



Tellabs 1048 Small CBA



Tellabs 1000 CBA



Tellabs 1000 High Density CBA

## Tellabs® 1000 MSAP Supports Your Legacy and Advanced Services

### Overview

Service providers face three often conflicting challenges when it comes to maintaining and upgrading their last-mile access networks. They must:

- Satisfy the continuing demand for TDM-based business services, even though the industry clearly is transitioning to an all-IP Ethernet-centric network
- Figure out how to keep delivering TDM-based services to businesses and residences, despite the fact that many of their incumbent equipment vendors have Manufacture Discontinued (MD'd) their product lines
- Provide the most cost effective infrastructure which, when economically feasible, means deploying fiber rather than copper to the building entrance

The Tellabs® 1000 Multiservice Access Platform (MSAP) is a low-cost replacement solution for MD'd technologies that support TDM-based services. Equally important, its design allows service providers to upgrade the platform to IP via software and cards. Today, more than 200,000 Tellabs 1000 Channel Bank Assemblies (CBAs) carry traffic in service provider networks throughout the world.

This huge installed base is part of the strong Tellabs heritage of serving the telecommunications and enterprise markets. Building on this heritage and backed by the strength and stability of Marlin Equity Partners' \$2.6 billion portfolio, the new Tellabs continues to invest in solutions designed to help its service provider customers grow their businesses and strengthen their profitability.

As one of the two divisions that make up the new Tellabs, Tellabs Broadband will continue to support and evolve the Tellabs 1000. Working closely with our service provider customers, Tellabs will focus R&D resources on developing new breed of Tellabs 1000 applications.

### Support Legacy and Advanced Services

The Tellabs 1000, also known as the AccessMax, DMAX1120 and UMC1000, is a modern and flexible Integrated Multiservice Access Platform (IMAP) capable of economically serving from as few as one to as many as 2,000 subscribers. Designed with a modular building-block approach and incorporating state-of-the-art technologies, the Tellabs 1000 accommodates a variety of transmission media to provide both legacy and advanced services in a wide range of network topologies.

Included in the Tellabs 1000 family of products are local-loop voice, data, xDSL and Ethernet (e.g. 10/100, 10/100/1000 and 10 gigabit Ethernet) solutions. Using existing backhaul facilities, including fiber and T1/E1 or HDSL copper plant, the Tellabs 1000 delivers legacy narrowband and wideband services. Its unique backplane design combines line card powering and heat-dissipation technologies to deliver multiple high-density services.

Tellabs equips remote telecom cabinets/closets with the Tellabs 1000 CBA, which can provide the following:

- A full set of services on one platform (POTS, ADSL, VDSL, Ethernet, Specials, Hi-Caps, DS3) with full Time Slot Interchange (TSI) capabilities to assign any service to any slot/port
- High-capacity OC3c, OC12c, 10/100/1000 Ethernet and 10G Ethernet [software-dependent] transport
- SONET-compliant OC3 for inter-terminal transport over SONET rings as well as card support for GR253-compliant SONET 1+1 automatic protection switching
- One set of fibers for all services, thereby eliminating the need for separate fibers for each service type
- An advanced Element Management System (EMS) — the robust Tellabs® Panorama™ solution
- Lowest-cost Customer Premises Network Element to provide a full set of required services, including locally switched and locally switched specials, as well as non-locally switched services and non-switched services
- Support for up to 112 DS1s and M13 functionality
- Upgrade to IP with software and cards — 10/100/1000 or 10G Ethernet transport and uplink, 10/100 Ethernet services, VDSL2 and VDSL2 bonded services using PTM and ADSL2+ ATM services Via common control cards, service cards and transport/uplink/ service cards
- The Tellabs 1000 delivers a comprehensive set of solutions for POTS, Special and Hi-Cap Service deployments
- Local Exchange Terminal (LET) in the central office/location to Remote Subscriber Terminal (RST) OSP CEV, HUT or customer premises — single shelf to full rack; small-shelf 1048 CBA; and small-shelf 1048 Retrofit Kit
- Local Exchange Terminal in central office only — single shelf to full rack

The Tellabs 1000 also provides Fiber-to-the-Business (FTTB) CPE Remote Terminals:

- 100 lines — RST — 100 wall mount
- 200 lines — RST — 200 wall mount
- 200 lines — RST — 200 wall mount expansion kit

## Three Tellabs 1000 Network Configurations

Service providers can configure the Tellabs 1000 in three ways:

**Linear chain** — also called point-to-point or drop and continue, can extend five transport spans deep from the LET, with up to 32 total remote terminals. The LET resides in the central office with the switch, and the RST resides in a remote cabinet, rack, CEV or on the customer's premises.

**Star** — also called point-to-multipoint can connect directly to up to 32 RSTs, five transport spans deep. The LET resides in the central office with the switch, and the RST resides in a remote cabinet, rack, CEV or on the customer's premises.

**Co-location (alternate CLEC)** — The Tellabs 1000 is ideal in this configuration because it delivers all critical voice services as well as ISDN, DDS, 2-wire and 4-wire specials, pay/coin service, T1, HDSL, ADSL and VDSL — in any combination and all from a single shelf. By then concentrating voice and data traffic, the Tellabs 1000 uses transport facilities with maximum efficiency.

