



# MicroLegend<sup>®</sup> Signaling Blade

## Overview

The MicroLegend<sup>®</sup> Signaling Blade is a full-featured embedded SS7/IP signaling gateway. Bootable locally from onboard compact flash and functioning independently of other components and their operating systems, the MicroLegend Signaling Blade is a true "system-in-a-slot". It can be integrated with chassis components such as media gateways, media gateway controllers (or softswitches), access modules, and Ethernet switching units that function dependently or independently of the chassis operating system. When used in conjunction with these components, it can help to perform IP telephony applications that emulate the call control functionality or service processing capabilities of traditional circuit-switched telephone network switches.



## Benefits

### Compact, Low Cost System-in-a-Slot

The MicroLegend Signaling Blade boots locally from compact flash, making it independent of the system controller. It enables system designers to easily integrate signaling gateway applications, yet benefit from the lower production costs associated with embedded solutions. It can support up to 8 SS7 links using T1/E1 or V.35 I/O interfaces, and with its dual Ethernet ports, it can support the latest IETF SIGTRAN SS7/IP interworking protocols, such as SUA and M2UA over SCTP.

### Superior Reliability

The MicroLegend Signaling Blade uses the same basic software functionality found in Performance Technologies' higher capacity 4000 Series stand-alone unit. With its distributed software architecture, the 'hot-swap' capability of CompactPCI<sup>®</sup>, and mated pair configurations, the MicroLegend Signaling Blade can provide superior reliability comparable to fault-tolerant "five nines" systems.

### Distributed Software Architecture

With distributed software architecture, two or more systems can be connected to each other using redundant Ethernet or serial high-speed connections. This architecture distributes the MicroLegend SS7 software stack across multiple machines, unlike traditional stacks that run on a single computer, or even on a single processor. This feature allows system and SS7 link load sharing among platform units, with platform clusters acting as a single point code. Since the signaling traffic is constantly distributed among units, any system or network failure is handled with minimum switchover delay.

### Versatile User Application Protocol (UAP)

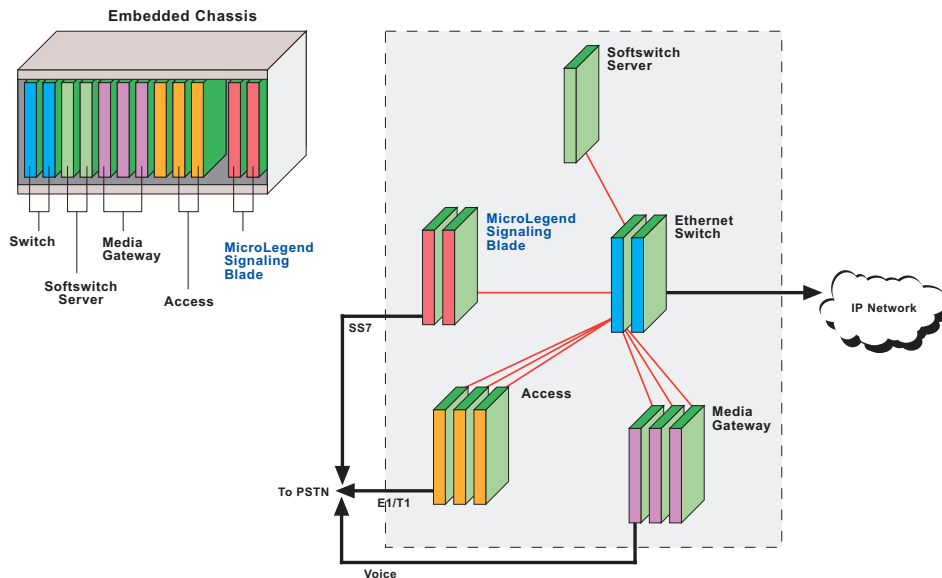
The MicroLegend Signaling Blade utilizes an UAP that provides access to the complete SS7 information message stream through a TCP/IP socket interface. It is designed to be easily adaptable and quickly integrated into the customer's call control or service creation software environment. Performance Technologies is committed to supporting industry protocol standards and sits on the IETF design committee for signaling transport protocols. The MicroLegend UAP currently supports SUA and M3UA over SCTP. It is also capable of utilizing a TCP/IP solution should the customer prefer that type of interface.

