

Dialogic® BorderNet™ 2020 Session Border Controller

BorderNet™ Session Border Controllers supercharge connections between networks, services and subscribers with ease and scale

The Dialogic® BorderNet™ 2020 Session Border Controller (SBC) connects and secures sessions across IP and mixed network boundaries to support the seamless delivery of services. The BorderNet 2020 SBC connects IP and hybrid networks via high-density optical, telephony and Ethernet links in a compact 1U form factor appliance. It also transforms media and signaling to support efficient and reliable voice, fax and multimedia sessions for mobile, fixed and cloud-based applications.

The combination of SBC and integrated gateway functions in a single chassis in the BorderNet 2020 SBC offers the potential for significant reductions in CAPEX and OPEX when compared to less integrated alternatives.

Along with providing a broad range of session performance scalability in a small footprint, the BorderNet 2020 SBC handles signaling and media in a single chassis and can deliver SIP services into SS7, SIGTRAN, PRI, and SIP-I networks. The BorderNet 2020 SBC is well suited for access SBC applications to help service providers deliver multimedia services with features that include Denial of Service (DOS) protection, IPv6 to IPv4 interworking, SIP mediation, SIP-to-H.323 interworking, SIP back-to-back user agent (B2BUA), SIP trunking support, and IP-to-IP transcoding of voice, mobile HD voice and video.

The BorderNet 2020 is part of a family of session border controllers from Dialogic that help service providers and enterprises energize their networks and services with a better way to interconnect and deliver services through ease-of-use and low total cost of ownership (TCO).



Features	Benefits
Scalable from 50 to 2250 simultaneous SIP sessions with multimedia transcoding, and 128 to 2016 channels of SS7 signaling	Scalable SBC and gateway solution provides high performance in a small footprint to help lower OPEX and CAPEX
Combined SBC and gateway features	SBC functionality and gateway features facilitate Time Division Multiplexing (TDM) and IP interworking to provide service delivery flexibility and automated failover between domains
Any-to-any signaling and media support	Support for SS7, SIP signaling, and IPv6 and IPv4 interworking along with voice and video transcoding provides a cost-effective platform to help service providers evolve from a TDM to an all-IP environment
SIP profiler and web based user interface	Easy-to-use service configuration and management tools can help accelerate service deployment and simplify platform management
Integrated encryption and transcoding support for voice, video, tone and faxing	Eliminates the need to add separate hardware to support both security and transcoding requirements helping to reduce CAPEX and number of platforms deployed
Carrier-ready platform	Carrier-ready design provides reliable throughput and enhanced service availability

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Scalable SBC and Gateway Solution

With its scalable density and versatility, the BorderNet 2020 SBC can help enable wireless and wireline service providers to add new Value Added Services (VAS) quickly, and provide a clear migration path to an all-IP network. Access session border controller functionality in the BorderNet 2020 SBC includes multimedia connectivity, security, service assurance and optimization and border management features. It can scale up to 2250 simultaneous IP sessions and at the same time provide media transcoding and impressive sessions per second performance. Other SBC features include IPv6 to IPv4 interworking, B2BUA, denial of service protection, integrated firewall, pinholing, access control lists, SIP mediation, SIP public and private network interworking, and topology hiding. An optional encryption license enables authentication and privacy for SIP sessions over Transport Layer Security (TLS) and Secure RTP (SRTP) for media without the need for additional hardware add-ons.

The BorderNet 2020 SBC supports voice densities ranging from 128 to 2016 channels of SS7 signaling, call routing, call translation and IP transcoding in a single 1U chassis for gateway operations. Hardware-assisted IP video transcoding allows service providers to offer innovative combinations of audio and video-enabled mobile services. The integrated gateway and SBC functionality not only provides interworking between IP and TDM domains, but also automated failover from IP to TDM or IPv4 and IPv6 networks for outbound routing. These features help service providers looking to improve network and routing resiliency, lower their TCO and facilitate an evolution from gateway to session border control supported services. These capabilities make the BorderNet 2020 SBC an excellent option for mobile VAS, SIP trunking, contact center and emergency service deployments, as well as for retail, wholesale, business, and enhanced service VoIP.

Any-to-Any Signaling and Media Connectivity

The BorderNet 2020 SBC provides any-to-any network connectivity through its ability to interwork multiple protocols used by telecommunications providers to deliver services to their retail, business and wholesale customers. In addition to providing TDM-to-TDM signaling conversion (SS7 ISUP and ISDN), it can also provide interworking between SS7, SIGTRAN, SIP and SIP-T/I formats.

The BorderNet 2020 SBC also supports any-to-any media transcoding for popular voice and video codecs. T.38 and G.711 fax interworking and support for RTP, inband and SIP INFO method based tones and event handling complement the media transcoding capabilities to provide a high degree of flexibility to help deliver value added services economically.

Easy-to-use Service Configuration and Management Tools

The Web graphical user interface (WebUI) is a real-time web based GUI used to configure, monitor, and provision the BorderNet 2020 SBC. It allows operators to graphically configure and perform real-time monitoring and provisioning of a single BorderNet 2020 SBC. Changes can be applied to connected nodes with simple point-and-click configuration, and high level alarms can be viewed without needing to reference or decode log files. SNMP support includes both standard and private MIBs, enabling customers to integrate statistics and performance intelligence such as call reporting by channel group and monitor CPU, memory utilization and alarms via their own management system.

