Ribbon Policy Solutions

As SIP session traffic continues to grow—a trend accelerated by the rapid adoption of multimedia devices like smartphones and tablets— service providers and enterprises must find ways to effectively manage, route and control this traffic in their networks. And the most effective way to manage and control SIP traffic is through a robust policy management solution. Ribbon Communications was an early pioneer in the concept of centralized SIP policy management with its PSX™ Intelligent Session and Routing Control solution. The PSX quickly became the gold standard of SIP policy management, and today drives more than 5 billion SIP sessions in the world's communications networks every day. The PSX provides service providers with unprecedented scalability—up to millions of subscribers and routes—and robust features

Figure 1 – An overview of the Ribbon PSX platform

not available anywhere else, such as highly sophisticated call routing and broad signaling interoperability with SIP and legacy networks. Building on that tradition, Ribbon today offers the PSX an open, advanced SIP routing and policy platform that can be easily extended through software modules to address unique SIP policy roles such as leastcost routing, hosted number portability and IP Multimedia Subsystem (IMS) interoperability. In addition, the PSX functionality can be extended to address future SIP applications.
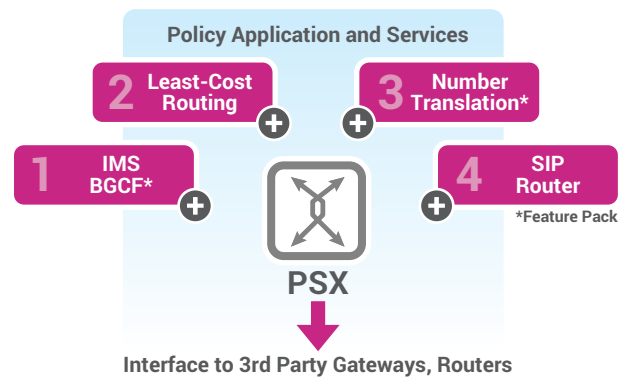
Ribbon PSX

The Ribbon PSX is a centralized SIP/ENUM policy server that is designed for a multivendor ecosystem of Session Border Controllers (SBCs), media gateways, Class 4/5 softswitches, Mobile Switching Centers (MSCs) and other devices. Most communications networks today are multivendor, multiprotocol environments with fragmented policy information spread out across individual geographies and individual network elements. With PSX, service providers and enterprises can move to a single, centralized SIP policy solution that eliminates the cost and complexity of managing different elements and policy databases in the network. The PSX employs a unique master/replica architecture in which all SIP policy information is provisioned in a single master server and replicated to local policy servers (if needed) throughout the network. This centralized model allows service providers and enterprises to easily manage and update their SIP policies from a master server in their core network, and quickly copy this policy intelligence to local policy servers deployed nationally or internationally.

The Ribbon PSX supports hundreds of configurable policies including routing policies, custom dialing plans, emergency calls, call blocking and screening, local number portability lookups and calling name delivery. These policies can be managed and applied uniformly across heterogeneous networks without the need to "rip and replace" legacy equipment—a key advantage in multivendor enterprise networks that have resulted from mergers and acquisitions or service provider networks that feature a mix of legacy and next-generation technology. In addition to its policy management role, the PSX can act as a SIP proxy/redirect server in the network, performing SIP Message Manipulation (SMM) and playing externally stored tones and announcements. The scalability of the PSX platform is second to none: a single server can handle 10s of millions of routes and 10s of millions of subscribers.

Policy Applications & Services

Beyond its basic role as a centralized policy server for Ribbon and third-party elements, the functionality of the PSX can be extended through a variety of software upgrades to serve unique roles in the network including the Breakout Gateway Control Function (BGCF) in IMS networks, number portability server or value-based routing server. Below is a brief overview of the features and functions of each. In addition, Ribbon continues to add functionality to the PSX platform via new software feature packs, so stay tuned!

IMS Breakout Gateway Control Function (BGCF)

The BGCF element plays an important role in IMS networks as a SIP proxy to route calls between IMS and non-IMS networks. As a number of mobile network operators roll out multimedia-based IMS networks in conjunction with their existing circuit-based GSM/CDMA networks, there will be a growing need to route calls between the two network architectures, not just between peer networks but within the same network. Through a special software pack, the Ribbon PSX can be upgraded and deployed as a fully functional BGCF routing server.

