

Sonus SGX4000™ Universal Signaling Gateway

The sign on the road says “All Media, All IP Ahead.” Yet until we get there, much of the world’s telecommunications traffic will continue to run on legacy networks. With the Sonus SGX4000 Universal Signaling Gateway, you can drive your network’s transformation to IP today without losing sight of legacy subscribers.

SS7/C7 signaling networks form an essential part of today’s global communications infrastructure, providing call control in traditional TDM networks, advanced call features (calling cards, freephone numbers, number portability) in Intelligent Networks and location-based services in wireless networks. The SGX4000 Universal Signaling Gateway helps to create a powerful bridge between SS7/C7 and SIP core networks, enabling network operators to migrate to an IP architecture while preserving legacy network services and policies. The SGX4000 gateway forms an integral part of the Sonus Next-Generation Network (NGN) core and IMS architectures, delivering a host of benefits to carriers right now:

- Enables SS7/C7 and SIGTRAN signaling messages to communicate with SIP core networks;
- Supports consistent policy enforcement on SIP core networks;
- Presents a non-disruptive NGN migration path that enables IP networks to access legacy and Intelligent Network/Advanced Intelligent Network (IN/AIN) services;
- Consolidates SS7/C7 links and supports multiple Originating Point Codes (OPCs) and Subsystem Numbers (SSNs) to reduce operator costs and increase network efficiency;
- Provides a future-ready solution that is scalable, reliable, easy to manage and IMS compliant.

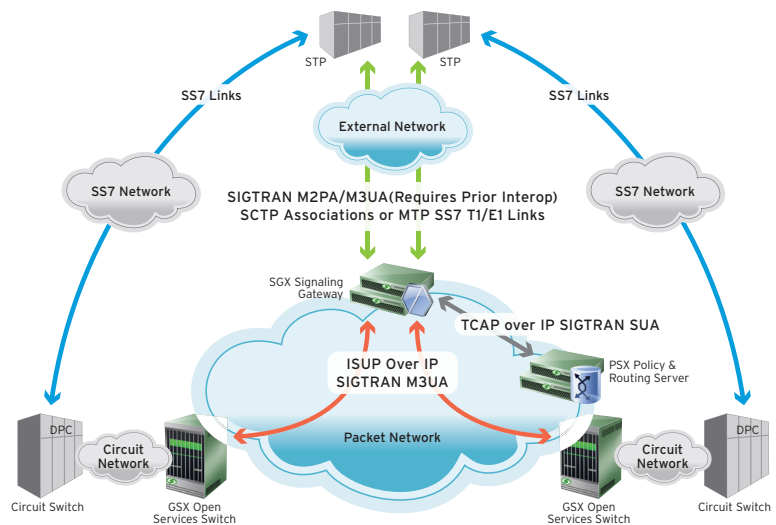


FIGURE 1. Sonus IP network environment featuring the Sonus SGX4000 signaling gateway

Reduce Network Costs

The improved hardware and software design of the SGX4000 gateway reduces the number of SS7/C7 links and dedicated signaling gateways needed in the network. An active-active pairing of SGX gateways can serve an entire network—up to 65 GSX/PSX™ devices—and 128 A/F links, eliminating the need for costly SS7 links to core network elements. As a further cost savings in multinational, mixed-protocol networks, a single SGX4000 gateway can support up to eight originating point codes (OPCs).

SS7/SIGTRAN Support

The SGX4000 provides a more efficient NGN core through two-way SS7 and SIGTRAN communications. External to the IP core network, the SGX4000 can send/receive SS7 or SIGTRAN messages with Signal Transfer Points (STPs) in the legacy signaling network. Within the IP core, the SGX4000 communicates with the Sonus IP network elements (e.g., GSX gateways and PSX servers) via standards-based SIGTRAN. By broadly leveraging SIGTRAN in the IP network, the SGX4000 reduces bottlenecks and simplifies network management.

The SGX4000 gateway is Sonus Networks’ most powerful SS7/C7 signaling gateway ever:

- Supports ISUP, TCAP and SIGTRAN messages for service and policy consistency between IP and legacy networks
- Triples the size of the network that can be served from a single gateway
- Supports up to eight Originating Point Codes per gateway
- Features unique patent-pending technology that improves redundancy and availability

More Powerful, More Protocol Support

The SGX4000 gateway nearly triples the performance of the previous SGX model, supporting up to hundreds of calls and thousands of TCAP transactions per second. It features some of the broadest protocol support in the industry: SS7 MTP, M2PA, M3UA, ISUP, SCCP, SCTP, SUA and, in conjunction with the Sonus PSX server, TCAP, IS-41 and GSM MAP. Greater protocol support enables IP network elements to access a wider range of legacy and IN/AIN voice services, including number portability databases, toll-free number translations and virtual private networks. The SGX4000 gateway also supports a wide variety of international signaling standards—ANSI, ETSI, ITU, hybrid TCAP services (e.g., ANSI and GSM on a single node; ANSI, ITU and GSM on two nodes) and many country-code variants—allowing operators to more easily extend their networks internationally.

Flexibility and High Availability

The Sonus signaling gateway is not a proprietary “box” but an integrated network element. Network administrators can easily manage provisioning objects, configure call tracing and track performance for the SGX4000 centrally from the Sonus Element Management System or, for smaller networks, directly via the SGX4000’s embedded GUI. High, five-nines (99.999%) reliability is ensured through multiple failsafe features including paired active-active servers, redundant CPUs, redundant LANs and dual DC power feeds. In addition to many Service Availability Forum-compliant characteristics that support high availability requirements, the SGX4000 gateway features unique, patent-pending Sonus technology that improves redundancy and message transfers for optimal availability configurations.

