



*Since 1992, in Taiwan, Loop Telecom has developed and produced commercial grade Transmission/Switching equipments conforming to ANSI and ETSI standards over copper, fiber, and wireless, including Networking. Starting with CSU/DSU Loop Telecom has developed TDM Multiservices cross-connect, then SDH/SONET transport, and a range of Ethernet devices such as Switch, Router, Demarcation Devices, and PseudoWire Emulation.*

*Today, Loop Telecom has launched New Generation Transport: 10G PTN with MPLS-TP or Carrier Ethernet and OTN solutions tracking from single DS0 Multi-services to high rate IP/Ethernet traffic, and Industrial Ethernet solutions.*

**Loop Telecom actively pursues the following markets:**

- Utilities: Power Companies, Oil, Gas, & Water Companies,
- Transportation: Air traffic Control, Airport Ground Transport, ITS, Railway, High-Speed Rails, and Subways
- Telco, ISP
- Military, National infrastructures
- Industries

***These worldwide deployments are either by direct sales or through partners, who also supply local service.***

- **Multi-Services Cross Connect**
- **SDH/SONET Transport- MSTP**
- **Multi-Service Transport Platform**
- **TDM over Ethernet PseudoWire**
- **10G Packet-Transport-Network /MPLS/CE**
- **Ethernet Access**
- **Ethernet Switch**
- **FOM and G.SHDSL Line Extension**
- **Wireless**
- **Network Management solutions**

## Multi-services Multiplexer TDM/PDH DS0 cross connect DACS

These Multi-services multiplexers convert analogue voices and data signals in n.64kbps channels to transmit as Time Domain Multiplexing (TDM). These DACS cross-connect (DS0) signals transport over multiples E1 2Mbps or T1 1.5Mbps. The different modular Loop models support few to high density of interfaces as: Voice E1-CAS, FXO/FXS, E&M, conferences, magneto; Data synch X21, V35, EIA530, async RS232/485/422, G703, Bridge, contact; Dedicated C37.94, Teleprotection, Ethernet Layer2/3 over WAN interfaces E1/T1 or TDMoE.



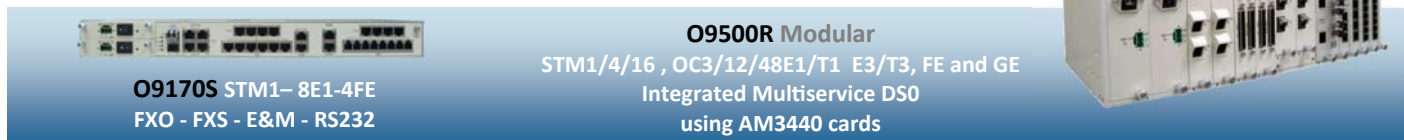
## SDH/SONET Transport of TDM/PDH circuits and Ethernet EoS

SDH/SONET use a synchronous technology to carry independent TDM flows over short or very long distance fiber optics. These multiplexers are carrying together Ethernet (EoS) or ATM interface in same fibers. Loop offer compact systems and full modular systems to control STM16 OC48 rings, 10 rings or MSP, 504 E1/T1, E3/DS3 and 64 FE/GE. They support MSP, SNCP, SNCP Mesh, MS-Spring, Dual homing protections.



## Hybrid Multiservice TDM DS0 and SDH/SONET Transport - IMAP

These system combine small Multi-services multiplexer DCAS with unique clock with a O9400R full SDH/SONET multiplexer. The chassis supports 4 cards for SDH STM1/4/16, 63E1/T1, E3, EoS and 6 n.64kbps Multi-services cards of the AM3440. This IMAP device save CAPEX because of compact place, half number of chassis to install and to manage and save OPEX with half power consumption and half number of nodes to support.



## PseudoWire Emulation End to End (PWE3) transport of TDM over IP or Ethernet links

These Emulation technologies provides the transport of E1, FE1, T1, FT1, E3, DS3, STMx/OCxx as VC11/12, VC3, VC4 or VC4-xc Full Services over an IP or Ethernet or MPLS network. Loop Telecom produces a large range of stand-alone and card for TDM or SDH devices. These are used for Point to Point connection or Point to Multipoint distribution. These devices can carry single interfaces as voice E&M with its CAS signalization and groom these PWE3 in E1 or STM1 at the other end of the Packet Network.