## Features

- Compact, Low Cost System-in-a-Slot
- Superior Reliability
- Distributed Software Architecture
- Versatile User Application Protocol
- Network-Proven Solutions
- Onboard Protocol Conversion
- Flexible Network Configurations
- Call Control and Service Message Support
- Exceptional Scalability
- Point Code Conservation



## The MicroLegend Signaling Blade in an Embedded VoIP Architecture Environment



### Network-Proven Solutions

MicroLegend signaling solutions have been deployed for international and domestic applications in wireless and wireline configurations all over the world, including the United States, Canada, France, United Kingdom, Netherlands, Switzerland, Germany, Spain, Brazil, Mexico, Japan, and China. The MicroLegend signaling platform contains multiple co-resident stacks conforming to ANSI, ITU-T, Japan JTT, and Chinese SS7 specifications, allowing customers to transparently deploy their own IP network solution throughout the world without the need to rewrite their own software code. The MicroLegend Signaling Gateway supports V.35, T1 and E1 interfaces for the connection of SS7 links.

### Onboard Protocol Conversion

While SS7 is a universally embraced signaling protocol standard, each country can have a slightly different flavor of SS7. The MicroLegend Signaling Blade can be adapted to translate between these variants using onboard SS7 protocol conversion, thus allowing customers to transparently deploy their own IP service or application solution (without modifying their software) throughout the world, regardless of SS7 variants.

### Flexible Network Configurations

MicroLegend Signaling Blades can be configured as a Signaling End Point (SEP) or as an STP node for international or inter-network gateway applications. In SEP mode, a network provider can connect a number of softswitch and media gateway configurations in widely dispersed geographic areas and use the signaling gateway to appear to the SS7 network as a single switch. Like a PSTN switch, a distributed IP switch can send and receive ISUP call control or other SS7 messages, utilizing the signaling gateway as the critical component for delivering these messages. With its enhanced STP capabilities, the MicroLegend Signaling Blade can also emulate the presence of multiple end points on the SS7 network, effectively providing access to more voice trunks and more signaling links, without violating SS7 network provisioning guidelines.

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### **Call Control and Service Message Support**

The MicroLegend Signaling Blade can support customer requirements for any level of the SS7 stack, including ISUP, TCAP, MAP and INAP. This flexibility allows VoIP providers integrating media gateway controllers (softswitches), media gateways and signaling gateways to form a distributed network switch that offers call control functionality comparable to the traditional Class 4 or 5 telco switches or database services through application server configurations.

### **Exceptional Scalability**

The MicroLegend Signaling Blade is designed for embedded solution manufacturers and value added providers looking for signaling gateway applications with 1-8 SS7 links, although larger link configurations are possible using distributed mode. The Signaling Blade provides the flexibility to cost-effectively grow in capacity and functionality within converged network environments. Customers can begin with a modest single or dual module deployment in non-distributed or distributed configurations and incrementally add units as SS7 message traffic grows. Customers with small-scale applications benefit from the same "hot-swap" reliability and software functionality used for the largest configurations.

### **Point Code Conservation**

In the PSTN, SS7 entities require identifiers called point codes. The tremendous growth in the number of telecom carriers, together with the distributed nature of entity provisioning in IP networks, has severely reduced the number of available point codes in a numbering scheme established several years ago for traditional PSTN applications. The unique distributed stack architecture and enhanced traffic distribution algorithms of the MicroLegend Signaling Blade allow smaller carriers to grow without the need to continually request, typically from competing incumbent carriers, additional point codes.

### **Next-Generation IN Services**

The convergence of voice and data networks provides the opportunity to develop new types of Intelligent Network (IN) services. On IP networks, new services can be created using familiar databases and programming environments that run on open computer platforms. These types of configurations differ dramatically from the large scale, expensive and highly specialized SCPs typically used in the PSTN. The open accessibility of the IP infrastructure will foster unprecedented innovation for communications of all kinds.

In some cases, new services may be designed to access subscriber data available in existing PSTN databases for 800 service, LNP or calling card (LIDB) applications. In other cases, new IP hosted databases may be created for specialized applications like policy management, Internet call waiting, or mobile customer home location registers (HLRs). In either case, it should be possible for subscribers on both the PSTN and the IP networks to access these services transparently, without concern for the location of the database. Signaling gateways interwork the signaling between the PSTN and IP networks to enable the two networks to share services. These Intelligent Network services generally use the TCAP, MAP, or INAP layers of the SS7 signaling protocol stack.

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