

# Tellabs® 1000 Multiservice Access Platform (MSAP)

## Product Overview - Lowest cost delivery of IP/Ethernet services

The Tellabs® 1000 Multiservice Access Platform (MSAP) maximizes broadband capabilities in the access networks. The Tellabs 1000 MSAP provides Ethernet uplinks, Ethernet inter-nodal transport and Ethernet service delivery, while continuing to support revenue generating Time-Division Multiplexing (TDM) and Asynchronous Transfer Mode (ATM) services and transport. This rare combination, in a Broadband Digital Loop Carrier (BBDLC), affords the Tellabs 1000 the distinction of being the best low cost choice for the migration of ATM, and TDM, to IP/Ethernet.

With simple in-service upgrades, service providers obtain the technology, capacity and Quality of Service (QoS) to support 100% of their service offerings and broadband initiatives. The Tellabs 1000 supports a vast number of technologies including copper based, optical based, Ethernet, SONET/SDH, ATM, IMA transports across most any networks infrastructure. Using one or more Tellabs 1000 Channel Bank Assembly (CBA) [Figure 1: Tellabs 1000 MSAP Channel Bank Assembly], the platform is cost effective from one subscriber to over 2000 DSL (VDSL2 or ADSL2+, bonded or un-bonded) and POTS subscribers. Furthermore, the Tellabs 1000 is compatible with current public voice switched network infrastructures (e.g. GR-303, TR-08 & TR-57), thus offering substantial savings per upgrade by maintaining existing voice switching system interface groups. These features push its capabilities beyond those of traditional BBDLC and DSLAMs.

## System Components - Delivers carrier-class 99.999% reliability and redundancy

The Tellabs 1000 MSAP starts with the CBA. The Tellabs 1000 MSAP CBA has 26 slots that include four integrated common-control slots for processing and power plug-in cards, and 22 multi-purpose slots that support any narrowband or broadband Tellabs 1000 plug-in. The system is expanded quickly, in-expensively and easily by adding one or more Tellabs 1000 CBAs linked to the primary CBA by fiber optic cable. Consisting of a preformed, cold rolled steel card cage, metal rear covers, printed circuit board backplane, and mounting hardware, the Tellabs 1000 CBA includes all hardware necessary for installation except the actual cables that carry voice, data, and power.

Both power plug-in cards (DC options and Charger/Rectifier for AC options) and common control plug-in cards (Dual-memory support for non-service affecting upgrade) can be deployed in redundant configurations for 99.999% reliability while delivering TDM, ATM or IP/Ethernet services. This level of resiliency for an access platform equipped with IP/Ethernet transport, uplink and service capability is superior through-out the broadband access industry.



Figure 1: Tellabs 1000 MSAP Channel Bank Assembly

Furthermore, optional alarm, timing and testing interface choices are unparalleled. The Tellabs 1000 monitoring, testing, and provisioning can be accomplished through Craft User Interface (CUI) or through Tellabs® Panorama™ Integrated Network Manager (INM). The deployed Tellabs 1000 systems can be configured in Star, Tree, Drop-and-Insert and Mixed network configurations. And voice switch interfaces supported include GR-303, TR-08 and TR-57.

The Tellabs 1000 provides the access industries only upgradeable, carrier-class, low cost, Ethernet transport and Ethernet services delivery with the Gigabit Ethernet Transceiver (GbE222) transport (and uplink) and Ethernet Service 10/100 Plug-in Card (ES 10/100) plug-in cards. This means Tellabs 1000 owners can offer bonded DSL, wireless traffic backhaul and business premises services delivery across an Ethernet BBDLC without sacrificing carrier-class reliability and redundancy.

## Transport and Uplink Options – Enables migration of ATM/TDM to IP/Ethernet

The Tellabs 1000 MSAP supports a wide variety of inter-terminal transport and network uplinks including copper, optical, Ethernet, SONET/SDH, ATM, IMA transports.

