

SESSION BORDER CONTROL BORDER GATEWAY FUNCTION FOR JUNOS SOFTWARE

Product Overview

Service providers offering voice over IP (VoIP) services need reliable, high performance infrastructure that is cost effective and operationally efficient to deploy at scale. To help service providers meet these requirements, the Session Border Control Border Gateway Function for JUNOS Software is supported by Juniper Networks MX Series Ethernet Services Routers, M Series Multiservice Edge and T Series Core Routers to provide a fully standards-based SBC BGF solution for a wide variety of multimedia applications with reliability and performance at scale.

Product Description

As VoIP services become increasingly important elements of advanced broadband service offerings, service providers are challenged to cost effectively deploy them at scale. While network operators used appliance-based Session Border Controllers (SBCs) to support their early VoIP roll-outs, Juniper now offers router-integrated SBC functions that help reduce the total cost of ownership (TCO), ensure performance and service quality at scale, and improve operational efficiency.

Standards define SBC functions for signaling (functions that cover VoIP session control, such as session set up and teardown), and media (functions that provide session transport). The media function, properly known as a Border Gateway Function (BGF), can be distributed into network elements located at the peering and access edges of the service provider's IP network. Integrating the SBC BGF into routers that are already deployed in these locations, can be a very efficient implementation approach as long as the routing platforms that can flexibly accommodate a wide variety of services at scale without compromising performance or reliability.

Juniper Networks[®] offers the Session Border Control Border Gateway Function (SBC BGF) for JUNOS[®] Software for the MX Series Ethernet Services Routers, the M120 and M320 Multiservice Edge Routers and the T640 Core Router. The SBC BGF for JUNOS is supported on dedicated hardware acceleration modules called Multiservice DPCs (or MS-DPCs, for the MX Series) and Multiservice PICs (MS-PICs for the M120, M320 and T640). The high performance MS-DPCs and MS-PICs can also host a wide array of other processing-intensive applications, including Dynamic Application Awareness for JUNOS, stateful firewall, IPS, and many others, allowing these applications to benefit from the performance and reliability of the MX Series, M120, M320 and T640, while concurrently reducing the cost and complexity of deploying service specific appliances.

SBC BGF for JUNOS provides many important VoIP functions such as media gateway control and media latching, Network Address Translation (NAT) and Network Address Port Translation (NAPT) traversal, Differentiated Services Code Point (DSCP) marking and rate limiting, that together ensure the appropriate handling of voice traffic at the access and peer edges of converged IP service networks. With this comprehensive solution, Juniper delivers true service convergence that increases service velocity, accelerates network monetization and improves operational efficiencies for wireline and wireless service providers alike.

Architecture and Key Components

Juniper Networks routing platforms set the standard for performance, reliability and scale, and the MX Series, M120 and M320 Multiservice Edge Routers and the T640 Core Router are well-proven in the most demanding network environments and applications. These broadly deployed Juniper routing platforms share a multiprocessor, hardware-assisted, distributed packet forwarding architecture that permits the incremental addition of processing power, and are all powered by JUNOS Software.

SBC BGF for JUNOS provides advanced functions including NAT and NAT for topology hiding, DSCP marking to insure proper QoS handling, as well as support for Real-time Transport Control Protocol (RTCP) and Real-time Transport Protocol (RTP) monitoring, and security related services such as media inactivity detection. It also provides advanced operational features such as IPv4/IPv6 interworking.

SBC BGF for JUNOS is integrated with Juniper Networks routers via MS-DPCs and MS-PICs. These service modules supply hardware acceleration for a variety of packet processing-intensive applications, and multiple MS-DPCs and MS-PICs can be deployed per router to incrementally and cost-effectively increase performance as demand grows, without negatively impacting system performance.

