

Dialogic® BorderNet™ Virtualized Session Border Controller

"Single-Software" SBC for COTS, Private and Public Cloud Deployment Models

The Dialogic® BorderNet™ Virtualized Session Border Controller (SBC) brings carrier class SBC functionality to the cloud and enables service providers and enterprises to take advantage of flexibility and cost savings opportunities from virtualization. The BorderNet Virtualized SBC can interconnect IP networks securely and seamlessly, with unmatched ease of use and low total cost of ownership (TCO) to help secure mission critical infrastructure and reduce the cost of delivering services.



The BorderNet Virtualized SBC is designed to operate in virtualized public and private cloud environments to address complex service delivery challenges involving security, network interoperability, media handling, and reliability encountered in today's demanding service provider and enterprise networks.

Features	Benefits
<p>Carrier Class in the Cloud SBC features</p>	<p>High performance full featured software SBC with VMware hypervisor and Amazon Machine Images (AMI) support for rapid Amazon Elastic Compute Cloud deployment</p> <hr/> <p>Virtualized High Availability (HA) mode</p> <hr/> <p>SBC security includes DoS protection, encryption, overload protection, and threat mitigation to protect "mission critical" infrastructure and services</p>
<p>Rapid deployment and low TCO</p>	<p>Modern Web 2.0 UI with real time dashboard, alarming and analytics for fast and intuitive configuration and system management</p> <hr/> <p>Investment protection with easy "single-software" software transition from COTS, to private cloud, to public cloud</p> <hr/> <p>Flexible licensing options for cost effective scalability</p> <hr/> <p>Open Virtualization Format (OVF) compliant for fast deployment and implementation</p> <hr/> <p>Amazon Machine Images (AMI) for rapid Amazon Elastic Compute Cloud deployment</p>

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Examples of Applications

The BorderNet Virtualized SBC leverages virtualized computing environments to help make networks easier to connect. Example applications for the BorderNet Virtualized SBC include:

- Interconnecting IP Multimedia Subsystem (IMS), Voice over LTE (VoLTE), and IPX networks
- Interconnecting diverse SIP and H.323 mobile and fixed networks
- Detecting and reducing fraud
- IPv4 to IPv6 migration initiatives
- Managing multiple peering partners
- Traffic cost optimization and improved service quality
- Data center provider Infrastructure as a Service (IaaS) opportunities

Carrier Class in the Cloud Features

Feature Rich, High Performance Software SBC Solution

The BorderNet Virtualized SBC brings carrier class functionality to virtualized or cloud environments and can be deployed in a standalone or redundant (High Availability) configuration.

Advanced Security Features

SBCs provide a first line of defense against fraud and malicious attacks in service provider networks. The BorderNet Virtualized SBC helps protect network integrity and service quality from being compromised by providing a set of layered security capabilities that include the following:

- Customizable signaling and media topology hiding
- Built-in firewall capabilities
- Transcoding functionality by internal BorderNet SBC software using only the BorderNet SBC CPU resources
- Dynamic access control lists
- Automated rate limiting to protect against DoS attacks and DDoS
- Real-time inspection of message syntax and semantics
- Protection against malformed messages
- Encryption, including TLS, IPsec, SRTP pass-through and HTTPS
- Message flood protection
- Dynamic Black Listing
- Media-related security, including pin-hole management, rogue RTP detection and bandwidth control
- Adaptive overload controls for the delivery of high priority and emergency traffic

Real-time Dashboard, User Management and Reporting Capabilities

The BorderNet Virtualized SBC features WebUI technology that provides a real-time view into the activities on the BorderNet Virtualized SBC in the form of an operator dashboard to monitor key aspects of the SBC. The configuration and provisioning tasks related to the Virtualized SBC are performed through the highly intuitive WebUI.