In particular, Tellabs 1000 MSAP GbE222 is a high-bandwidth, cost-effective Gigabit Ethernet uplink, and Ethernet inter-terminal transport [Figure 2: Tellabs 1000 MSAP Gigabit Ethernet Transceiver (GbE222)]. The GbE222 supports voice transport, Ethernet traffic aggregation for High Speed Internet (HSI), IP Television (IPTV), business premises applications and cell site base station traffic backhaul. Furthermore, it provides point-to-point inter-terminal transport between Central Office (CO) based Local Exchange Terminal (LET) and Remote Subscriber Terminal (RST) located in non-environmentally controlled cabinet or HUT. The GbE222 provides two full-duplexed Gigabit Ethernet ports equipped with optional configurations of SX, LX, ZX and single-fiber bi-directional Small Form-factor Pluggable (SFP) optics.



Figure 2: Tellabs 1000 MSAP GbE222



Figure 3: Tellabs 1000 MSAP ES 10/100

IPTV services have been deployed over Tellabs 1000 MSAP infrastructure for many years. This is inclusive of major RLECs who continue to grow their subscriber base receiving commercial IPTV and VoD services over the Tellabs 1000 existing equipment. The platform is well suited to satisfy the technology, traffic engineering and performance requirements for a low cost IPTV startup strategy. In fact, supporting IPTV on the Tellabs 1000 MSAP can be as simple as one or two new plug-in cards! This combination of IPTV ready and low cost entry, allows service providers to start marketing these IPTV/VoD service with confidence over their embedded base of Tellabs 1000 equipment!

### Service Delivery Options - Reduced power usage by 70% compared to overlay

Targeted at both DSL subscribers within the reach of the CO and outside the reach of the CO, the Tellabs 1000 MSAP can serve 100% of potential DSL (VDSL2 or ADSL2+, bonded or un-bonded) subscribers in urban, suburban and rural markets, while utilizing existing backhaul facilities including ATM, T1 or HDSL, copper plant and fiber plant or upgrading inter-node transport with Gigabit Ethernet interfaces.

When Tellabs 1000 MSAP integrated IP/Ethernet solutions are coupled with its ADSL2+ service delivery capabilities, there exists the added benefit of saving power relative to 1RU "pizza box" DSLAM overlay options. In fact, in a direct comparison between

upgrade versus overlay, service providers deploying the Tellabs 1000 can experience as much as 70% less power consumption by upgrading versus overlaying.

Of special interest is the Tellabs 1000 MSAP ES 10/100 plug-in card which can deliver Ethernet services to business premises, multi-dwelling premises and cell site base stations [Figure 3: Tellabs 1000 MSAP Ethernet Service 10/100 Plug-in Card (ES 10/100)]. ES 10/100 can be located in any of the multipurpose shelf slots. Used in conjunction with GbE222 plug-in card in transport, and/or network uplink, configurations, the Tellabs 1000 MSAP can deliver end-to-end Ethernet interfaces. In addition, these Ethernet based interfaces can be deployed without abandoning revenue generating legacy TDM and analog special services that are delivered simultaneously from within the same Tellabs 1000 shelf. Both optical and copper based SFPs can be utilized with the ES 10/100 plug in card.

Deploying Ethernet centric services from a service providers' embedded base of access equipment affords the opportunity to capture additional revenues from Ethernet business services and the wireless traffic backhaul from sub-tended cell tower base stations. However, do not lose sight that the Tellabs 1000 MSAP accomplishes this feat simultaneously as it supports legacy services such as ISDN, FAX, DID/DOD, 2-Wire/4-Wire, Pay Phone, E&M, TO and EBS. Thus, the Tellabs 1000 MSAP is unique in that it can support these next generation IP/Ethernet initiative without cannibalizing traditional TDM revenue sources!

