Tellabs® 1000 Multiservice Access Platform

Migrating Business Services from TDM/ATM to IP/Ethernet

Introduction

The Tellabs 1000 MSAP has always been well suited for delivery of business services and now it is better. Its advantages are derived from its small form factor, variety of mounting options (Central Office, Remote Terminal, Customer Premises), modularity with Transport plug-in card options (DS1, DS3, OC3, OC12 and Gigabit Ethernet) and wide Service plug-in card coverage (Special circuits, xDSL, DS1, DS1 IMA, DS3, OC3 and 10/100 Ethernet). With the availability of Feature Package (FP) 16.0, the Tellabs 1000 MSAP adds the GbE222 Gigabit Ethernet Transport/Uplink plug-in card as well as the ES 10/100 Ethernet service plug-in card. Now service providers have the ability to IP/Ethernet enable their Tellabs 1000 MSAP from end-to-end with a smooth, cost effective migration of traditional TDM/ATM to IP/Ethernet business service. [Figure 1: Tellabs 1000 MSAP deployed with ES 10/100 plug-in card].

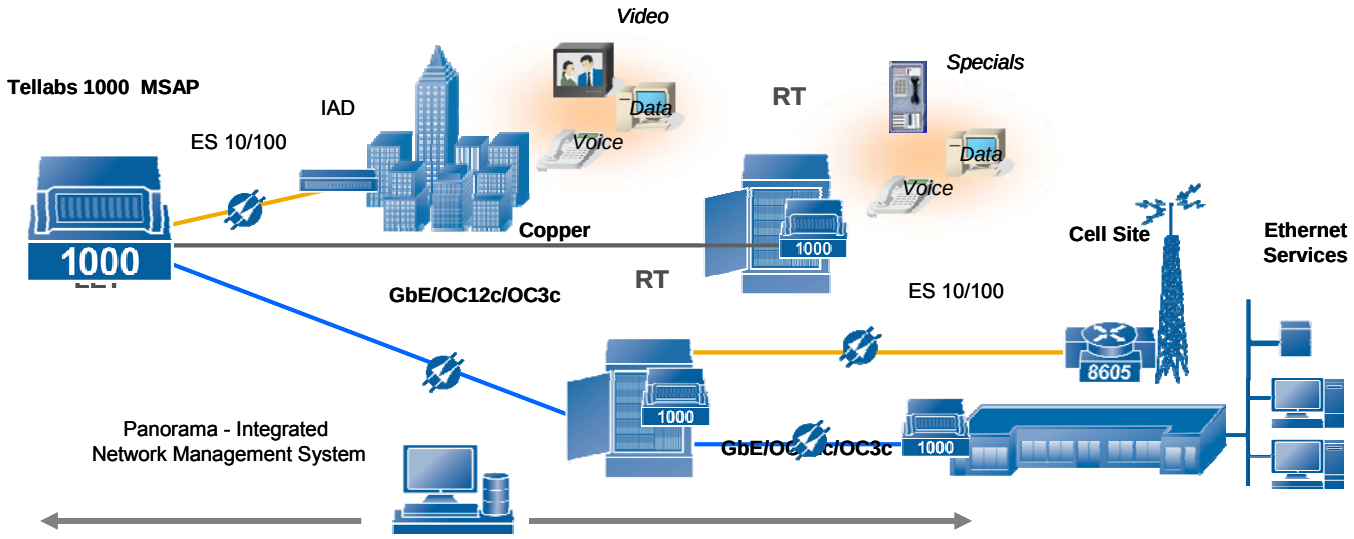

Figure 1: Tellabs 1000 MSAP deployed with ES 10/100 plug-in card

Benefits of Ethernet services versus TDM services

Today's Tellabs 1000 MSAP supports a wide variety of service cards. Plug-in cards from ISDN, Special Services, xDSL, DS1, DS3 and even OC3 have been supported for many years and have faithfully generated revenue for service provides. However, there are inherent benefits of Ethernet and the ability to capture more revenue with Ethernet business services that drive service providers to up-grade their existing Tellabs 1000 embedded base with the new ES 10/100 plug-in card.

IP/Ethernet is the preferred means to deliver advanced services such as IPTV, VoD, VoIP, VPN, medical imaging, security (IP security cameras, building security access, etc…) and data storage. The top reasons for its popularity over TDM, ATM and SONET include Ethernet's low cost, reliability, highly scalable bandwidth provisioning, low overhead/high revenue generating bandwidth and inherent efficiencies (i.e. not time division multiplexed). As of the third millennium, we can say that Ethernet is a widely accepted technology and service

providers are slowly developing an understanding of the technology. The Tellabs 1000 being a true multi-service access platform, and supporting all technologies such as Ethernet, DSL, TDM, and ATM, is a perfect network element for internal technical staff to gain a greater comfort level for IP/Ethernet on a network element that they are familiar with and have worked with for many years. Ultimately, all voice, video and data will be over IP/Ethernet interfaces and the Tellabs 1000 MSAP allows for the graceful migration of technologies and training of technical staff.