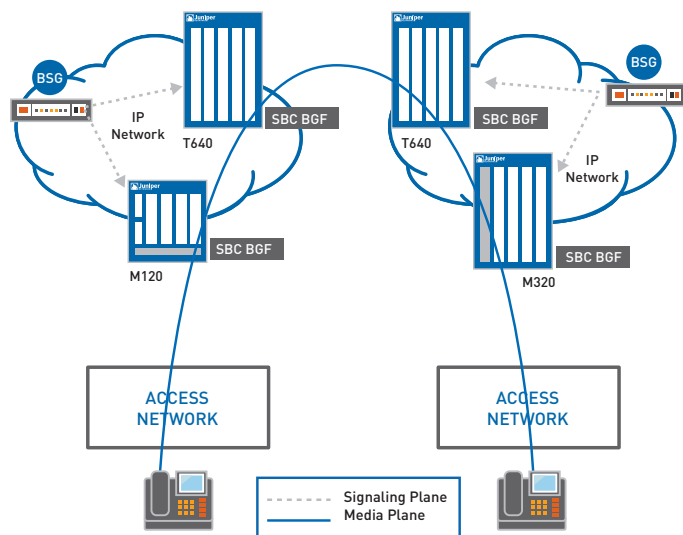


Figure 1: SBC BGF-enabled Multiservice Edge Routers M120, M320 and T640

In this illustration, Border Signaling Gateways (BSGs) handle the signaling for VoIP calls and control Juniper Networks, M Series and T Series routers running the BGF for JUNOS Software application via the H.248/Ia protocol. The T640 is deployed at the peer edge while the M120 and M320 are used at the access edge; all platforms provide topology transparency and network interconnectivity as well as tight control over VoIP traffic flows, including QoS, monitoring, lawful intercept and security services.

Features and Benefits

Carrier Grade Reliability

The MX Series, M120, M320 and T640 routers combine carrier grade architecture with fully redundant hardware components to ensure critical services and applications are always available. Software also contributes to system availability: JUNOS was designed with high availability in mind. JUNOS has a modular architecture, with each program running independently, and each process protected in its own memory space, to ensure that the behavior of any one module does not adversely impact others. Further, individual modules can be updated in service, without interrupting forwarding, routing, or active TCP sessions. JUNOS also enhances network reliability via support for protocols such as Graceful Restart, MPLS Fast ReRoute, Virtual Router Redundancy Protocol (VRRP), and Bi-directional Forwarding Detection (BFD), which maintains real-time connectivity awareness between JUNOS-powered elements and their physically connected neighbors (an exceptionally important feature for VoIP and video services).

Capital and Operational Efficiency

SBC BGF for JUNOS simplifies network operations by eliminating the need to purchase, install, support and spare standalone BGF specific appliances, and also eliminates the need to dedicate router interfaces for interconnection with standalone SBC BGF specific appliances. Using the same configuration tools for both JUNOS and for the SBC BGF application also simplifies operations and reduces the risk of human error for personnel intensive tasks such as troubleshooting. SBC BGF for JUNOS is hosted on the MS-DPC and MS-PIC, ensuring seamless integration with the routed infrastructure, and multiple MS-DPCs and MS-PICs can be deployed in a single MX Series or M120, M320 and T640, respectively, in order to increase performance incrementally and cost-effectively. Furthermore, platform support for 10 Gbps and 40 Gbps interfaces also provides cost-effective scalability to address both current and future bandwidth requirements.

JUNOS Software Integration

SBC BGF for JUNOS can be flexibly complemented by a wide variety of other router integrated JUNOS Software features such as stateful firewall, IPsec, Network Address Translation (NAT), and comprehensive MPLS support, to name just a few. These features can be layered to create an enhanced, customized service experience. For example, tight integration with MPLS provides the SBC BGF for JUNOS with all of the benefits of IP-layer awareness. This broad set of JUNOS Software capabilities truly enables service providers to maximize their network investment via the creation of highly customized services based on a combination of subscriber interests and application requirements, without negatively impacting service performance, reliability or scale.

