Tellabs Access Solutions

Tellabs 1000 Lowest-cost path to Ethernet broadband access

Introduction

Initiatives to migrate from TDM/ATM interfaces to IP/Ethernet can start in the core down to the access network, or they can begin at the customer premises and drive back through the access network. Service providers that have an embedded base of TDM/ATM centric access equipment are faced with three choices relative to satisfying the need to transition to IP/Ethernet.

- Replacement - Clear TDM/ATM BBDLC and Fill with IP/Ethernet access platform
- Overlay - Cap TDM/ATM BBDLC and Grow with IP/Ethernet access platform
- Upgrade - Upgrade existing Tellabs 1000 MSAP with GbE222 and ES 10/100

Tellabs 1000 Multiservice Access Platform (MSAP) has added the GbE222 Gigabit Ethernet transport (and uplink) plug-in card and ES 10/100 Ethernet Services plug-in card allowing the lowest-cost path to Ethernet broadband access [Figure 1: Tellabs 1000 MSAP IP/Ethernet migration support].

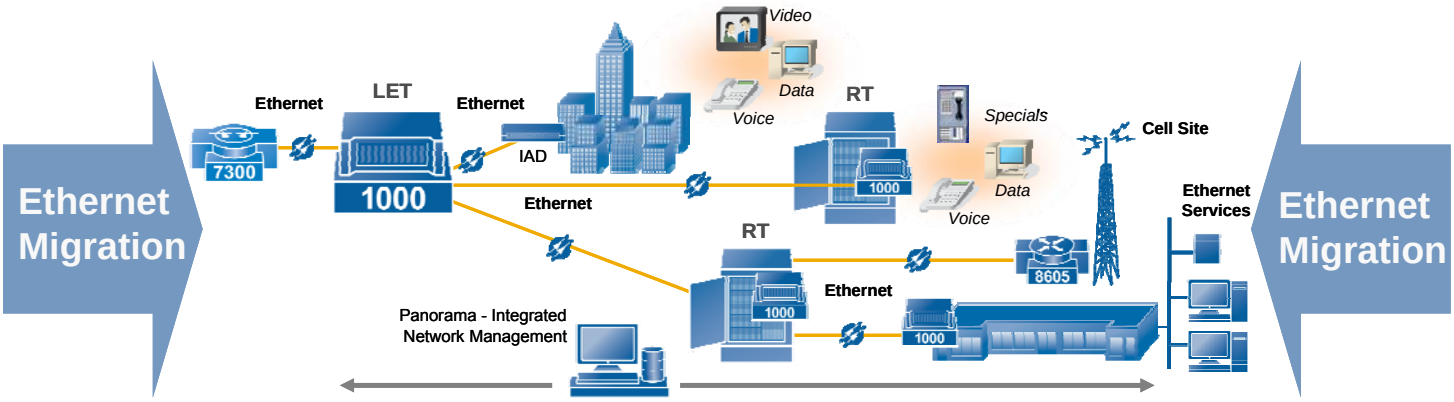

Figure 1: Tellabs 1000 MSAP IP/Ethernet migration support

The ultimate purpose of a TDM/ATM to IP/Ethernet network upgrade would be for service providers to capture the significant revenue opportunities associated the higher bandwidth IP/Ethernet market demands such as:

- Deliver Ethernet business services
- Support wireless traffic demands to sub-tended cell site base stations (e.g. 3G to 4G and beyond migration)
- Grow the number of residential broadband subscribers served
- Increase bandwidth speeds to residential broadband subscribers (e.g. VDSL2, bonded ADSL2+ advancements)
- Provide IPTV/VoD services

All of the above mentioned initiatives can be supported from the existing Tellabs 1000 MSAP embedded base. And, with the addition of the GbE222 plug-in card and the ES 10/100 plug-in card the Tellabs 1000 MSAP provides the desired graceful migration to IP/Ethernet interfaces without abandoning existing revenue generating TDM service such as ISDN, Special Services, DS1, DS1 IMA and DS3.

Replacement

Replacement of the access equipment is certainly the most disruptive of the three choices. Service providers need to weigh their long-term goals and budget constraints before going down the path of wholesale change out. Industry installation companies have analyzed the costs of new cabinets versus renovating existing cabinets, and their findings state that $25,000-$50,000 in expenditures can be saved per cabinet by selecting renovation options.