Another benefit of IP/Ethernet is that it satisfies the markets furious appetite for higher bandwidths and the subsequent revenue opportunities. Residential broadband user are demanding higher bandwidth speeds as service packages increase from 1.5Mbps to 5Mbps to 25Mbps to 50Mbps and above. Business customers are placing the same pressures on service providers and thus DS1 speeds, and multiple DS1 bundles and DS3 speeds are no longer sufficient and Metro Ethernet Forum (MEF) network models have been widely embraced. Same can be said for wireless service providers and their progression forward to support 3G and 4G speeds and Ethernet centric interfaces for their cell site traffic backhaul. All three of these examples represent ***significant revenue opportunities for services providers*** that can be pursued and captured from the Tellabs 1000 MSAP embedded base.

It follows that when selling bandwidth in chunks of 1.5 Mbps, 45 Mbps and 155 Mbps the physical interface bandwidth become a service provider's artificial constraint in setting price points of service packages. There are customers that desire to obtain, and pay additional money for, 50 Mbps, 75 Mbps and 100 Mbps, that do not have that option because the bandwidth is sold in 1.5 Mbps and 45 Mbps blocks. At the upper end of the TDM scale, the cost, and amount of bandwidth, of an OC-3 is prohibitive. At the lower end of the TDM scale, bundling multiple pairs of DS1s is not efficient and assumes the availability of copper in the ground to facilitate. Ideally, a service provider that can deliver 10/100 Ethernet services has the ability to match customers bandwidth needs exactly with their financial budget, and thus capture all possible revenue within a theoretical supply curve [Figure 2: Supply and Demand chart]. For example, the Tellabs 1000 MSAP ES 10/100 allows the provisioning of services down to the "per cell" granularity and thus all possible revenue can be captured.

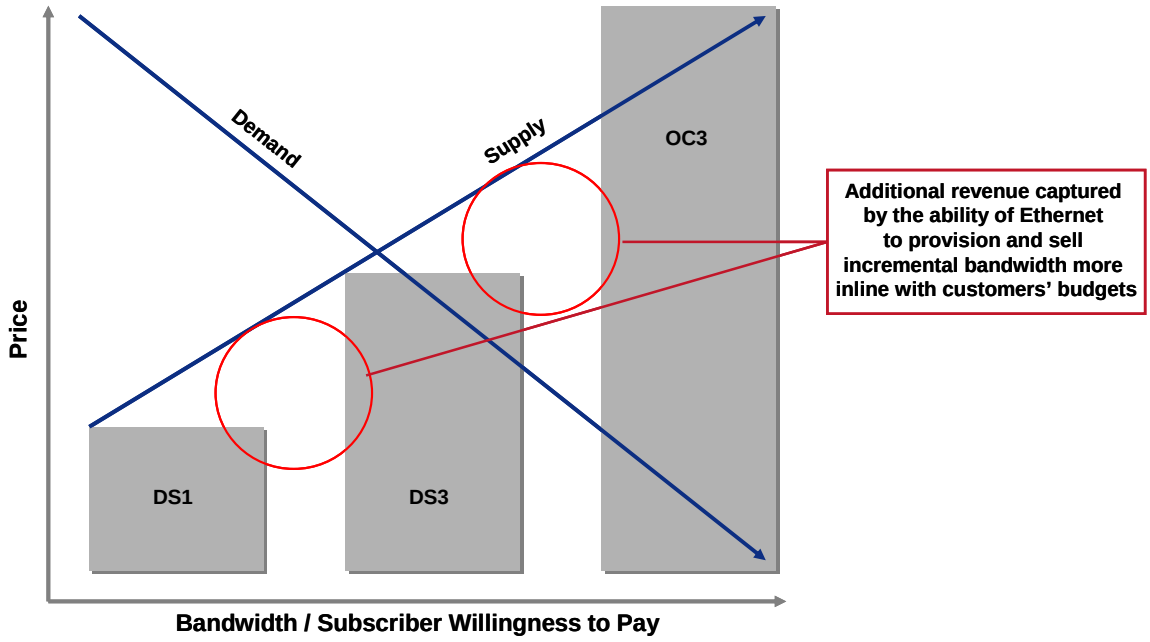

Figure 2: Supply and Demand chart

ES 10/100 upgrade cost compared to revenues from services delivered

Business services are a lucrative proposition for service providers and Ethernet business services continues that trend. If a service provider's customer is demanding 10 Mbps or 100 Mbps Ethernet service, then it is a conservative assumption the national rate range for those services speeds respectively are $700-$950 and $2,000-$2,600* a month. That said, approximate price of the ES 10/100 plug-in card is roughly $1,400 and factoring in installation costs and customer premises IAD, this outlined project can achieve ***positive cash flow in one months for 100 Mbps service!***

- Tellabs 1000 MSAP ES 10/100 plug-in card = $995
- Tellabs 1000 MSAP ES 10/100 plug-in card installation costs = $700 (no travel)
- Customer premises IAD costs = $500
- Break even, assuming 10 Mbps monthly revenue = $950 – positive flow in 2+ **months!**
- Break even, assuming 100 Mbps monthly revenue = $2,600 – positive flow in **1 month!**

** Rates vary across national markets*
***Please contact Tellabs' sales account team for quotation*

ES 10/100 upgrade cost compared to costs of Ethernet services 3rd party equipment overlay

Before FP16.0, service providers might have chosen to overlay the Tellabs 1000 MSAP with a non-carrier class 3rd party "pizza box" type node. With the availability of FP16.0, and the GbE222 and the ES 10/100 cards, this tactic is no longer needed nor is it optimal for the following reasons [Figure 3: Overlay configuration versus integrated solution].

