

PremNet[®]

Ethernet Interface Modules

- **Transparent transport at native LAN speeds (10 Mbps) across campus, local area, or wide area networks**
- **MAC-layer filtering capability**
- **Redundant bridge support**
- **Software-configurable options**
- **LED status indicators**
- **Easily managed through the Milgo CMS[®] network management system, SNMP, or PremNet local console**

PremNet®

Ethernet Interface Modules

The PremNet® Ethernet interface modules provide full bandwidth (10 Mbps) IEEE 802.3 Ethernet remote connectivity between Ethernet segments or networks connected to the PremNet broadband access system. With these modules, you can connect remote Ethernet networks across the reliable, private fiber, SONET/SDH OC-3c/STM-1, ATM OC-3c/STM-1, or T3 circuits for high-speed backbone transport between PremNet nodes. You can even double the backbone bandwidth in a single-ring to up to 310 Mbps, utilizing dual main-ring architecture.

PremNet Advantages over Competing Technologies

The advantages of PremNet over competing technologies are:

- offers transparent transport at native speeds (10 Mbps support), preventing congestion and traffic loss
- ability to multiplex different traffic types (voice, video, data) along with Ethernet traffic onto one traffic stream, providing economies of scale
- more cost-effective

Virtual LANs Eliminate WAN Bottlenecks

PremNet provides virtual local area network (LAN) capability (also referred to as Transparent LAN Service or TLS), even though the actual devices on the LAN are separated by long distances. With Ethernet running at a full 10 Mbps, WAN bottlenecks are eliminated.

Using PremNet, geographically dispersed Ethernet LANs can be interconnected at native speeds.

PremNet allows virtual LAN service through TDM technology over T3 (45 Mbps), Unilink (100 Mbps), SONET/SDH OC-3c/STM-1 (155 Mbps), or ATM OC-3c/STM-1 (155 Mbps) backbones.

Truly Transparent Transport

PremNet nodes are completely transparent to all higher-layer protocols. As a result, devices on the backbone appear to be on the same logical network. Furthermore, because you can run multiple data, voice, and video types over the same backbone, you do not have to create separate networks to support each application. This greatly consolidates and reduces cabling, saves room in wiring closets, and reduces hardware and maintenance costs. It also makes your network easier to manage, modify, and expand.

Since PremNet does not impose any special topology or connectivity restrictions, your Ethernet services can also be bridged or routed via external equipment.

Two Versions of Ethernet Modules

PremNet Ethernet modules come in two versions: High-Performance Ethernet module and High-Performance Ethernet Bridge module. Depending on your specific network application requirements, you can use either one or both in the same network.

High-Performance Ethernet Module

Unlike a repeater, the PremNet Ethernet module re-times each Ethernet frame at the destination

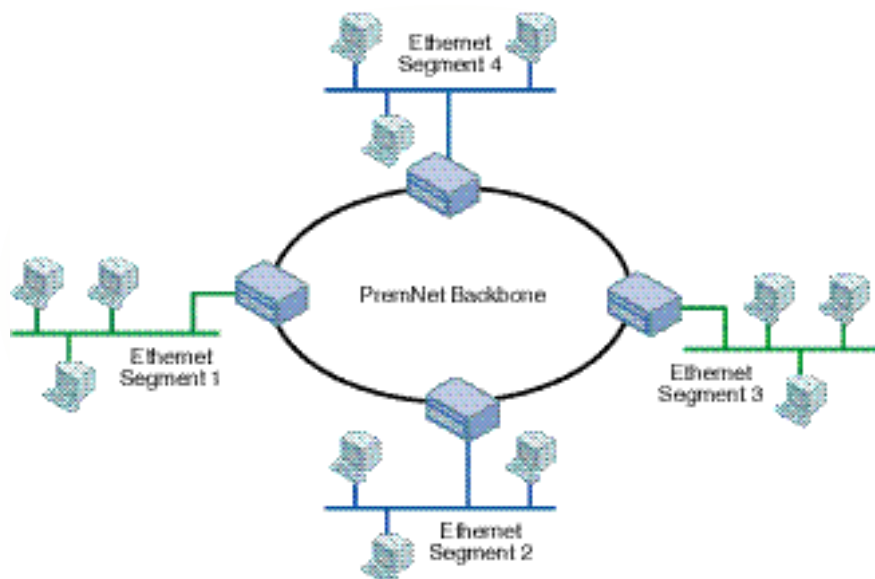
output of each module in the system. This module functions like a bridge (without filtering capability) on top of IEEE 802.3, storing and forwarding packets. Each segment connected to the Ethernet module carries all traffic presented on all the remote segments.

