Tellabs® 1000 Multiservice Access Platform (MSAP)

Secure high revenue TDM services with low cost integrated MSAP

Introduction

The Tellabs 1000 MSAP has enjoyed a successful history of gracefully migrating TDM to ATM and now to Ethernet (Figure 1). However, the fact that the Tellabs 1000 MSAP still supports TDM services should not be lost within all the new IP/Ethernet uplink, transport and services advancements. In fact, the core customer base of the Tellabs 1000 MSAP continues to support POTS, Special Services (e.g. UVG, Pay Phone, TO, EBS, E&M, 2-wire & 4-wire), ISDN, DS1 and DS3 services as a low density, low cost, low power, high availability platform for continued support of these year-over-year high revenue TDM services.

The purpose of this paper is to once again position the Tellabs 1000 MSAP as the access platform of choice for the following TDM applications with the explicit customer benefits of providing the lowest first plug-in card cost and pay-as-you-grow savings over time:

- M13 Mux
- 0/1 DACS
- 0/1/3 DACS
- Voice Switch Retirement and Re-homing
- ISDN Switch Retirement and Re-homing
- High Capacity (Hi-Cap) Transport

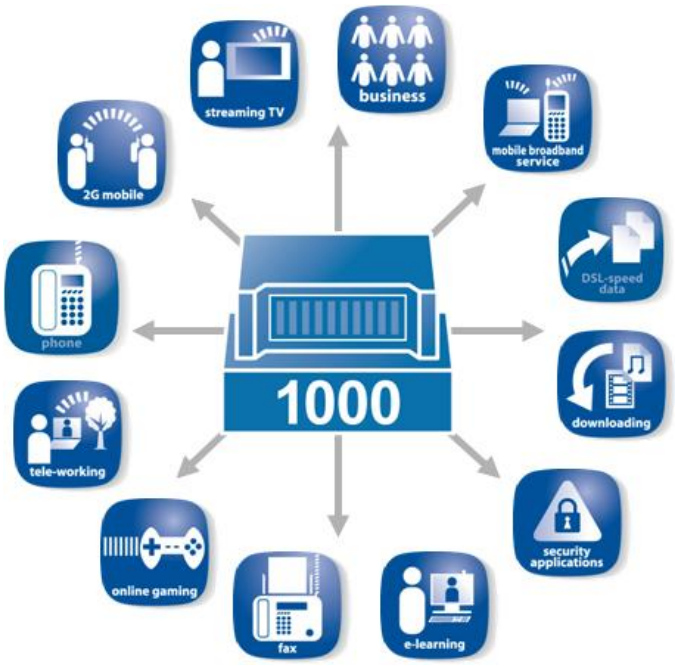

Figure 1: Tellabs 1000 Multiservice Access Platform (MSAP)

M13 Mux

The DS3 card enables aggregation of up to 28 ATM-or TDM-based T1 Hi-Caps interfaced into M13 Digital Access & Cross-Connect System (DACS) in the Central Office (CO) capabilities using 75 Ohm coaxial cable of up to 450' (Figure 2). DS3 terminates a standards based DS3 signal from the network and multiplexes/demultiplexes into 28 DS1s. The plug-in card is fully compatible with any third party DS3 multiplexer capable of supporting C-Bit parity framing. DS3 plug-in card and port level redundancy can be provided with RG179 75 Ohm coaxial "Y" cable.

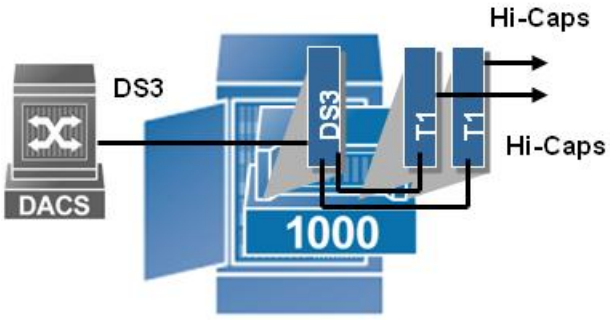

Figure 2: M13 Mux

Additional information:

- Intact DS1 service to customer - T1A-XCVR (0110-0192) , T1AX-XCVR (0110-0193), T1HD2 (0120-0151) and/or T1HD4 (0120-0147)
- Direct connection to 3rd party Mux - DS3-XCVR (0120-0148)
- Inter-nodal transport - OC3c-XCVR (0120-0133), OC12c-XCVR (0120-0145 or 0120-0166) or GbE222 (0120-0162)
- Best Practices – The framing is C-bit parity and the line coding is B3ZS. The line rate is of course standard DS3 44.736 Mbps and it supports loopback modes of Line (facility) and Internal (equipment).
- Technical Documentation – "Tellabs 1000 MSAP Plug-In Card User Guide"

0/1 DACS

The 0/1 DACS capabilities, or Nx64, are supported across a wide variety of Tellabs 1000 T1 plug-in cards (e.g. T1/T1X, T1HD2 and/or T1HD4). Cross connecting DS0 sub-groups can be accomplished as long as the sub-groups have equal numbers. Uplink transceiver can support single or multiple subgroups (Figure 3).

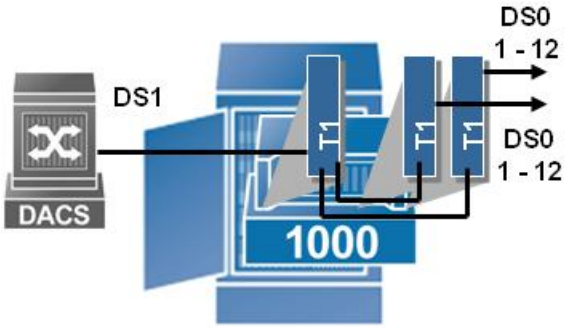

Figure 3: 0/1 DACS

Additional information:

- Channelized DS1 service to customer premises - T1 (0120-0122), T1X (0120-0123), T1HD2 (0120-0151) and/or T1HD4 (0120-0147)
- Inter-nodal transport - OC3c-XCVR (0120-0133), OC12c-XCVR (0120-0145 or 0120-0166) or GbE222 (0120-0162). Remember, you can use these XCVRs for inter-nodal transport, but the channelized DS1 always count against the TDM buss, that is you cannot off-load capacity to ATM buss like is done with Hi-Caps.
- Best Practices - Individual 64k channel (DS0) on one channelized T1 can be cross connects to a different channelized T1. Any DS0 can cross-connect to any DS0, with the exception of DS0s on the same T1. Each Tellabs 1000 shelf supports Up to 20 T1s. The TDM buss maximum capacity is 50Mbps (full duplex). TDM buss of primary shelf limits capacity because it has to carry all inter-shelf traffic. Any to Any cross-connect configuration should be kept to 50 T1s or less. Intra-shelf cross-connect configuration (cross-connect only to T1s on same shelf) can expand to 148 T1s. There are hybrid configurations that are possible. The key is not to cross-connect any more than 600 DS0s (25 T1 capacity) between shelves.
- Technical Documentation– "Provisioning Nx64 Services Application Guide"

0/1/3 DACS

For the 0/1/3 DACS application the Tellabs 1000 T1A/T1AX/T1HD2/T1HD4 can be used to multiplex/demultiplex any number of intact DS1s in quantities not exceeding 24. Then, the intact DS1s would be provisioned over to corresponding DS3 that would provide the direct uplink to a standards based 3rd party Mux. Simultaneously, channelized T1/T1X/T1HD2/T1HD4 plug-in cards can be deployed in Nx64 configurations (Figure 4). DS3 plug-in card and port level redundancy can be provided with RG179 75 Ohm coaxial "Y" cable.