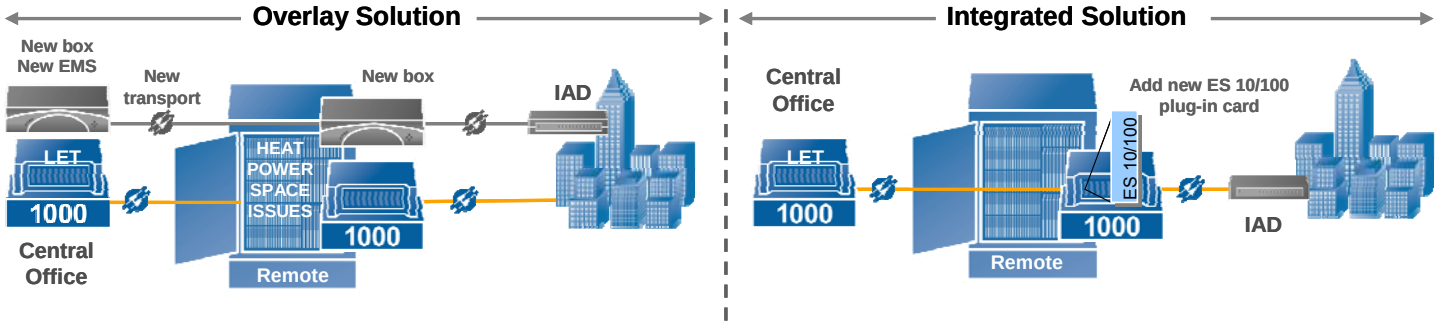

Figure 3: Overlay configuration versus integrated solution

Across the industry all service providers have explicit initiative to lower operational expenses. Anytime non-integrated solutions are deployed operational expenses are increased. Those costs being added expenses associated with introduction of new box-on-box, new procedures, second transport facilities, second EMS software, second EMS hardware and annual second EMS maintenance charges, subsequent personnel training and expanded spares program all add up to negatively effects operational expenses.

Understanding that a large majority of these 3rd party "pizza box" type overlays would be considered for remote outdoor cabinets, these cabinet deployments raise a variety of negative considerations. First, the availability of parallel fiber facilities for second nodes transport is problematic and introduces inefficiencies if it exists and/or significant costs if it needs to be added. Second, the addition of 3rd equipment into a cabinet typically voids the

warranty of the existing electronics equipment manufacture. Finally, if we move past the cabinet warranty issue and second fiber transport availability issue, then the environment, mechanical and powering engineering needed to protect the service provider's liabilities associated with the installation of 3rd party equipment impacts the project budget versus installing a new card in an existing chassis needs to be factored into the project costs.

- Installation cost 1RU Ethernet Switch at cabinet where Tellabs 1000 MSAP exists* = **$1,290**
- Installation cost ES 10/100 at a cabinet based Tellabs 1000 MSAP system** = **$700**

** Does not include environment, mechanical and powering engineering analysis expense and does not include additional power utilization of overlay equipment*
*** Assumes that existing Tellabs 1000 GbE222 transport and network uplink exist*

Historically, 1RU "pizza box" type Ethernet nodes have been non-carrier class. Their form factor dictates an indivisible combination of power, common control, EMS and user interface, transport interfaces and service interfaces. Therefore all critical functions of the node become a single point of failure that can crash the entire node and disrupt services to all the customers being served by that node. Comparing this architecture to the Tellabs 1000 MSAP, one finds that the Tellabs 1000 provides for redundant power, redundant common control, separate card for EMS and user access, redundant transport and redundant service if desired. ***This carrier-class architecture provides resiliency never before seen in the IP/Ethernet transport, uplink and services market.***

Summary

As stated, the Tellabs 1000 MSAP has always been well suited for delivery of business services, cell site traffic backhaul and the delivery of revenue generating analog special services. It is a true multi-service access platform. Now, the Tellabs 1000 MSAP FP16.0 enables service providers to deliver compelling end-to-end IP/Ethernet services with the new GbE222 Gigabit Ethernet Transport/Uplink plug-in card as well as the ES 10/100 Ethernet service plug-in card. There are positive technological reasons and positive monetary reasons for service providers to move forward with the transition of TDM/ATM based business service to IP/Ethernet based business service. Tellabs takes satisfaction in facilitating this migration and Tellabs stands ready to assist customers in reaping the rewards of this adoption of IP/Ethernet business services.

For more information, please contact your local Core Telecom Systems sales representative, at the phone numbers provided below or visit www.coretelecom.net

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