Since the Ethernet module is designed to act as a non-filtering bridge, no processing or modification of the data takes place. Only known erroneous frames are not forwarded to their destination.

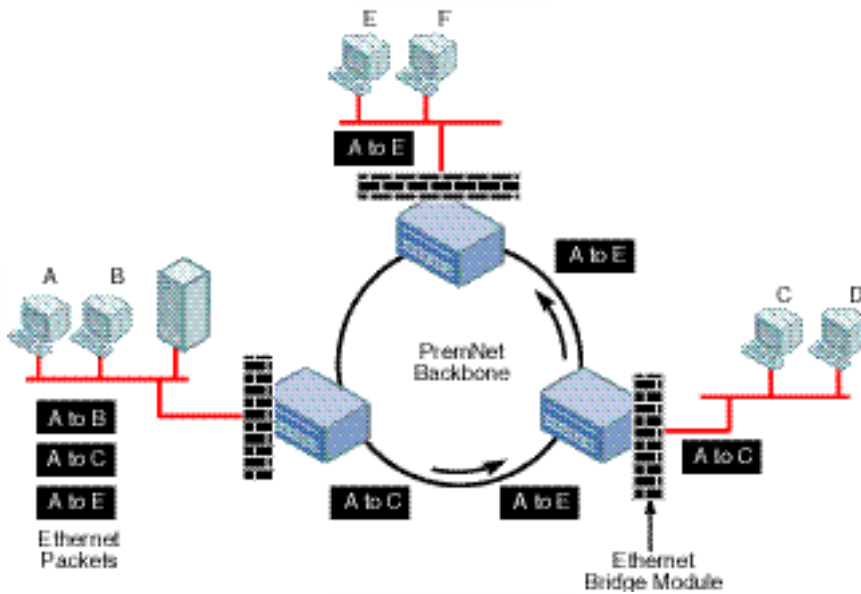
High-Performance Ethernet Bridge Module Eliminates External Bridges

The Ethernet Bridge module provides a software-selectable filtering option, which means you can use it to eliminate the use of external bridges in your network. This interface module is compatible with earlier versions of Ethernet modules.

As a transparent bridge, the Ethernet Bridge module examines all the frames received from the attached Ethernet segment. Whether the frame has a group destination or individual MAC address, the module knows where to forward the frame. If no match is found on any attached segments, the frame is automatically routed back to the originator of the frame, where it is discarded.



Multiple Ethernet segments in multiple virtual connections on the same PremNet backbone



Ethernet Bridge Module Filtering

Learning capability – The Ethernet Bridge module knows all locally attached MAC addresses (up to a maximum of 2,048 MAC addresses). For cases where a station may be moved to a remote segment, the Ethernet Bridge module has a learning capability.

The Ethernet Bridge module automatically builds a MAC table by examining the source MAC address fields in all frames it receives over the attached local Ethernet segment. If the Ethernet Bridge module does not receive any frames from a particular station within a particular amount of time, it knows to remove the address from its table. This keeps the MAC tables updated and also optimizes the lookup time.

Redundant bridge support – The Ethernet Bridge module also supports the spanning tree algorithm to avoid loop conditions. If segments are attached in error or otherwise through a different mechanism (a remote bridge, a repeater, or directly attached), the Ethernet Bridge module identifies that an alternate route has been established and automatically takes the necessary corrective actions to suspend its forwarding activity on that segment.

Software-Selectable Bandwidth Allocation

Using the PremNet "mix-and-match" time-division multiplexing (TDM) technology, you can configure the Ethernet module to use one, two, three, or four of the timeslots available, depending on your application needs. Both Ethernet modules are software-configurable. The differences between the two modules are the bridging-related features, which are all software-configurable.

Traffic Control

The Ethernet modules incorporate mechanisms to regulate the instantaneous traffic demands presented by other nodes on the network.

Frame Buffers – Each module contains frame buffers that can store as many as 128 packets in each direction, thus smoothing peak traffic demands.