In addition to typical OAM&P functions, the WebUI also provides feature-rich analytics and reporting. The analytics available from the WebUI include traffic statistics, usage summary, and a comprehensive set of performance and traffic reports to help manage network and service activity. The BorderNet Virtualized SBC's WebUI includes a role-based user administration function to secure and control access to various system views involving configuration and provisioning of the SBC. Additional tools are included in the WebUI to make license management, data archiving, historical reporting, regulatory compliance and network troubleshooting easy and streamlined.

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Powerful and Easy-to-Use Management, Interworking and Configuration Tools for Low TCO

Service providers need to securely connect their networks with other operators to deliver business and consumer services to their customers; however, not all SIP implementations are the same. Dialogic has developed the SIP Profiler for the BorderNet SBCs - including the Virtualized SBC - to help reduce the complexity of this process. The SIP Profiler is a powerful configuration tool that can help reduce the time and effort to implement interconnection in multi-vendor, multi-application environments across networks and enterprise end points with different SIP behaviors.

The SIP Profiler can be used to define behavior at the ingress and egress ports of the BorderNet Virtualized SBC and enable customized routing to help optimize and control SIP message flows. The SIP Profiler is accessed through the Virtualized SBC's WebUI, or through the use of XML scripts. Types of operations that can be performed using the SIP Profiler include:

- Add, modify or delete SIP headers, SIP bodies and SDP parameters and adaptively impact message sequence and flows
- Store information from header fields for later access
- Inspect SIP messages for specific content
- Use customized response codes when, for example, rejecting messages

A Media Profiler extends the core features of the powerful SIP Profiler framework to the SDP, media attributes, and the codecs used in the bearer plane. The Media Profiler provides the ability to:

- Control and reorder the offered codec list
- Control media attributes
- Manage and manipulate contents of ISUP, QSIG and other non-SDP message bodies

The BorderNet Virtualized SBC's WebUI can simplify operational tasks associated with configuring and maintaining the integrity of a peering and access environment. The profile-based provisioning capabilities through the BorderNet Virtualized SBC WebUI allow users to define common sets of service, security, VoIP parameter, and media attributes that describe the behavior of a connected endpoint through the use of templates. The template-based provisioning approach can significantly reduce the time needed to turn up service and also the system knowledge required to do so. These powerful configuration features can also help lessen TCO and accelerate service delivery by reducing the complexity traditionally involved in establishing interworking and access connectivity.

The BorderNet Virtualized SBC includes both IP level and session level tracing, media capture and recording. It also includes SOAP/XML and bulk loading of interface configurations along with a northbound API for integration with existing BSS/OSS applications. System software upgrades can be easily accomplished through the WebUI, with the ability to roll back to an earlier software release version if needed.

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Technical Specifications

Protocol Interworking

Signaling	SIP, SIP-I, SIP-T, H.323
Other	VLAN, IPv4, IPv6, UDP, TCP, RTP, RTCP
Network	IPv4, IPv6, overlapped IP networks

Security Features

- Access Control List
- Signaled pinhole media firewall
- Network topology hiding for both signaling and media
- Encryption support: TLS, IPsec, HTTPS, SSH, SRTP pass-through
- NAT traversal
- DoS and overload protection
- Rate limiting
- Dynamic black listing

Media Security Features

- Media profiling
- Rogue RTP detection
- Packet rate monitoring, and limiting
- Bandwidth determination and enforcement

IMS, IPX and VoLTE

- Interconnect Border Control Function (I-BCF); Transition Gateway (TrGW) (RFC 4117); Integrated Border Function (I-SBC)
- Interworking Function (IWF)
 - SIP and SIP-I/SIP-T Interworking

Session Admission Control

- License control
- Inbound, outbound and aggregate call control
- Session rate limit on per Peer and Interface level