Simple to Upgrade, Easy to Expand

With the SGX4000’s live upgrade feature, network operators can evolve their networks without service interruption and take advantage of future standards like IMS and LTE at their own pace. Flexible hardware configurations and simplified licensing models are available for the SGX4000 gateway, so carriers only pay for the performance they need, yet can easily scale to meet growing network demands.

Network Design and Migration Services

Planning, implementation and migration services for signaling gateway deployments are available from Sonus Global Services. Sonus offers Network Design services that feature a detailed schematic of SS7/C7-to-SGX gateway interconnection, and Network Migration services that address signaling link installation and migration. For legacy-to-IP network migrations, Sonus also offers a unique Point Code Migration Platform that allows network operators to re-assign legacy point codes to IP network elements in a non-disruptive manner, one circuit at a time.

The SGX4000 gateway supports a seamless, high-performance path to network transformation:

- Solves the challenge of SS7/C7 signaling interworking, allowing IP networks to leverage legacy and IN/AIN services
- Consolidates SS7/C7 links, OPCs and signaling gateways to reduce costs and increase network efficiency
- Enables wireless operators to offload bandwidth-intensive data communications onto efficient IP networks
- Provides an ISUP signaling gateway solution that is faster and more powerful than ever, with even more robust international signaling support

Product Specifications

Protocols Supported

- MTP - ANSI, ITU/ETSI, Japan
- M2PA (RFC 4165)
- M3UA (RFC 4666) - Requires Prior Interop
- SUA (SS7 SCCP User Adaptation Layer) (RFC 3868)
- TCAP over IP (via Sonus PSX policy & routing server)
- ISUP over IP (via Sonus GSX media gateway) - ANSI, ITU/ETSI, BT and Japan
- SCCP - ANSI, ITU and Japan v9

Signaling Standards Supported

- Signaling rates
 - MTP3: 32 A-links at 1 Erlang per server
 - SIGTRAN: 16 M2PA/M3UA associations per server chassis
- Signaling capacity (based on avg. MSU length of 30 bytes)
 - 10,000 MSUs/sec per server w. low speed TDM links (64 A-links per server)
 - 20,000 MSUs/sec per server w. high speed IP links

Max. signaling rates assume 100% port utilization across three scenarios: 100% MTP3-M3UA/SUA calls, 100% M2PA-M3UA/SUA calls or a 50% mix of both types. At these rates, max. CPU utilization of SGX server does not exceed 85% capacity.

Network Capacity

(Maximum Capacity Configuration)

- GSXs/PSX SCPA processes supported: 65 (max of 50 for either type)
- Local point codes: 8
- Adjacent point codes: 32
- Linksets per local point code: 32
- Destination Point Codes (DPCs) per local point code: 500
- Routesets per local point code: 500
- Routes per DPC: 8
- M3UA routing keys per local point code: 700
- SUA routing keys per local point code: 254
- SCTP associations: 512
- SUA associations per server chassis: 128
- M2PA associations per server chassis: 16
- Internal M3UA associations per server chassis: 128
- External M3UA associations per server chassis: 16
- Global Title Translation digits: 22
- Global Title Translation entries: 20,000

SIGTRAN Support

- External (toward signaling network): M2PA, M3UA
- Internal (toward Sonus network elements): M3UA, SUA
- SCTP (Stream Control Transmission Protocol) (RFC 2960)

Calls/Transactions per Second

- 8,000 Calls per Second
- 10,000 TCAP Transactions per Second

Operating System Software

- Red Hat Enterprise Linux Server R7.1 (SGX10.0 and onwards)

Element Management Environment

- SGX Navigator (with Sonus Element Management System)

Redundancy/Failsafe Features

- 2 servers operating in active-active mode
 - No active calls dropped in the event of single router, packet link or server failure
 - No service outage in the event of partial T1/E1 circuit link failure
- Dual hotswap N+1 redundant DC or AC power supply units
- 2 packet network interfaces (redundant 4x GigE connectivity) per server
- Service Availability Forum (SAF) middleware
- Geographic redundancy requires 2 point codes for redundant SGX4000s
- Dry Contact Alarms and Watchdog Timer

Hardware Specifications

- HP DL380 G8 carrier grade, NEBS compliant server
- 2 RU
- Dimensions: (H x W x D) 3.38 x 17.54 x 27.25 in (8.59 x 44.55 x 69.22 cm)
- Weight: Maximum 60.00 lbs (27.27kg)
- Requires External Storage for High Availability.
- Optionally PCI-Express T1/E1/J1 Communications Controller.

Note: Please contact your sales or channel contact to get the exact specifications.

About Sonus Networks

Sonus enables and secures real-time communications so the world's leading service providers and enterprises can embrace the next generation of SIP and 4G/LTE solutions including VoIP, video, instant messaging, and online collaboration. With customers in more than 50 countries and nearly two decades of experience, Sonus offers a complete portfolio of hardware-based and virtualized Session Border Controllers (SBCs), Diameter Signaling Controllers (DSCs), Cloud Exchange Networking Platform, policy/routing servers, and media and signaling gateways. For more information, visit www.sonus.net or call 1-855-GO-SONUS. Sonus is a registered trademark of Sonus Networks, Inc. All other company and product names may be trademarks of the respective companies with which they are associated.

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