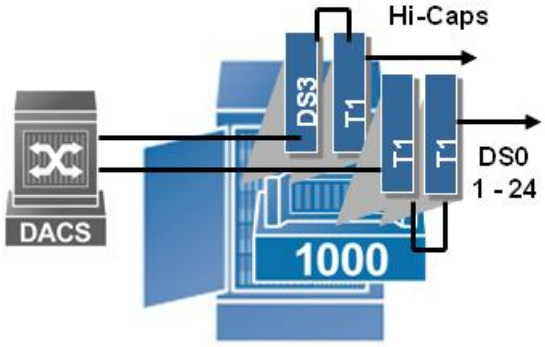

Figure 4: 0/1/3 DACS

Additional information:

- Intact DS1 service to customer - T1A-XCVR (0110-0192) , T1AX-XCVR (0110-0193), T1HD2 (0120-0151) and/or T1HD4 (0120-0147)
- Channelized DS1 service drop to customer premises - T1 (0120-0122), T1X (0120-0123), T1HD2 (0120-0151) and/or T1HD4 (0120-0147)
- Direct uplink to 3rd party - DACS DS3-XCVR (0120-0148)
- Inter-nodal transport - OC3c-XCVR (0120-0133), OC12c-XCVR (0120-0145 or 0120-0166) or GbE222 (0120-0162)
- Best Practices - There is a 670 DS0 limit across the TDM buss for the channelized DS1s, however the intact DS1 can be transported over TDM-over-ATM configuration that take advantage of ATM buss capacity as well.
- Technical Documentation – "Tellabs 1000 MSAP Plug-In Card User Guide"

Voice Switch Retirement/Re-homing

As Class 5 voice switches approach end-of-life, they are still burdened with less corporate support, less R&D and yet the high cost for annual support agreements continues. For Class 5 switch retirement and re-homing, Tellabs can provide existing technology, and equipment, that can help our CORE customers realize immediate energy and cost savings. By replacing select Class 5 offices or remotes, with small, low energy consumption Tellabs 1000 MSAP equipment, our customers can migrate from the current untenable high cost structure toward a sustainable, lower cost, stream-lined network that can efficiently evolve with your customers (Figure 5). Once the Class 5 is retired and removed, the Tellabs 1000 MSAP can be used to consolidate POTS and DSL on to one integrated platform eliminate additional network elements, expand integrated DSL functionality.

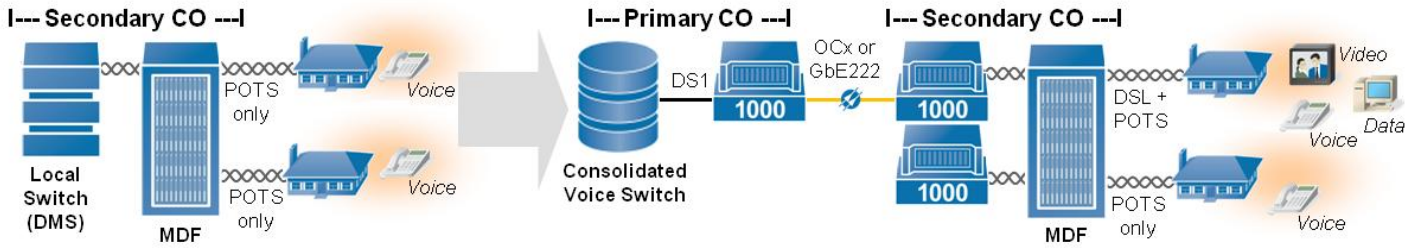

Figure 5: Voice switch retirement or re-homing

Additional information:

- POTS only service drop to customer - POTS (0110-0196)
- Integrated xDSL/POTS service drop to customer - ADSL2+B 6+6 (0110-0273)
- Inter-nodal transport - OC3c-XCVR (0120-0133), OC12c-XCVR (0120-0145 or 0120-0166) or GbE222 (0120-0162)
- Best Practices - There is a 670 DS0 limit across the TDM buss, however expansion beyond is possible through TDM-over-ATM configuration that take advantage of ATM buss capacity as well.
- Technical Documentation – "Tellabs 1000 MSAP Plug-In Card User Guide"

ISDN Switch Retirement/Re-homing

Similar to the voice switches replacement and re-homing, but in a smaller scale, there are ISDN switches that are also approaching end-of-life. Tellabs 1000 MSAP can be used for central offices or remotes based, with small, low energy consumption ISDN. The BRI ISDN provides for two 64 kbps bearer channels and one 16 kbps data channel (Figure 6).