## 10GE PTN with MPLS-TP/Carrier Ethernet Transport — and Universal Transport Network

Loop Telecom produce a new range of 10GE Packet Transport Network (PTN) equipment with SyncE, PTP1588 using GE and 10GE interfaces and supporting MPLS-TP and Carrier Ethernet. The G7860 equipment supports GE/10GE and TDM over MPLS-TP/CE networks. The O94/O9500R-PTN add SDH/SONET ADM and Multi-services DACS DS0 over GE/10GE PTN with MPLS-TP transport. The UTN Universal Transport Network transport TDM circuits over VC12 SDH or PWE3 in MPLS-TP LSP with same level of protection but plus high Ethernet services. Loop propose an optional OTN solution to optimize the use of the fiber with CWDM or DWDM multiplexing. All nodes and functions, including OTN, are under the iNMS management with automatic commissioning of devices, OAM monitoring and network optimization.





## Ethernet Switches: hardened environment, EN61850-3 for Power substation automation, -20/+70°C

### Layer2 Ethernet FE/GE

These industrial switches are used in harsh environment by Power and Transportation industries.

**IP6810** with 100FE/FX/POE ports, dry contacts supports automatic-discovery, RS232/485 multipoint/Omnibus.

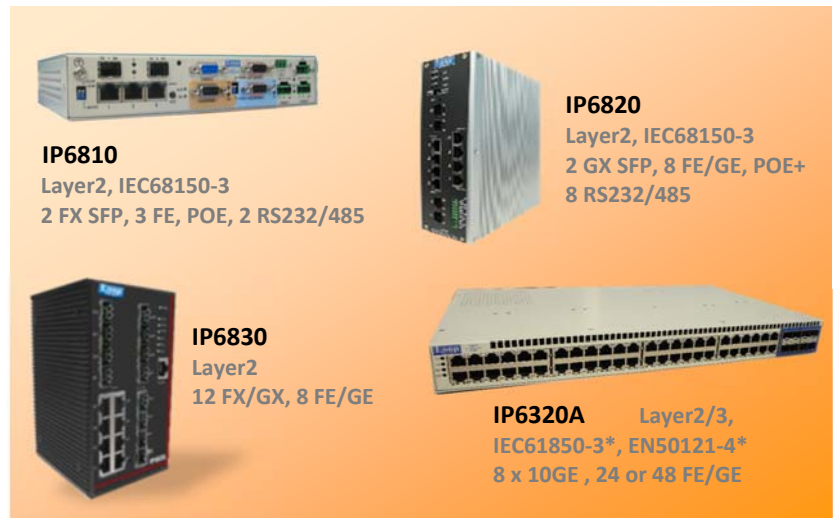
**IP6820** with 10xGE/GX/POE+ ports with RS232/485 and contact, supports more protocol as Q-in-Q, G8032 and full OAM monitoring for large infrastructure.

### Layer3 FE/GE/10GE -Router/Switch

**IP6320A** is 8 x 10GE and 24/48GE concentration switch with 120Gbps switching capacity, a high level of Layer 2/3 supported protocols as IGMP, PIM, G.8031/32, OSPF, VRRP... It is concentrating high number of switches but also a large volume of data like in video surveillance for industries, public sites and railway.

### Enterprise Layer 2/3 Switches

Loop propose also non-industrial 19" switch versions.



All Loop Telecom Switches, EDD, Routers are supported by iNET management together with customer third party devices as cameras.

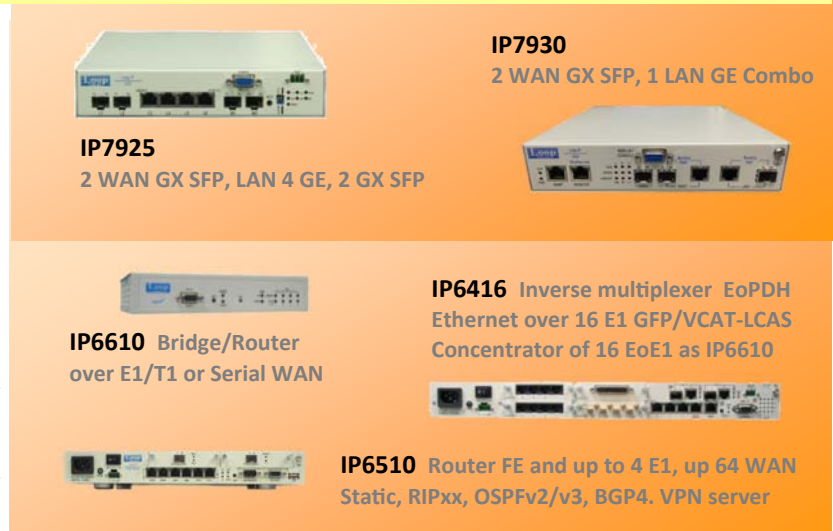
### Ethernet Demarcation Devices EDD

These device are designed to terminate the Ethernet network transport in the Customer Premise. They support SyncE and PTP1588 for frequency and phase synchronizations, apply VLAN and Q-in-Q to transport customer VLAN with rate limiting and with full OAM monitoring. Dual WAN support G.8032 protection.

