

Ribbon Virtual SGX4000™ Universal Signaling Gateway

With the Ribbon Virtual SGX4000 Universal Signaling Gateway, you can continue to drive your signaling network transformation to virtualization 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 networks, advanced call features (calling cards, freephone numbers, number portability) in Intelligent Networks and location-based services in wireless networks. The virtual SGX4000 Universal Signaling Gateway is a signaling gateway that aggregates signaling connections to Ribbon's Trunking solution (GSX and PSX) as shown in Figure 1. The virtual SGX4000 gateway forms an integral part of the Ribbon Next-Generation Network (NGN) core and IMS architectures, delivering a host of benefits to carriers right now:

- In conjunction with GSX, enables SS7/C7 and SIGTRAN signaling messages to communicate with SIP core networks;
- In conjunction with PSX, provides 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.

Reduce Network Costs

The virtualization of SGX4000 gateway enables data center-based deployments providing customers increased flexibility to manage the SGX4000's hardware lifecycle. An active-active pairing of SGX gateways can serve an entire network—up to 65 GSX/PSX™ devices. As a further cost savings in multinational, mixed-protocol networks, a single virtual SGX4000 gateway can support up to eight originating point codes (OPCs).

The virtual SGX4000 gateway provides flexibility and scalability for SS7/C7 signaling

- Supports ISUP, TCAP and SIGTRAN messages for service and policy consistency between IP and legacy networks
- Supports up to eight Originating Point Codes per gateway
- Features unique patent-pending technology that improves redundancy and geographic and non-geographic availability

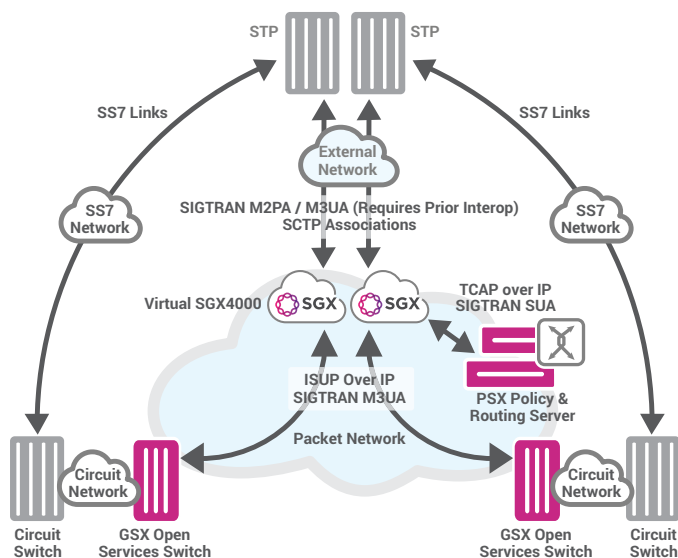


Figure 1. Ribbon Trunking solution with virtual SGX4000

SIGTRAN Support

The virtual SGX4000 gateway aggregates SUA links from Ribbon's PSX and M3UA links from Ribbon's GSX9000 gateway towards the STP via SIGTRAN signaling, simplifying the network and reducing costs.

More Powerful, More Protocol Support

The virtual SGX4000 gateway supports up to hundreds of calls and thousands of TCAP transactions per second. It features some of the broadest protocol support in the industry: M2PA, M3UA, ISUP, SCCP, SCTP, SUA and, in conjunction with the Ribbon PSX, 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 virtual 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

Network administrators can easily manage provisioning objects and track performance for the virtual SGX4000 from a centralized location using the Ribbon Element Management System. Five-nines (99.999%) reliability is ensured through multiple failsafe features including a paired active-active configuration. In addition to many Service Availability Forum-compliant characteristics that support high availability, the virtual SGX4000 gateway features unique, patented Ribbon technology that improves redundancy and message transfers for optimal availability configurations.

Simple to Upgrade, Easy to Expand

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

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

- Consolidates signaling 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

Network Design and Migration Services

Planning, implementation and migration services for signaling gateway deployments are available from Ribbon Global Services. Ribbon 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.

Geographic Redundancy (GR)

The geographic redundancy feature for the virtual SGX4000 provides additional resilience against outages in the SS7 network. GR consists of two geographically redundant SGX (termed as a pair). All of the PSXs and GSXs in the network register to both SGXs in an identical manner, so they can access both of the SGXs for call processing.

Protocols Supported

- MTP3 – 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 Ribbon PSX policy & routing server)
- ISUP over IP (via Ribbon GSX media gateway) – ANSI, ITU/ETSI and Japan
- SCCP – ANSI, ITU and Japan v9

SIGTRAN Performance

- 20,000 MSUs/sec
- At 20,000 MSUs/sec, maximum CPU utilization of SGX does not exceed 85% capacity

Configuration Capacity

- 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 active instance: 128
- M2PA associations per active instance: 32
- Internal M3UA associations per active instance: 128
- External M3UA associations per active Instance: 32
- Global Title Translation digits: 22
- Global Title Translation entries: 20,000
- Number of CIC ranges per AS: 255

About Ribbon

Ribbon Communications (Nasdaq: RBBN) delivers communications software, IP and optical networking solutions to service providers, enterprises and critical infrastructure sectors globally. We engage deeply with our customers, helping them modernize their networks for improved competitive positioning and business outcomes in today's smart, always-on and data-hungry world. Our innovative, end-to-end solutions portfolio delivers unparalleled scale, performance, and agility, including core to edge software-centric solutions, cloud-native offers, leading-edge security and analytics tools, along with IP and optical networking solutions for 5G. We maintain a keen focus on our commitments to Environmental, Social and Governance (ESG) matters, offering an annual Sustainability Report to our stakeholders. To learn more about Ribbon, please visit rbbn.com.

Contact Us

We are here to help. Let us know if you are interested in a quote or if you have any questions.

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SIGTRAN Support

- External (toward signaling network): M2PA, M3UA
- Internal (toward Ribbon 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.X (SGX10.0 and onwards)

Element Management Environment

- SGX Navigator (with Ribbon Element Management System)

Redundancy/Failsafe Features

- Active mode
 - No active calls dropped in the event of single router, packet link or server failure
- Supports redundant network interfaces for signaling, management and high-availability
- Geographic redundancy requires 2 point codes for redundant SGX4000s
- Watchdog Timer

Minimum Hardware Requirements (per active instance)

- VCPUs: 24
- RAM: 32 GB
- Storage: 300GB
- NICs:
 - 8 * 1Gbps
 - 2 * 10 Gbps

Note: Please contact your Ribbon sales representatives for virtual host hardware and software packaging options available from Ribbon.