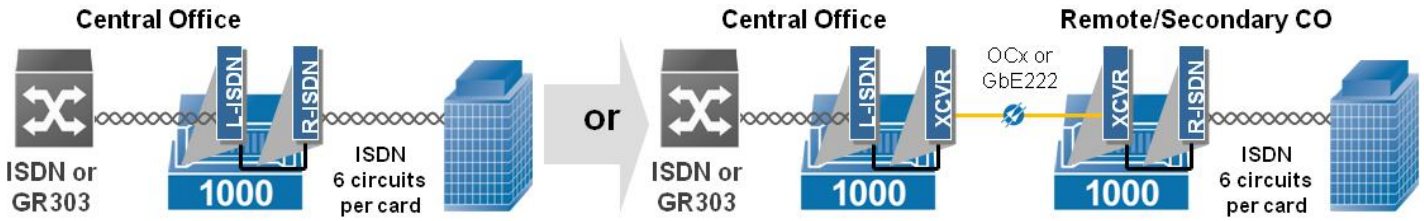

Figure 6: ISDN switch retirement or re-homing

Additional information:

- Uplink to switch - L-ISDN (0110-0098) or for GR-303 use T1 (0120-0122) or T1X (0120-0123)
- BRI ISDN service drop to customer - R-ISDN (0110-0246)
- Inter-nodal transport - OC3c-XCVR (0120-0133), OC12c-XCVR (0120-0145 or 0120-0166) or GbE222 (0120-0162)
- Best Practices- There are six ISDN circuits per plug-in card, using three DS0s per circuit, thus 18 DS0s per plug-in card. There is a 670 DS0 limit across the TDM buss that must be considered.
- Technical Documentation – "Tellabs 1000 MSAP Plug-In Card User Guide"

High Capacity (Hi-Cap) Transport

The Tellabs 1000 MSAP can carry a large number of Hi-Cap services out of each remote terminal and free up valuable TDM bandwidth for additional voice services. As an example, a typical remote cabinet is equipped with SONET ADM to support the additional capacity required for Hi-Caps and for transport while another device is used to deliver the Hi-Caps services. Tellabs Hi-Cap feature eliminates the need for both of these pieces of equipment, significantly lowering the cost per terminal with this integrated access approach (Figure 7).

Figure 7: High Capacity (Hi-Cap) Transport

Additional information:

- Intact or channelized service drop to customer premises equipment - DS3-XCVR (0120-0148) , T1A-XCVR (0110-0192) , T1AX-XCVR (0110-0193), T1HD2 (0120-0151) and/or T1HD4 (0120-0147), T1 (0120-0122) and/or T1X (0120-0123)
- Inter-nodal transport - OC3c-XCVR (0120-0133), OC12c-XCVR (0120-0145 or 0120-0166) or GbE222 (0120-0162)
- Best Practices – The Tellabs 1000 supports groups of eight, ten, or twenty T1 Hi-Cap cards in a single expansion shelf. The maximum number of T1s is 112 Hi-Cap per system (FP11.9 increased number T1 Hi-cap from 60 to 112). The T1 Hi-Cap groups of sizes 8, 10, or 20 consume 16 Mbps, 20 Mbps, or 40 Mbps respectively. When provisioned, a fixed bandwidth on the ATM cell buss is reserved to support these services.
- Technical Documentation – "Tellabs 1000 Application Guide ToA Hi-Cap Service"

Summary

Tellabs endeavors to support our core customer base with continued support of Tellabs 1000 MSAP POTS, Special Services (e.g. UVG, Pay Phone, TO, EBS, E&M, 2-wire & 4-wire), ISDN, DS1 and DS3 services as a low density, low cost, low power, high availability platform for continued support of these year-over-year high revenue TDM services.

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

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