## Network Topology Choices

The following diagrams illustrate examples of network deployments to provide voice and data service in linear chain, star and co-location configurations. Although these diagrams show POTS cards, they also apply to any DSO, DS1, DS3 or Ethernet service.

With the exception of having to place GigE uplink cards in slots 12/13 of the CBA when deploying Ethernet, the first 22 slots are considered universal slots for any service type. In any of these topologies, fiber or copper can feed the transport.

The linear chain example (**Figure 1**) shows the extension of an LET to multiple RSTs in a drop-and-continue configuration with a single-shelf solution over a mix of fiber and copper. The LET connects via fiber to RST1, with RST1 connecting to RST2 and RST2 connecting RST3 via copper. The service provider maps each RST's DS0s to specific LET T1X cards for delivery to a local digital cross-connect system or multiplexer for distribution to the ultimate end location. The TSI functionality allows the service provider to assign any RST DS0 to any LET T1X or associated DS0 card. In some service provider networks, OSS restrictions or models will dictate the placement of plugs. In the linear-chain configuration, any break on an upstream transport link will sever service to the trailing RSTs.

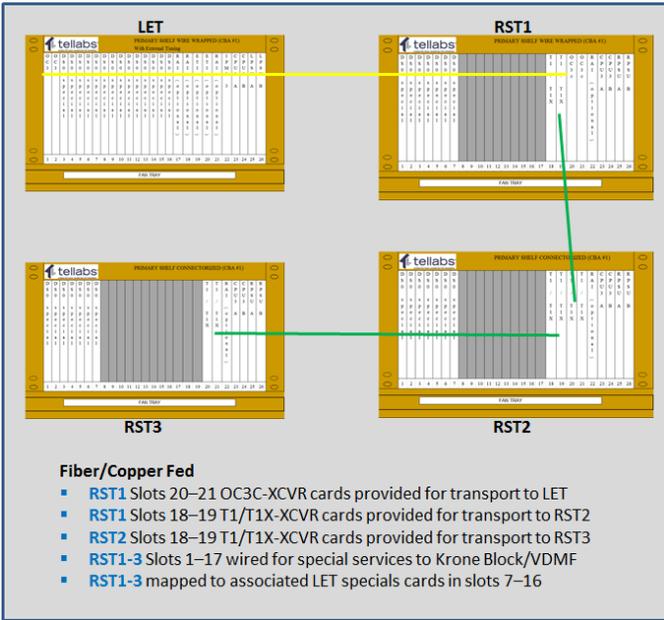


Figure 1. Tellabs 1000 Linear Chain Single-Shelf Configuration

Figure 2 below shows the extension of an LET directly connected to multiple RSTs with a single-shelf solution. The LET directly connects via fiber to RST1, RST2 and RST3. The service provider maps each RST's DS0s to specific LET T1X cards for delivery to a local digital cross-connect system or multiplexer for distribution to the ultimate end location. The TSI functionality allows the service provider to assign RST DS0 to any LET T1X or associated DS0 card. In some service provider networks, OSS restrictions or models will dictate the placement of plugs. In the star configuration, any transport link cut will affect only the RST that directly connects to the LET.

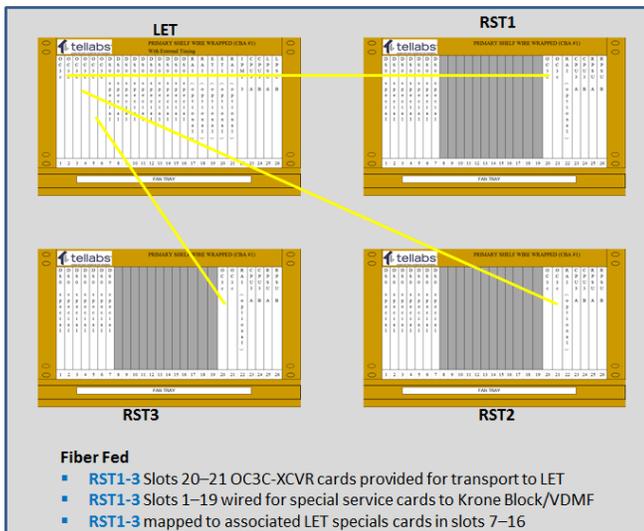


Figure 2. Tellabs 1000 Star Single-Shelf Configuration

The LET multi-shelf solution in Figure 3 below is similar to Figure 2 by expanding the LET with the addition of expansion shelves supporting many RSTs. This configuration supports greater bandwidth on a per-LET-shelf basis, and it provides additional slots if more universal/local MDF connections are necessary. The service provider maps each RST's DS0 special to LET specific DS0 special or T1X cards for delivery to a local digital cross-connect system or multiplexer for distribution to the ultimate end location. The TSI functionality allows the service provider to assign any RST's DS0 to any LET T1X or associated DS0 card. In some service provider networks, OSS restrictions or models will dictate the placement of plugs. With this configuration, any transport-link cut will affect only the RST that directly connects to the LET.