The Ribbon BGCF is a transaction-stateful SIP proxy server that delivers everything you would expect in a BGCF device, including high performance (1,000 calls per second on a single server), 3GPP R9 compliance and complete support for IMS ecosystem elements via Mi, Mj, Mk and Mx interfaces. In addition, the Ribbon BGCF includes many value-added features not found in other BGCF servers, such as Next- Generation and SS7 Service Control Point (SCP) lookups, DNS/ENUM server overload controls and Address Reachability Service (ARS) controls.
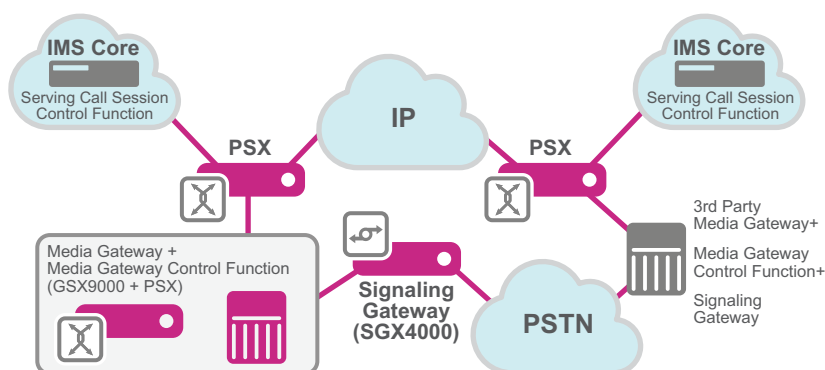

Figure 2 – The enhanced Ribbon PSX deployed as a BGCF Routing Server

Why Does Centralized Policy Matter?

To a subscriber, a SIP session doesn't look much different than a traditional voice call: it confirms the availability of a particular endpoint, establishes a connection between two endpoints and controls the exchange of media during the session. In reality, SIP sessions are more complex than that; they consist of multiple policy decisions such as security settings, routing paths based on lowest cost and/or highest quality, media transcoding options and signaling interworking. Decisions like these may be made multiple times during a single SIP session, and the intelligence for these decisions may reside in dozens of different network elements such as soft-switches, Session Border Controllers (SBCs) and Least-Cost Routing (LCR) engines. Thus, what appears to be a simple VoIP call may actually be a complex series of communications between a call routing server, a policy database, multiple SBCs, an Electronic Numbering (ENUM) server and other network devices.

The complexity of SIP traffic creates several problems for communications networks: it consumes more bandwidth, it introduces quality issues (e.g., latency, dropped packets) and it's prone to errors because the policy information is often manually entered and updated on each device. In order to minimize the complexity of SIP and provide more robust management of SIP sessions, Ribbon created a centralized SIP policy and routing platform, known as the Ribbon PSX. The PSX platform addresses what we see as the most important challenges facing today's multimedia networks:

- Scalability in the number of policy and routing decisions that can be performed as the amount of SIP sessions increases in the network;

- Interworking between a wide range of internal and external network devices that speak different signaling languages including IPv4 and IPv6, legacy PSTN protocols (e.g., ISUP, H.248) and the many varieties of SIP favored by network solution vendors;

- Simplicity in the management and provisioning of network-wide policy and routing information including MACs (Moves/ Adds/Changes), overload controls, least cost routes and number portability lookups.

- Ability to seamlessly migrate/upgrade existing policy servers to address new challenges such as Unified Communications, IP Multimedia Subsystem (IMS) interoperability and hosted number portability services.

ribbon

Number Translation Services

As the consumer demand for number portability services increases, so does the cost to carriers. That's because, every time a carrier "dips" into a third-party number portability database for an address, they pay a fee. It may only be a fraction of a penny for every dip, but over millions of calls these number translation fees can add up—to more than $1 million each year for some carriers. Fortunately, there's a way for carriers to address the growing need for number portability services and still reduce costs: by hosting their own number translation server.

The Ribbon number translation application enables carriers to deploy a number portability server in house, thus reducing costs and decreasing the latency incurred from external thirdparty database dips. The number translation functionality is available as a software-based feature upgrade to the PSX and delivers a highly scalable, highly flexible number portability so-lution. Ribbon's number translation solution supports interoperability with a variety of databases—SIP, ENUM, INAP, TCAP—and allows carriers to get number portability data directly from the source and host it locally. Instead of paying a fee to a third-party service for every dip, carriers can reduce costs and eliminate 100-200ms of latency per call by dipping directly into their own number portability server.
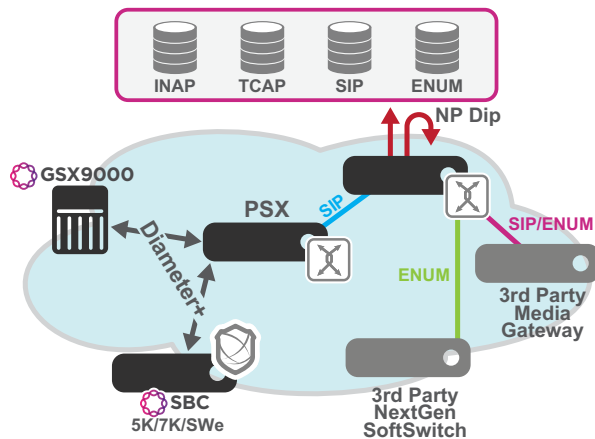