Optional Flow Control – When the number of packets pending in a module's internal buffers exceeds a given threshold, an optional flow control mechanism asserts a pseudo-carrier sense signal on the local network, forcing attached Ethernet nodes into a wait state. This allows the modules to transmit the accumulated packets that the system has buffered, thus alleviating congestion and preventing internal overflow.

The flow control function also serves to notify the nodes of traffic congestion on the network, thus allowing network administrators to observe the problem and reduce traffic or reconfigure the network, if required.

Point-to-Point or Multipoint Connections

The Ethernet interface modules in each virtual circuit may be configured as either a point-to-point (for only two modules in a virtual circuit) or multipoint (for three or more modules in a virtual circuit) connection type. As many as 32 Ethernet modules may be connected in the same virtual circuit. These multipoint applications do not require additional bandwidth.

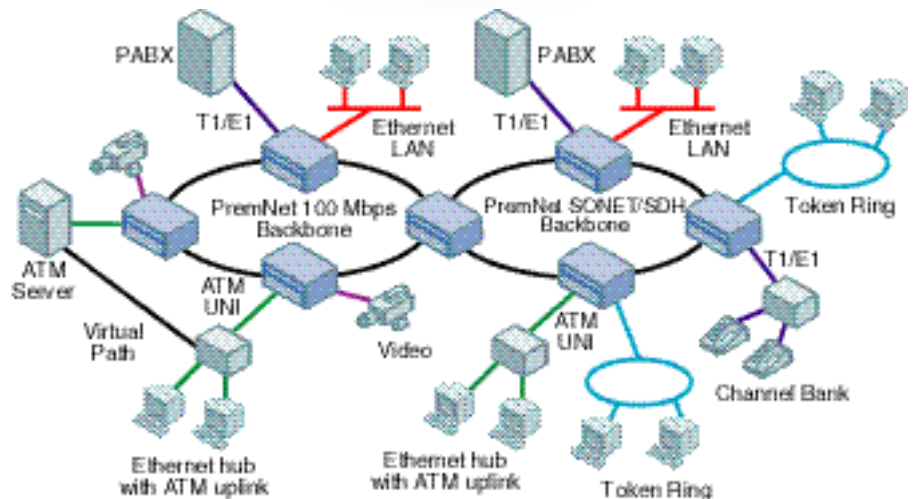
Alarm Display through LEDs

The PremNet Ethernet module has LEDs on the front panel for collision detection and for transmit and receive activity between the module and the rest of the PremNet network. LEDs are provided for each device port. Module status levels include alarm, standby, and active.

Network Management

The PremNet Ethernet interface modules and the entire PremNet network can be managed from a variety of network management platforms: Milgo CMS® network management system, your existing SNMP-compliant management, or PremNet's local onboard management (via an asynchronous terminal attached to any PremNet node on your network).

In addition to PremNet Ethernet modules, the PremNet family of products includes interface modules for the transparent transport of a wide variety of voice, video and data traffic, including Token Ring (4/16 Mbps), V.35, T1/E1, 4-wire voice, RS-232, RS-422, and one-way and two-way video.



In addition to Ethernet applications, PremNet transports a range of multimedia applications within a building, campus, or metropolitan area, using single-ring or multi-ring topologies

technical specifications

Part Numbers	PN850074-07	High-Performance Ethernet Interface Module
	PN850127	High-Performance Ethernet Bridge Interface Module
Compliance	IEEE 802.1d (Spanning Tree), IEEE 802.3 (Ethernet)	
Data Rate	10 Mbps (Software-selectable)	
Ports/Connectors	1 AUI port on standard DB15 female connector (50 m max)	
	1 ThinNet (10Base-2) interface on 50 Ω BNC coax connector (200 m max)	
	1 external device port on standard DB15 male connector (50 m max)	
Bandwidth/Timeslots	1, 2, 3, or 4 PremNet timeslots (each timeslot = 4.7 Mbps)	
LED Indicators	LED indicators for port status: alarm, standby, and active	
Configuration Maximum	Up to eight modules per node; 16 nodes per ring	
Environmental	Operating temperature	32° to 122° F (0° to 50° C)
	Storage temperature	-40° to 158° F (-40° to 70° C)
	Humidity	95% noncondensing
Network Management	Managed via a standard PremNet integrated system, a Milgo CMS network management system, or an SNMP-compliant management platform	

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