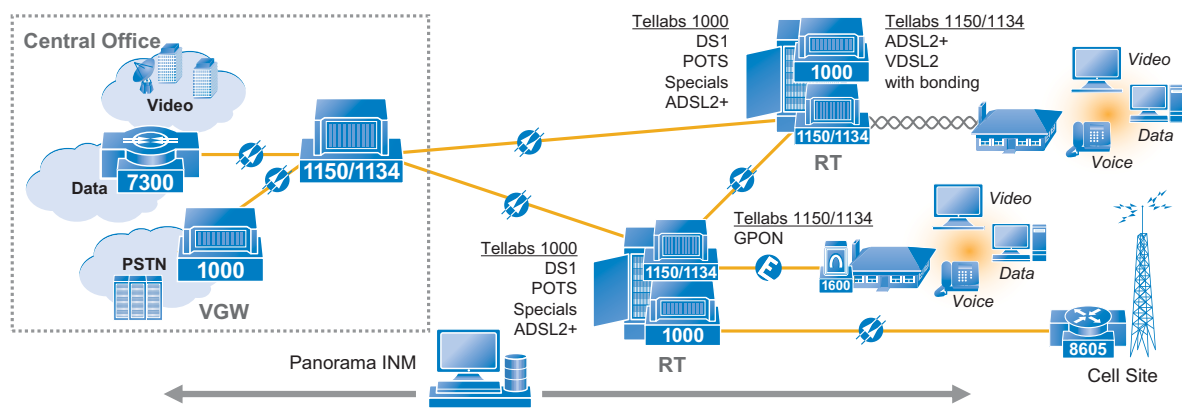


Figure 4: Tellabs 1000 MSAP deployed with other Tellabs equipment

### Integrated Network Management - Take advantage of the simplicity of Ethernet

The Tellabs 1000 can be provisioned, tested and monitored using the CUI and/or from a menu-driven software provisioning system accessible from any LET, RST, or remote Telnet session. To further simplify provisioning and monitoring, the Tellabs® Panorama™ Integrated Network Manager (INM) can be used. The Panorama INM offers a complete management solution for the Tellabs 1000 MSAP, the Tellabs® 1100 Multiservice Access Platform and the Tellabs® 1000 Voice Gateway (VGW). Panorama INM is available in both Solaris™ and Windows® operating environments and offers a full suite of management capabilities — user management, configuration management, performance management and security management. It also supports remote upgrades, service fulfillment, service assurance, remote back-up, remote capacity and inventory reporting, and a variety of additional functions.

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. The Tellabs 1000 MSAP continues to support T1, T1 IMA, DS3c, OC3c and OC12c ATM plug-in cards, along with POTS, DS1, xDSL and a comprehensive list of analog special services plug-in cards. But, what makes this BBDLC platform special is the addition of Gigabit Ethernet transport, Gigabit Ethernet uplink and 10/100 Ethernet services plug-in card. From an Panorama INM operator provisioning stand-point, the systems identifies “end-points” whether they be network end-points or customer premises end-points, and all the complexity, protocol adaptations, mixed technology aggregation, that takes place in between end-points, is transparent from the operator.

### Benefits with other Tellabs equipment - More than 75% of North American telecom companies rely on Tellabs access solutions

The Tellabs 1000 MSAP is the network services providers’ access gateway to satisfy end-to-end Tellabs’ solutions from the customer premises through the core transport network. Today, major service providers deploy the Tellabs 1000 coupled with Tellabs 1150/1134 MSAP, Tellabs® 7100 Advanced Transport Node, Tellabs® 7300 Metro Ethernet Switching and Tellabs® 8605 Ethernet Aggregator with confidence. These Tellabs’ products can be interconnected together to provide compelling mobile backhaul, business services, Ethernet aggregation and optical networking solutions [Figure 4: Tellabs 1000 MSAP deployed with other Tellabs equipment].

The Tellabs 1000 MSAP Integrated Gateway Processing Engine (iGPE) plug-in card provides VGW functionality to any Tellabs 1000 MSAP configured as a VGW. It provides protocol conversion of VoIP (SIP) voice calls traversing the Tellabs 1150/1134 MSAP that are destined to a legacy Class 5 TDM voice switch utilizing existing switch interfaces (e.g. GR-303 and TR-08).

Service providers are under constant pressure to increase bandwidth capacity to cell site base stations. This means, increasing traffic backhaul capabilities of the 2G interfaces (e.g. DS1, IMA, xDSL and DS3) which the Tellabs 1000 has always supported. It also means migrating for cell site traffic backhaul of 3G interface (i.e. GbE-221/222 and ES 10/100 and xDSL) as well. Interoperability testing and live commercial deployments have been completed between the Tellabs 1000 and the Tellabs 8605 Ethernet Aggregator for the purposes of optimizing service provider’s access networks at small traffic aggregation points or cell sites.