However, that study covers both the cabinet and access gear replacement, so what if only the access equipment was replaced? First, there is the possibility that the addition of 3rd party electronic equipment into a cabinet would exceed the power and heat dissipation capabilities as designed, resulting in equipment failure or safety concerns. Second there needs to be extensive upfront engineering completed for environment, space, mechanical, battery plant and powering issues before inserting 3rd party equipment. This can result in 2 to 4 weeks of engineering and the associated expense. Next there is the installation costs estimated to be between $15,000 to $20,000 per cabinet for a "clear and fill" scope of work regardless of access equipment installed (i.e. stated numbers do not include electronics). Finally, the difficulties of executing service effecting access equipment replacement projects during non-standard work hours (i.e. maintenance windows) needs to be taken into consideration.

Overlay

Overlay is a plausible course to take, but once again care should be taken in assessing long-term goals and budget constraints relative to this tactic. Just like with the replacement strategy, environment, space, mechanical, battery plant and powering issues need to be engineered properly before installing 3rd party access gear next to existing access equipment [estimated costs $4,000 = 40 man hours x $100 per hour engineer labor cost]. Then there is the installation costs for installing 1RU 48-port "pizza box" type DSLAM estimated to be between $1,295 to $1,770 per cabinet and it could be expected that the 1RU 48-port DSLAM electronic might cost $16,500 for three (e.g. $5,500 per node). It is necessary to take into consideration the cost of three 1RU DSLAMS, because they would need to be double-ended between a remote node and a central office node, AND one node would likely be needed as voice gateway. Furthermore, do not lose sight of the fact that additional fiber, for this second access box being transported back to central office, would be required [Figure 2: Overlay Illustration]. The availability of parallel second fiber is often problematic.

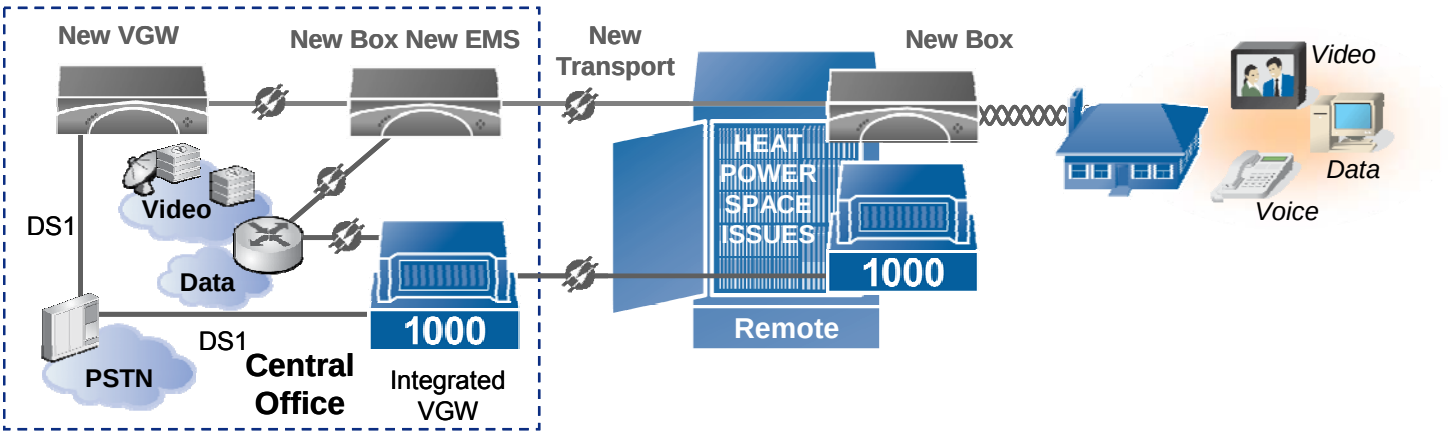

Figure 2: Overlay Illustration

Another consideration is the operational expense of an overlay solution relative to power utilization. For example eight Tellabs 1000 6+6 ADSL2+ would draw approximately 100 watts. It is plausible for a 1RU 48-port pizza box DSLAM to draw upwards of 200 watts and that remote node would be matched with a second node in the central office that would also utilize 200 watts and there might be the need to add voice gateway node as well which would add another 200 watts. Obviously adding eight Tellabs 1000 6+6 ADSL2+ with integrated transport, EMS and voice gateway provides significant power saving.