Specifications and Approvals

ITU

- H.248 Supplement 7 editorial and general comments, ITU T COM 16 – C 278 – E, June 2007.
- Gateway Control Protocol v3, ITU T Recommendation H.248.1, September 2005.
- Gateway Control Protocol: Error code and service change reason description, ITU T Recommendation H.248.8, September 2005.
- Gateway Control Protocol: Application data inactivity detection package, ITU T Recommendation H.248.40, January 2007.
- Gateway Control Protocol: Packages for Gate Management and Gate Control, Draft Proposal H.248.GM, September 2006.
- Gateway Control Protocol: Inactivity timer package, ITU T Recommendation H.248.14, March 2002.
- Gateway Control Protocol: IP NAPT Traversal Package, Updated draft new ITU T Recommendation H.248.37 Amendment 1, March 2007.
- Gateway Control Protocol: MGC information package, ITU T Recommendation H.248.45, May 2006.
- Gateway Control Protocol: Hanging Termination Detection package, ITU T Recommendation H.248.36, September 2005.
- Gateway Control Protocol: Media gateway overload control package, ITU T Recommendation H.248.11, November 2002.

TISPAN

- TISPAN; Resource and Admission Control: H.248 Profile for controlling Border Gateway Functions (BGF) in the Resource and Admission Control Subsystem (RACS); Protocol specification v1.1.1, ETSI ES 283 018, March 2006.
- TISPAN; Gate control protocol, ETSI ES 102 333 v1.1.2, July 2004.
- TISPAN; NGN Release 1; Endorsement of 3GPP TS 29.162 Interworking between IM CN Sub-system and IP networks, ETSI TS 183 021 v1.1.1 (2005-09).

IETF

- IETF RFC 3605: "Real Time Control Protocol (RTCP) attribute in Session Description Protocol (SDP)."
- IETF RFC 2474: "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers."

Performance-Enabling Services and Support

Juniper Networks is the leader in performance-enabling services and support, which are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to bring revenue-generating capabilities online faster so you can realize bigger productivity gains, faster rollouts of new business models and ventures, and greater market reach, while generating higher levels of customer satisfaction. At the same time, Juniper Networks ensures operational excellence by optimizing your network to maintain required levels of performance, reliability, and availability. For more details, please visit www.juniper.net/products-services.

Ordering Information

Hardware

For router specific information, please see the following datasheets:

- MX Series: www.juniper.net/us/en/local/pdf/datasheets/1000208-en.pdf
- M Series: www.juniper.net/us/en/local/pdf/datasheets/1000042-en.pdf
- T Series: www.juniper.net/us/en/local/pdf/datasheets/1000051-en.pdf

Hardware

MODEL NUMBER	DESCRIPTION
PB-MS-400-2	Multiservices PIC Type 2 for the M120 and M320
PC-MS-500-3	Multiservices PIC Type 3 for the M120, M320, and T640
MS-DPC	Multiservices DPC for MX Series Ethernet Services Routers: MX960, MX480, and MX240

Software

For complete JUNOS Software information, please consult www.juniper.net/techpubs/software/.

SBC BGF LICENSE	DESCRIPTION
S-BGF-500	SBC BGF license for 500 sessions per chassis
S-BGF-1K	SBC BGF license for 1,000 sessions per chassis
S-BGF-2K	SBC BGF license for 2,000 sessions per chassis
S-BGF-4K	SBC BGF license for 4,000 sessions per chassis
S-BGF-8K	SBC BGF license for 8,000 sessions per chassis
S-BGF-16K	SBC BGF license for 16,000 sessions per chassis
S-BGF-20K	SBC BGF license for 20,000 sessions per chassis

About Juniper Networks

Juniper Networks, Inc. is the leader in high-performance networking. Juniper offers a high-performance network infrastructure that creates a responsive and trusted environment for accelerating the deployment of services and applications over a single network. This fuels high-performance businesses. Additional information can be found at www.juniper.net.

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