### Bridge/Router Ethernet with E1/T1

These equipment optimize unused E1/T1 SDH or microwave circuits to bridge or route Ethernet traffic. WAN Layer 2 support HDLC, PPP(PAP/CHAP)/BCP/PCP, Frame Relay, Cisco-HDLC. **IP6416** can bundle 16E1/T1 for Ethernet or can concentrate EoPDH from several vendors.

The **IP6510** router over E1/T1 or Ethernet, is supporting QoS, rate limiting, access authentication, filtering and IP-Sec VPN server over up to 64 WANs Ethernet of FE1/FT1.



## Management EMS and NMS

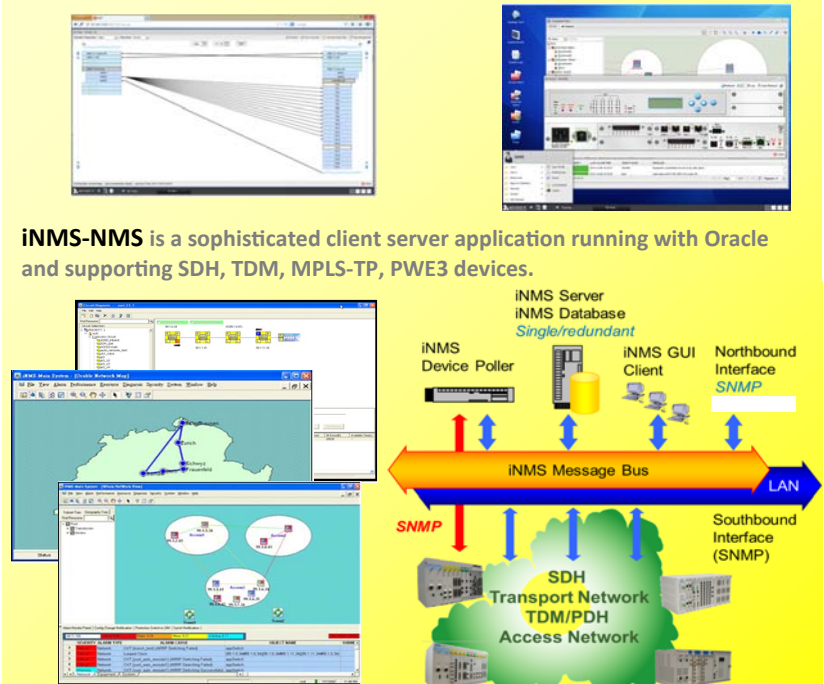
All Loop Telecom equipment can be managed with local craft interface by text menu or html according to the range. We provide as option these different type of management.

**iNET-LCT** From this Graphical Configuration Tool, Local Craft Interfaces you set-up node per node locally or over network and view all setting and cross-connects.

**iNET** Is based on scalable and modularized architecture, is an intelligent network management software for Element Management Layer (EML) and Network Management Layer (NML) based on Telecommunications Management Network (TMN) model. It provides a GUI (graphical user interface) for the management of a communications network containing Loop Telecom products and 3rd-parties NE.

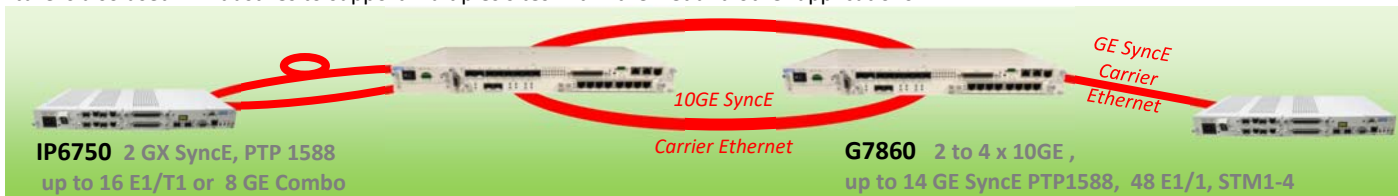
**iNMS-NMS** Intelligent Network Management System is a set of software programs supporting the Loop equipment compliant to TMN. This system manage the device of Transport Network (SDH), Access Network (PDH), Ethernet with PseudoWire-3E and PTN over MPLS-TP. This is a GUI, End-to-End commissioning with several services for small to very large infrastructure with a NBI to access to a head NMS.