Figure 3 – The enhanced Ribbon PSX deployed as a number translation server

Least-Cost Routing (LCR)

The Ribbon PSX is an enhanced Least Cost Routing (LCR) solution that allows service providers and carriers to reduce costs and increase quality of service by selecting the most appropriate SIP session routes based on a variety of criteria including interconnect carrier rates, service level agree-ments, voice quality, latency and network capacity. Because of the com-plexity of LCR calculations and the number of variables involved, service providers and carriers have traditionally employed teams of analysts or deployed standalone LCR engines to aggregate information and calculate the optimal routes. These options, however, can be costly and complex to manage. Ribbon offers a better solution: Least-Cost Routing (LCR) services built on the Ribbon PSX platform.

8 Reasons to Choose the Ribbon PSX

1 It is the most proven policy and routing platform on the market today

2 It delivers 99.9999% reliability— that's less than one minute of network downtime every year

3 It can be easily upgraded to provide new, advanced functionality such as a Breakout Gateway Control Function (BGCF) routing server, number portability server or valuebased routing server via a simple software feature upgrade

4 It's the most scalable policy and routing platform in the world, able to handle millions of subscribers and call routes

5 It's centralized, which means you only have to provision subscriber and routing changes once, and that change flows seamlessly through your entire network

6 It supports multivendor SBCs, gateways and switches, so you can benefit from the industry's most powerful policy server with the network you have today

7 It provides rich functionality you won't find anywhere else, including customizable security settings, overload controls and a myriad of routing configurations

8 It supports the broadest range of database lookups including SIP, ENUM, DNS, SCP, IN/AIN, INAP and wireless (GSM-MAP, IS-41, WNP, CAMEL) databases
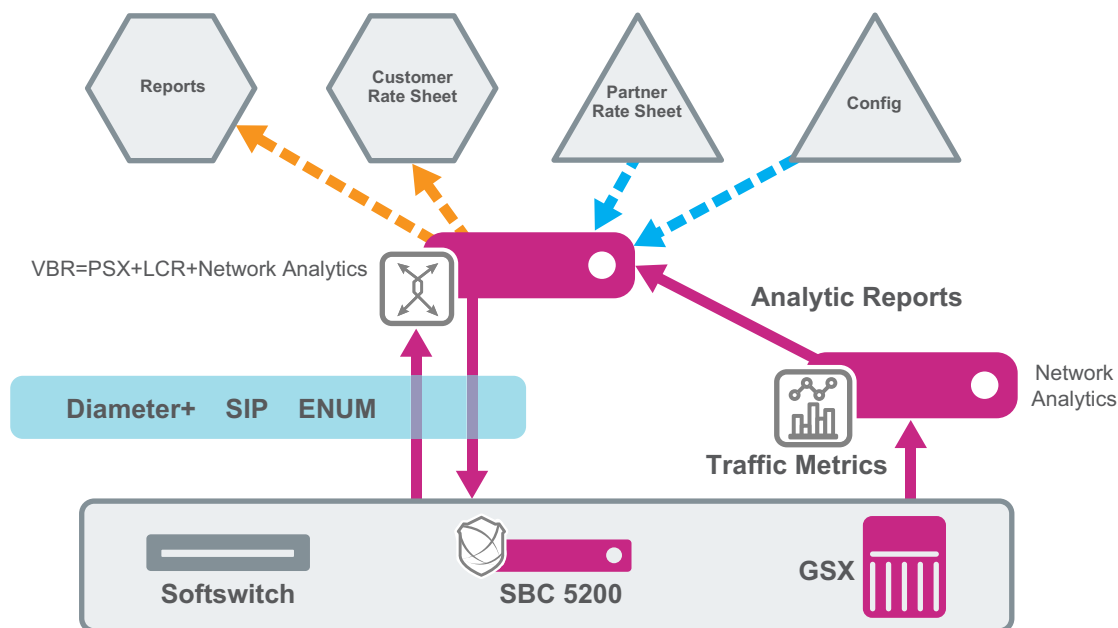
Figure 4 – The Ribbon PSX deployed as an LCR Engine

The Ribbon LCR solution is delivered as a software feature upgrade on the PSX platform, allowing service providers and carriers to deploy a centralized policy and least cost routing server in a single device for simplified management and reduced cost. The LCR application aggregates pricing and customer information from back-office systems and combines it with near realtime SIP session metrics provided by Ribbon network analytics software to create a reliable, scalable, flexible LCR solution that integrates seamlessly with your network's centralized policy decisions.

Contact Us   Contact us to learn more about Ribbon solutions.

Microsoft Partner
Gold Communications

Voice
Unified Communications
Business Productivity Solutions
Midmarket Solution Provider

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 visit rbbn.com.