Tellabs 7300 Metro Ethernet Switching elements extend Tellabs’ carrier Ethernet solutions into the access network realm. The Tellabs 7300 is relevant in access networks applications, including Ethernet service delivery, Ethernet aggregation and efficient Ethernet transport. Coupled with the Tellabs 1000 MSAP, an end-to-end Tellabs’ solution provides the greatest value to service providers of all sizes.

## Targeted Applications – Graceful migration to secure new IP/Ethernet services revenue without abandoning traditional revenue streams

The Tellabs 1000 MSAP is a powerful tool for service providers to combat business threats from competitive service providers. Furthermore, there is significant revenue opportunities associated with adopting IP/Ethernet interface that can be captured on the Tellabs 1000 embedded base without abandoning the revenue generating ISDN, Special, DS1, DS1 IMA type TDM services. Thus, the Tellabs 1000 is a true multi-service access platform with sufficient bandwidth capacity to support the following target applications [Figure 5: True MSAP capabilities to provide graceful migration for TDM/ATM to IP/Ethernet]:

- Enables ATM to IP Migration
- Growing the quantity of broadband customers served
- Increasing HSI speeds packages and associated revenues
- Federal Broadband Connect America, RUS & NTIA projects
- Supports IPTV/VoD initiatives
- Cell site traffic backhaul
- Business services
- Hi-Cap transport
- M13 Mux and O/1 DACS capabilities
- AFC cabinet retrofit and 3rd party cabinet retrofit
- Voice Gateway for Tellabs 1150/1134 MSAP

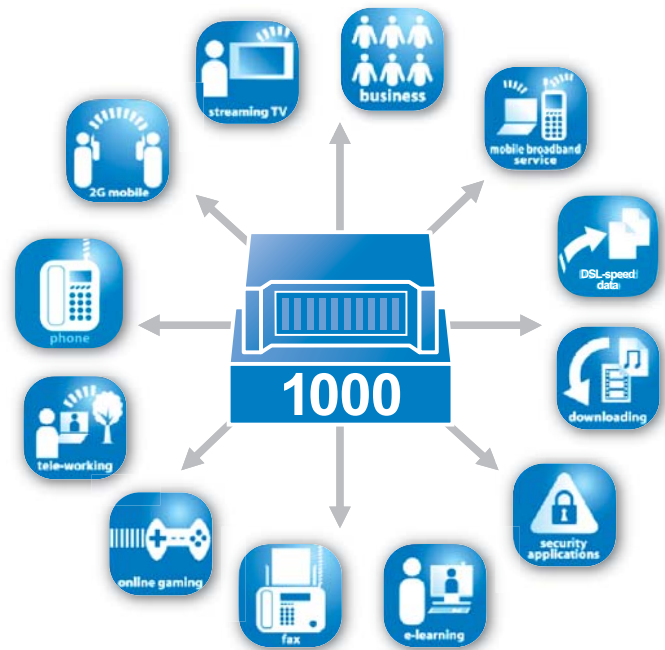


Figure 5: True MSAP capabilities to provide graceful migration for TDM/ATM to IP/Ethernet

## Specifications

### Partial list of Transport and Uplink plug-in card options

- Gigabit Ethernet GbE222
- OC12c and OC3c
- DS3 and DS3c
- T1 and HDSL2 and HDSL4
- IMA (Service and Uplink)

### Partial list of Service plug-in card options

- 10/100 Ethernet Service
- POTS
- DS1
- ADSL2+ with and without integrated POTS
- VDSL2/ADSL2+ with integrated POTS
- TDM / Special Services

### Voice Switch Interface options

- GR-303
- TR-08
- TR-57

### Channel Bank Assembly (CBA) Compliance

- NEBS Level 3 Compliant

### CBA Materials

- Cold rolled steel — Zinc plated per ASTM-B633 Type II (Gold) SC2

### CBA Powering

- -42 to 60 V DC @ 10 Amps maximum

### CBA Environmental

- Operating temperature: -40° C to +65° C (-40°F to +149°F)
- Storage temperature: -40° C to +70° C (-40°F to +158°F)
- Humidity: 5–95%, non-condensing

