidth and service options.

If you are interested in hearing more about joining the new world that Tellabs Optical Solutions bring, please contact your Tellabs sales representative for a more detailed presentation.

Tellabs Dynamic Optical Networking Enabling Technologies

- Converged services platforms for any size deployment
- Ethernet aggregation and switching
- Ethernet E-Line and E-LAN services
- SONET/SDH ADM on a blade, multiplexing, cross-connection, and protection
- SAN transport services (including ESCON, FICON, and Fibre Channel)
- Native video transport (including SDI, HD-SDI, DVB-ASI (EN50083-9), and more)
- OTN multiplexing, OAM, and transport
- Reconfigurable Optical Add Drop Multiplexer (ROADM)
- Fixed optical filter solutions for minimal initial cost solutions
- SFP/XFP pluggable interface port modules
- Tunable DWDM line side optics
- Up to 88 DWDM wavelengths carrying 10Gbps, 40Gbps, and in the future 100Gbps signals
- GMPLS/ASON standards based dynamic optical control plane
- End-to-end network management system

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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74.2116E Rev. A 11/09