Routing

Signaling	Static Routing: Interface-Interface and Peer/Interface SIP Invite/3xx SIP redirect server routing Integration with other routing engines through SOAP and bulk routing <ul style="list-style-type: none"> – Policy-based routing – SIP Message-based routing – Local DNS for URI to IP Address and Port mapping – Routing resolution through external DNS (SRV, A, NAPTR) – Load-balancing and priority-based routing – RFC 4904 Trunk Group Routing support – Emergency services call routing and call prioritization – SIP URN routing – Dynamic SIP REFER processing
Media	Optional Media Termination Separation of signaling and media over VLANs Media NAT traversal Media tromboning

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QoS

QoS metrics	Packets lost, jitter inter-arrival, and latency
Policy enforcement	DSCP and ToS marking
Traffic statistics	Total packets and octets transferred

Media Support

Audio	G.711, G.722, G.723.1, G.726, G.729a, G.729b, AMR-NB, AMR-WB, iLBC, OPUS
Fax	G.711 fax, T.38
Tones	G.711 tones, SIP INFO, RFC 2833

SW Transcoding

Audio	G.711-PCMA, G.711-PCMU, G729A, G729AB, G723.1, AMR-NB, AMR-WB, OPUS, iLBC
Fax	G.711 fax, T.38

Performance and Capacity

Performance Metric	virtual (2 vCPU)	virtual (8 vCPU)
Concurrent Sessions	4,000 ^{1,2}	12,000 ^{1,2}
Concurrent Sessions (TLS/SRTP)	500 ^{1,2,3}	3,000 ^{1,2,3}
Sessions/Sec (SPS)	50	200
SIP messages per sec. (7 per session)	700	2,800
Media packets per second (pps)	200,000	500,000
Access (subscribers)	5,000	64,000

- 1) One session per full call, including media; G.729, 20 msec media profile
- 2) Virtual SBC performance through vSwitch
- 3) SRTP – RTP call model

For higher performance results per instance please contact Dialogic representative

Scalability

VLANS	1,024
IP Addresses	2,048 (signaling and media)
SIP interfaces	500
Peers	4,000
Profiles	1,024
Local DNS entries	65,000
Policies	5,000

Management

- Integrated web-based management (https) dashboard and analytics
- SNMP traps
- Historical and real time statistics and reports
- Business and engineering reports including report filtering and multi-format data export
- Session Detail Records
- Role based User Management
- Integrated Wireshark packet and session tracing
- Northbound API interface based on web technology (SOAP/XML)
- Bulk provisioning interface
- Dialogic® ControlSwitch™ System integration
 - Integrated configuration and provisioning
 - Integrated alarms and reporting
 - Unified Call Detail Record (CDR)
 - End-to-end session tracing
 - EMS platform manages both BorderNet Virtualized SBC and ControlSwitch System

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Interfaces (Virtual)

Signaling and Media Management	Two(2) 1 Gigabit Ethernet Interfaces
High Availability	One (1) Gigabit Ethernet
	One (1) Gigabit Ethernet

Hypervisor

VMWare vSphere 5.0 or higher

Suggested Hardware Specification for Virtual Machines

Server	<p>Any x86 hardware, compatible with the VMWare vSphere (ESXi 5.0 or higher) Hypervisor.</p> <p>Dialogic has tested and qualified the BorderNet SBC on the following servers:</p> <ul style="list-style-type: none"> - Dell PowerEdge R710 and R720 Servers - HP ProLiant BL and ML series servers - HP DL360 and DL380
CPU	<p>Two 64-bit CPU or one 64-bit dual core processor (Itanium IA64 processor not supported)</p> <p>2.4GHz or faster Intel 64 or AMD 64 processor</p>
Memory	8GB RAM for 2 vCPU, 16GB for 8 vCPU
Disk Space	80GB or higher preferred
Network Interfaces	<p>Four x 1Gb Ethernet interfaces, including:</p> <ul style="list-style-type: none"> - Two x 1Gb Ethernet interfaces for signaling / media - One x 1Gb Ethernet for high availability - One x 1 Gb Ethernet for administration



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