



## Serial CES to IP Interface Module

Serial to IP conversion adds legacy support to PacketAssure™ Service Delivery Manager

- Integral component of DNE PacketAssure Service Delivery Manager
- Converts serial data into IP streams with Priority Flow Rate (PFR) class of service, with UDP and RTP protocol support
- Enables combined IP-based and circuit-based services in one platform, with traffic management
- Extensive, standards-based features ensure maximum configuration flexibility
- Advanced 'Framed' mode supports Type 1 bulk encryption using existing serial encryptor assets
- Supports data rates from 75 bps to 8Mbps

### Overview

The Serial CES-to-IP Interface (SIPI), designed and manufactured by Ultra Electronics - DNE Technologies, converts synchronous serial data into IP streams that can be transported over the evolving DoD IP network. DNE's PacketAssure Service Delivery Management Platform enhances this capability with IP traffic management that assures serial data remains synchronized over congestion-prone IP links.

Command Operations Centers are still deploying time-division multiplexers to reach DISA services and for joint service operations. Applications are rapidly transitioning to Internet Protocol (IP) transport, but the requirement for interoperable voice and video services depends on the operation of these multiplexers. The PacketAssure SIPI module supports the operation of these multiplexers at rates up to 8.192 Mbps over emerging IP-based radio links. The SIPI module and the PacketAssure platform's ability to

support IP-based applications offer a graceful transition to future all-IP communication networks.

Many network planners assume IP radios only support in-line encryption equipment and legacy radios only support bulk. The Framed Mode on the PacketAssure SIPI module permits planners to choose the technology that meets the mission. Some missions involving IP radios demand protection of all IP source information. The SIPI Framed Mode can insert framing into an aggregate IP data stream such that a Type 1 bulk encryptor can encrypt the data. The cipher text can be fed back to a SIPI Normal Mode port for IP encapsulation before transmission over an IP radio or remain as a serial stream for a legacy radio.

### Technical Description:

The interface includes four EIA 530 synchronous data ports that either encapsulate unstructured data into IP packets (Normal

Mode) or pass an Ethernet stream through HDLC framing (Framed Mode.) The interface can receive timing from a station clock, an external transmit clock, or the PacketAssure's internal clock.

Operation of port control leads may be independently configured to be disabled, handshake as specified by the EIA 530 standard, or the state of the local DTR lead may be transferred across the network to the remote DSR lead for "Push to Talk"-like signaling across the network. Separate from control lead configuration, the RTS lead can be configured to signal PacketAssure to enable or disable Normal Mode port data transmission, dynamically releasing bandwidth to other applications when the port is not in use. While in Framed Mode, the interface will detect loss of framing on the port and reset encryption equipment as required.

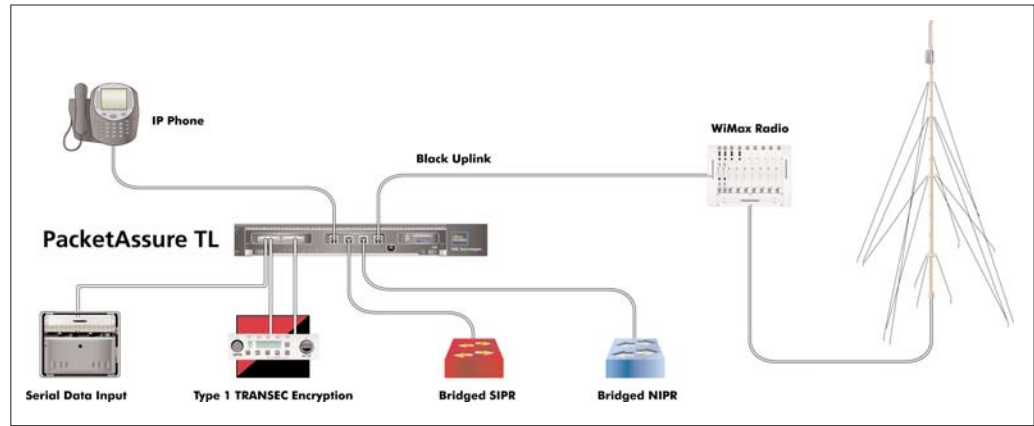
**Technical Description (cont.)**

Each port on the SIPI has a unique MAC address, along with user-configurable IP address, subnet mask, and IPv4 TOS/DSCP bits. The IP packet size is also user-configurable and constrained by the data rate selected.