**iNET-NMS** is client server application with SQL supporting all Loop equipment with GUI, representation of Networks links, default, setting and cross-connect.



### Carrier Ethernet Backhaul GE, 10GE for Ethernet and E1/T1 for 2G/3G/LTE and Industries

The distribution of Gigabit Ethernet and E1/T1 for sites with multiple BTS 2G and Node-B 3G and LTE is provided easily and with a high level of flexibility by using G7860 and IP6750 PTN devices with Carrier Ethernet services. G7860 can be used as 10GE backbone and deploy up to 14 SyncE GE with dark-fiber or xWDM to distant sites with IP6750. Thanks to SyncE and PTP1588, each node is synchronized in frequency and phase. This Ethernet backhaul transport Ethernet Virtual Connections (EVCs) with Ethernet links and E1/T1 in PseudoWire. Such infrastructure is also used in industries to support multiples sites with Ethernet and other applications.



### FOM Fiber Optic Backhaul Extension and Multiplexing

Loop Telecom supplies large number of fiber extension for E1/T1 and Ethernet /Gigabit Ethernet over dark fibers or xWDM fibers. These extensions or backhaul are used to deploy the links in full transparency to the Mobile BTS/Node-B, to customer premises for Internet and PBX, and for multiples industrial applications. Fiber are connected with SFP and are doubled for redundancy. In central side we supply chassis for concentration of FOM and DSL links, and DACS for E1 from O9310 fiber modems.



### G.SHDSL/Bis extension and Backhaul

Loop Telecom produces G.SHDSL and G.SHDSL-Bis modems and chassis to carry E1/T1 or Serial interfaces in TDM but also Ethernet last mile in TC-PAMxx. We supply 1-2 pairs modems with 1, 2 or 3 users interfaces including Ethernet bridge and router and full secure management with Radius, SSH and SNMP v3 for large Telco or secured networks. The H3308S/R can bound up to 8 pairs to support enough Ethernet bandwidth in longer distance. In central site we propose the C5600 chassis with multi-pairs interfaces to support all different DSL configurations and fiber optic multiplexer. This SNMP chassis control circuits and rate of the DSL and optical lines.



### E1/T1 interface converter, CSU/DSU

These devices terminate the Telco network in customer premise and deliver data or data with voice services. These support high monitoring of the line 2Mbps/1.5Mbps or n 56/64kbps and 1 or 2 user interfaces. For large WAN infrastructure we have implemented two DTE mux function and SNMP router management with secure Radius access to optimize the OPEX cost.



### Ethernet over MicroWave up to 440Mbps

This radio with HAAC Modulation use licensed 6.5G to 23G or unlicensed 5.8G-17G-24G bands. This wireless supports GE SyncE fiber link and PoE. The Ethernet match 200Mbps at 6.5Km/23GHz, 20km/6.5GHz and provides 8 E1 or STM-1 with external IP6704A or IP6763.



**LOOP TELECOMMUNICATION INTERNATIONAL, INC.**  
an ISO 9001 and ISO 14001 company

Worldwide	Europe	Americas	Australia & New Zealand
8F, No. 8, Hsin Ann Road Hsinchu Science Park Hsinchu, Taiwan 30078 +886-3-578-7696	Rue du Culot, 13 BE-1402 Nivelles Belgique +32-496-54-27-44	8 Carrick Road Palm Beach Gardens Florida 33418, U.S.A. +1-561-627-7947	3,Imperial Ave, Mount Waverley, Victoria 3149 Australia +61-413-382-931
<a href="mailto:sales@looptelecom.com">sales@looptelecom.com</a>	<a href="mailto:eu_sales@looptelecom.com">eu_sales@looptelecom.com</a>	<a href="mailto:nca_sales@looptelecom.com">nca_sales@looptelecom.com</a>	<a href="mailto:aus_sales@looptelecom.com">aus_sales@looptelecom.com</a>
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