Finally, another point of contention between overlaying existing Tellabs 1000 MSAP equipment with a 1RU 48-port pizza box DSLAM would be direct comparison of reliability. The Tellabs 1000 architecture of redundant power, redundant common control, separate EMS card interface, port level and card level redundancy for transport has always been a carrier-class architecture. Compared to a 1RU 48-port pizza box DSLAM where component and system architecture are so homogeneous and interdependent that failure of one component typically results in the failure of the whole system. As opposed to the independent and modular component and system architecture employed by the Tellabs 1000 resulting in isolation of failures, thus not bring down a complete system. ***This carrier-class architecture provides resiliency never before seen in the IP/Ethernet transport, uplink and services market.***

Upgrade

Now let us review the merits of upgrading existing Tellabs 1000 MSAP equipment to support Gigabit Ethernet transport and uplinks and furthermore support High Speed Internet (HSI) with eight 6+6 ADSL2+ plug-in cards [Figure 3: Tellabs 1000 MSAP integrated support of IP/Ethernet transport, uplink and services]. The installation costs for installing Gigabit Ethernet transport at CO and RT, Gigabit Ethernet uplink at CO and eight 6+6 ADSL2+ plug-in cards would be between $700 to $930. The associated Tellabs 1000 plug-in cards would cost around $11,335 (four GbE222 = $6,840 and eight 6+6 ADSL2+ = $4,495).

The Tellabs 1000 MSAP has delivered voice with its associated benchmark of 99.999% reliability. That equates to less than 5 minutes of down time per year. By nature, a 1RU 48-port pizza box DSLAM is a single point of failure. It is omni-dependent architecture mashes together transport, service, common control, EMS, user interface and power components into one node – one single point of failure. The Tellabs 1000 configuration outlined as part of "upgrade" proposal provides DSL on 6-port cards versus the overlay solution that had 48-ports on an interdependent 1RU DSLAM. The significances of that comparison is that in the un-likely event of a DSL circuit failure, the Tellabs 1000 systems has only 5 other DSL customers at risk, where the 1RU 48-port pizza box DSLAM has 47 other DSL customers at risk for a service effecting maintenance event.

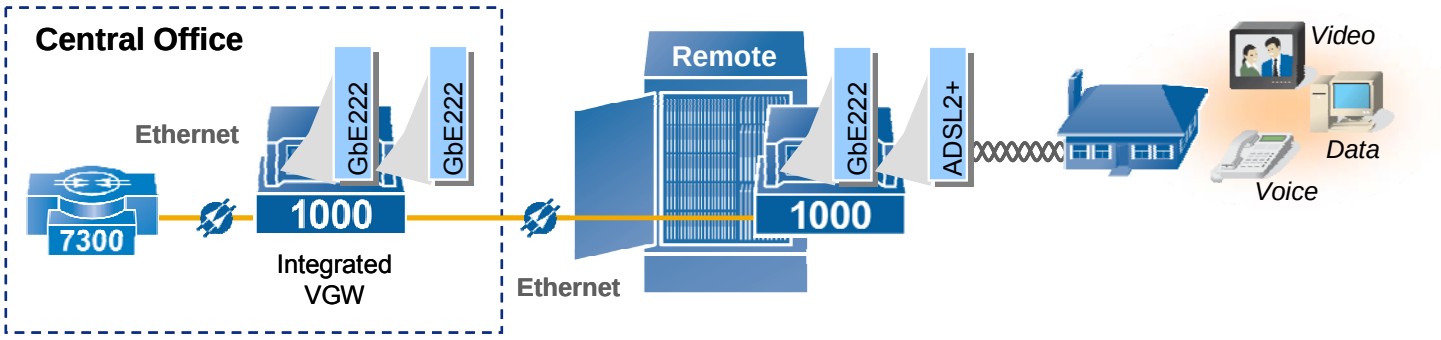

Figure 3: Tellabs 1000 MSAP integrated support of IP/Ethernet transport, uplink and services

Conclusion

Based on the above analysis, upgrading the Tellabs 1000 MSAP is the lowest-cost path to Ethernet broadband access when comparing the costs associated with replacement or overlay of existing access equipment.

- Savings relative to Replacement = ~$25,000-$50,000 (i.e. comparing upgrade against new cabinet installation)
- Estimated cost of Overlay = $4,000 (Eng.) + $1,770 (install) + $16,500 (equip.) = $22,270
- Estimated cost of Upgrade Tellabs 1000 MSAP = $930 (install) + $11,355 (equip.) = $12,265

With the Tellabs 1000 MSAP addition of GbE222 plug-in card, and the ES 10/100 plug-in card, the solution now provides the most cost effective means for service providers to migrate their old TDM and ATM interfaces to contemporary IP/Ethernet interfaces. This will allow service providers to capture additional revenues from Ethernet business services, wireless traffic backhaul, grow the number of residential broadband customers, increase bandwidth speeds to broadband subscribers and provide IPTV/VoD services while not abandoning existing revenue generating TDM services. This graceful migration of TDM/ATM to IP/Ethernet provides a compelling, and unique, value proposition for the embedded base of Tellabs 1000 MSAP equipment.

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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