Three status LEDs located on the SIPI front panel allow operators to quickly assess whether or not the SIPI is in an operational/provisioned state, in loopback mode, or is experiencing an error condition.

The SIPI Module converts synchronous serial traffic to RTP/UDP/IPv4/Ethernet packets. Each SIPI port has a unique MAC address assigned by the PacketAssure system. The system operator assigns IP addresses/masks, gateway addresses, UDP port addresses, filler bytes and TOS/DSCP values, as well as payload size and port rate. Diagnostic capabilities include line and local loopbacks to the individual port, BIST and PING.

The SIPI Module may be configured to operate in Normal



The PacketAssure Service Delivery Manager, with a Serial CES-To-IP Interface (SIPI) Module, Ethernet 10/100 Interface Module and Traffic Management Processor installed. Multiple IP- and circuit-based services are shaped, policed and aggregated as a serial stream, sent out a SIPI port, then switched through a Type 1 encryption unit and returned to another SIPI port, where the black data is encapsulated in IP packets and sent to an IP radio for transmission.

Mode or Framed Mode, configurable on a 'port pair' basis. Each mode differs in the types of applications supported; however both modes offer a comprehensive set of features and functions designed to meet exacting user requirements.

Normal Mode provides basic serial to Ethernet adaptation, at which time traffic management and aggregation with other Ethernet and serial traffic occurs.

This mode is suitable for aggregation of multiple Ethernet and synchronous services onto an Ethernet uplink.

Framed Mode allows an aggregated and groomed Ethernet stream, consisting of a combination of PacketAssure Ethernet and "Normal" serial traffic, to exit the PacketAssure as an "Ethernet over Serial", HDLC-encapsulated serial stream. This serial stream may

be sent to any serial encryptor device; such as a KIV-7/HS/HSB/M, KIV-19/A/M, or KG-194; or directly to a serial transmission facility. When sent to a serial encryptor, the cipher data may be directed to a Normal SIPI port, packed into Ethernet packets, and forwarded to a PacketAssure Ethernet uplink port, fully Type 1 TRANSEC-encrypted, for transmission to the remote location.

**Serial CES to IP Interface Module (SIPI)**

<b>Port Rates:</b>	75bps, 600bps, 2400bps, 4800bps, 9600bps, 16000bps, 19200bps, 32000bps, 64000bps*, 128000bps*, 256000bps*, 384000bps*, 512000bps*, 768000bps*, 1024000bps*, 1536000bps*, 2048000bps*, 3072000bps*, 4096000bps*, 4608000bps*, 5120000bps*, 6144000bps*, 8192000bps (*Framed mode only)
<b>Management</b>	SNMP-based management, fully integrated under PacketAssure's management architecture, for complete configuration, monitoring and control. Accessible through serial console, telnet, or http-based interface.
<b>Front Panel Indicators</b>	ER: Errors due to Loss of Signal or Clock OP: Card is in Operational state with no errors LB: One or more ports are in Loopback mode
<b>Interfaces</b>	2 DB-60P connectors may each be configured with DCE or DTE EIA-530 cabling.
<b>Environmental</b>	0° C to 50° C Operating, -40° C to 70° C storage, 5% to 95% Humidity (non-condensing), Operating altitudes of up to 30,000 ft, storage altitudes up to 40,000 ft (12,200m)
<b>Power</b>	16W maximum
<b>Dimensions</b>	1.1" (2.8cm) H x 4.2" (10.7 cm) W x 6.88" (17.5 cm) D. Weight: 6.5 oz (card only), 184.3g



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This document has been cleared for public release by the United States DFOISR, June 2008.

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