### CBA Mounting (Stacked configuration)

- Environmentally-hardened enclosure with 7 vertical in (17.8 cm) of 19- or 23-inch (48.260 cm or 58.420 cm) wide rack mount space

### CBA Dimensions

- Height: 7 in (17.8 cm)
- Width: 19 in (48.2 cm)
- Depth: 12 in (30.5 cm) (with connectorized CBA 12.875 in / 31.4 cm)

### CBA Physical

- 14.4 lbs (6.5 kg) connectorized
- 26 total slots — 4 integrated common-control, 22 general-purpose

### CBA Backplane Options

- Wire-wrapped or connectorized for RJ21, MS2, or 710

## Ordering Information

For more information, please contact your local Tellabs sales representative, local Tellabs sales office, at the phone numbers provided below or visit [www.tellabs.com](http://www.tellabs.com).



Tellabs 1000 MSAP Cards	Part Number	Function
ADSL2+ 6+0B	0110-0271	6-ports ADSL2+ only
ADSL2+ 6+6B	0110-0273	6-ports ADSL2+ and 6-ports POTS
CPU-3	0101-0065	System common control
DBP	0101-0023	Digital bypass pair test
DLP	0101-0008	GR-303 EOC and TMC processor
DSO-DP	0110-0139	Digital Signal Zero Data Port
DS3	0120-0148	intact DS3 or M13-mapped DS3
DS3c-XCVR	0120-0121	ATM DS3 uplink and service
E&M	0110-0238	2 or 4 wire E&M service
EBC-3	0101-0069	Expansion bank control
ELU-3	0101-0045	Expansion link control
ES 10/100	0110-0269	2-ports 10/100 Ethernet service, SFPs sold separate
ETI	0101-0032	External timing interface
GbE222	0120-0162	2-ports 1GbE transport or uplink, SFPs sold separate
iGPE	0101-0071	Connects SIP/VoIP calls to Class 5 GR-303 & GR-08
IMA	0101-0061	Inverse multiplexing for ATM
IPMI-3	0101-0043	Panorama INM interface card
L-EBS / R-EBS	(L)0110-0140, (R)0110-0141	Electronic business set
L-ISDN / R-ISDN	(L)0110-0098, (R)0110-0246	6 ISDN circuit
L-PAY / R-PAY	(L)0110-0118, (R)0110-0160	Pay phone
L-POTS / R-POTS	(L)0110-0150, (R)0110-0148	6 DSOs for analog voice (TR-57)
L-PSU / R-PSU	(L)0101-0078, (R)0101-0006	Power supply (DC to DC)
L-UVG / R-UVG	(L)0110-0095, (R)0110-0222	6 DSO universal voice
MCU	0101-0064	DC alarms via Tollgrade
MTU	0101-0004	Metalic test unit
NPSU	0101-0007	Network power supply
OC3c-XCVR	0120-0133	Uplink, transport and TDM to ATM bridge
OC12c-XCVR	0120-0145	Uplink, transport and TDM to ATM bridge
OSI	0101-0018	Data link for X.25 network
RAI	0110-0119	6 contacts for remote alarm
R-EPOTS	0110-0042	Extended reach POTS
SS 2/4	0110-0236	2 and 4 wire special service
T1A	0110-0192	(line powered) non-channelized T1
T1AX	0110-0193	(non-line powered) non-channelized T1
T1HD-XCVR	0120-0125	HDSL (Pairgain)
T1HD2-XCVR	0120-0152	HDSL2 (Adtran)
T1HD4-XCVR	0120-0150	HDSL4 (Adtran)
T1-XCVR	0120-0122	(line powered) Transport, Uplink and Service
T1X-XCVR	0120-0123	(non-line powered) Transport, Uplink and Service
TO	0110-0147	Transmission Only
VDSL2/ADSL2+ 6+6B	0110-0265	6-ports VDSL2 (ADSL2+ fallback), 6-ports POTS

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