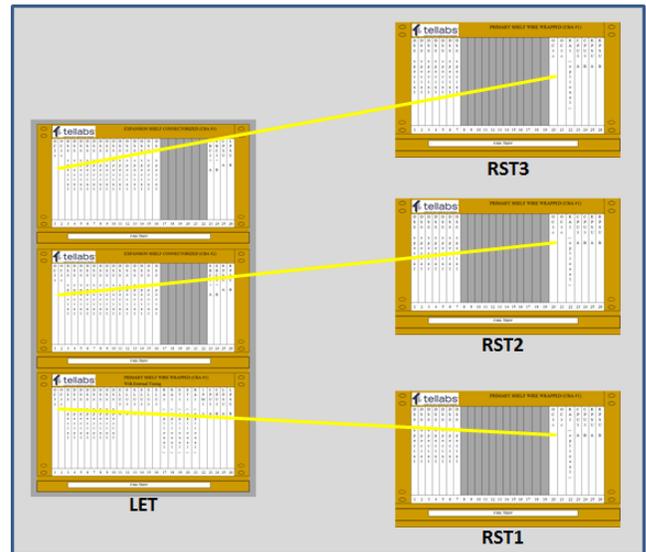


Figure 3. Tellabs 1000 Multi-Shelf Configuration

## Tellabs 1000 Special Services Program Continues to Grow

Tellabs, which has provided special services on the Tellabs 1000 since its inception, is committed to sustaining the viability of the Tellabs 1000 for our customers' networks. Tellabs continues to refine and evolve the platform's modules to improve card performance and address parts obsolescence. Because many of these cards have been working in service provider networks since the early 1990s, components naturally have become obsolete, and several component vendors have exited the business. However, as part of our long-term commitment to supporting the Tellabs 1000, Tellabs has and will continue to identify other component vendors that can supply the most cost-effective parts. In addition, to keep pace with these changes, Tellabs sometimes must refine and evolve network element software. These are not new loads but dot (.) releases to our ATM load (FP10.0) and the latest Ethernet load (FP17.0).

Application	CO Side Module	Remote Side Module	Ckts per Module	GR-303	TR-008
2-Wire DDS over ISDN	L-ISDN	R-ISDN	6 x 2-W	X	
Automated Teller Machine (ATM) banking circuits	MCU-AFC Alarm	MCU-AFC Alarm	1 DDS		
2-wire DC alarm circuits	MCU-AFC Alarm	MCU-AFC Alarm	1 DDS		
Direct Inward Dial service (DID)	R-UVG or SS 2/4	L-UVG or SS 2/4	6 Analog	X	X
Direct Outward Dial service (DOD)	L-UVG or SS 2/4	R-UVG or SS 2/4	6 Analog	X	X
Digital data (DDS) 2.4, 4.8, 9.6, 19.2, 56, or 64-kbps	DS0-DP	OCU-DP	1 DDS		
2 or 4-wire E&M service usually used in the central office	E&M	E&M	2 x 2W or 4W		X
Equalized Transmission Only (ETO)	SS 2/4	SS 2/4	2 Analog		
Foreign exchange service applications (FXO/FXS)	L-UVG or SS 2/4	R-UVG or SS 2/4	6 x 2W		
Non-Switched private line voice services (Leased line)	SS 2/4 or TO	SS 2/4 or TO	2 x 2W or 2 x 4W		
Analog 2-wire off premises extension	R-UVG or SS 2/4	L-UVG or SS 2/4	6 Analog		
Analog 2-wire off premises PBX	R-UVG or SS 2/4	L-UVG or SS 2/4	6 Analog	X	X
PBX – Local PBX trunk service	L-UVG or SS 2/4	R-UVG or SS 2/4	6 Analog	X	X
Private Line Automatic Ring down "hotline" service (PLAR )	R-UVG or SS 2/4	L-UVG or SS 2/4	6 Analog		
Radio control and dispatch circuits	MCU-AFC Alarm	MCU-AFC Alarm	1 DDS		
Telemetry circuits	MCU-AFC Alarm	MCU-AFC Alarm	1 DDS		
Pay phone services	L-PAY	R-PAY	6 Analog	X	X
Electronic Business Services (P-Phone)	L-EBS	R-EBS SL	6 Analog		
Range Extended POTS	L-POTS	RE-POTS	6 Analog	X	X
Firebar Ringing	L-UVG	R-UVG	6 Analog	X	X

**Figure 4.** Tellabs 1000 Special Service Application Chart. Supports 20 Special Services in 1 Integrated Platform. If TR-008 or GR-303 is used, only the Remote side module is required for certain services

## Tellabs 1000 Special Services Program Continues to Grow

Though service providers face these many challenges when it comes to maintaining and upgrading their access networks – they can trust the Tellabs 1000 MSAP to satisfy TDM-based business services demand, while cost-effectively supporting broadband, fiber and Ethernet infrastructure in the most economically feasible and the fastest time-to-market in the industry. A successful business solution for maximizing residential, and business, revenues that is embraced by global service providers around the world.

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