Powerful SIP Profiling tools on the BorderNet 2020 SBC allow operators to configure attributes and features needed to communicate with specific external network components and IP endpoints. This allows the BorderNet 2020 SBC to easily mediate SIP signaling variants between networks that use different types of SIP headers to convey message attributes. The BorderNet 2020 SBC also features the Dialogic® Programmable Protocol Language (PPL), which allows rapid implementation of SS7 ISUP variants and other signaling changes.

Carrier-Ready SBC and Gateway Platform

The BorderNet 2020 SBC has a carrier-ready design in only 1U of rack space and uses independent network interfaces to separate media, signaling, and OAM&P for reliability and enhanced service availability. Fast maintenance features, such as smart failover, hot-swappable power supplies, field-replaceable motherboard trays, persistent configuration, and graceful upgrades provide flexibility and ease of operation that carriers look for and help increase reliability in the field. The choice of single user WebUI or Multi-Node element management system provides flexibility and makes the BorderNet 2020 SBC easy to manage.

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Technical Specifications

Routing Features

Call routing and translation based on ANI, DNIS, Generic Number (only translation is supported), Nature of Address (NOA)
Algorithms include percentage-based routing and disposition by Cause Code
Pre- and post-routing digit translations with wildcard support
Multiple routing algorithms per trunk group or groups of trunks for IP-to-TDM and IP-to-IP and both A-law and μ -law conversions
Pre-call announcement (branding)

IP Bearer Features

Coder support: AMR-NB, AMR-WB*, G.711, G.723.1, G.729 A/B, G.726, G.722, GSM-FR, GSM-EFR, iLBC, RFC 4040 Clear Channel
Video support: Transcoding, transrating, and pass-through of CIF/QCIF resolutions for H.263, H.264, and MPEG-4
Echo cancellation: G.168 128 ms tail length
Voice activity detection and packet loss concealment
Comfort noise generation
T.38 real-time fax
Fax/modem bypass
Digit transmission via RFC 2833 (SIP)
Hosted NAT
VLAN tagging
Secure RTP media (for SIP) *

* Using the AMR-WB resource in connection with this Dialogic® product does not grant the right to practice the AMR-WB standard. To seek a patent license agreement to practice the standard, contact the VoiceAge Corporation at www.voiceage.com/licensing.php.

OAM&P

Web User Interface (WebUI) supports configuration via browser
Multi-Node Element Management System — Enables monitoring and provisioning of up to six (6) nodes via web browser
Centralized routing engine simultaneously configures gateways in the network
Radius (billing, authentication, prepaid)
Local time zone support and Network Time Protocol (NTP)
SNMP MIBs: MIB-2, Interface, Alarms, Private Call Reporting and System Statistics, Private Alarms, DS0, DS1, DS3, and OC3

Power Requirements

AC Power Supply Range	100 – 132 VAC (115 VAC nominal) 180 – 264 VAC (230 VAC nominal)
DC Power Supply Range	-36 to -60 VDC (-48 VDC nominal)

The power supply will operate at frequencies between 47 Hz and 63 Hz

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Power Consumption

	Typical	Maximum
No DSP Modules	90 Watts	120 Watts
1 DSP Module	110 Watts	145 Watts
2 DSP Modules	130 Watts	170 Watts
3 DSP Modules	150 Watts	195 Watts
4 DSP Modules	170 Watts	220 Watts

Environment

Operating temperature range 0 to +50 °C, 95% relative humidity non-condensing
Storage temperature range -10 to +75 °C, 95% relative humidity non-condensing

Physical Specifications

Dimensions 1.72 in (43.7 mm) high
16.97 in (431 mm) wide
19.67 in (499.6 mm) deep
Weight 24 lb (10.9 kg)

Maintenance

Field replaceable items Fan filter (available in 10-packs)
Power supplies
OC-3/STM-1 optical module
Motherboard tray
Up to four (4) DSP modules

Resiliency

SS7 signaling: 1+1 active/standby redundancy
Smart IP probing
Automated failover (Ethernet links)
Failover via automatic protection switching (optical links)
Graceful busy out per trunk group
Virtual IP addresses for SIP load balancing (via third-party server)
Call release due to media inactivity timeouts
Dual, hot swappable, AC/DC power supplies

Capacity

128 - 768 TDM channels per 1U shelf with Rear I/O Type 1 (scalable from 4 E1/5 T1 to 24 E1/T1)
672 - 2016 TDM channels per 1U shelf with Rear I/O Type 2 (supports either Optical OC3 interface or 3 DS3s)
100 - 4500 VoIP channels per 1U shelf
50 to 2250 SBC voice sessions
5 - 430 SBC video transcoding sessions per 1U shelf

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I/O Interfaces — Rear I/O Type 1 — T1/E1

Telephony — T1 and E1
Clock Sync
24 T1/E1 for timing (BITS clock), signaling and bearer traffic (T1 — 100 ohms and E1 — 120 ohms)
Stratum-3 via T1/E1 interface

IP Interfaces

LAN IP
later use
WAN IP
Dual redundant 100/1000 Base-T Ethernet for control; 2 - 100/1000 Base-T Ethernet Aux ports (reserved for
4 - 100/1000 Base-T Ethernet for VoIP payload and signaling

I/O Interfaces — Rear I/O Type 2 — High Density

Telephony — T1 and E1, OC3/STM-1, and DS3
Clock Sync
1 to 3 DS3 + 4 - T1/E1 for timing (BITS clock), signaling and bearer traffic
1 OC3/STM-1 with Automatic Protection Switching (APS) + 4 T1/E1 for timing (BITS clock), signaling, and bearer traffic (T1 — 100 ohms and E1 — 120 ohms)
Stratum-3 via T1/E1 interface or OC-3/STM-1 interface

IP Interfaces

LAN IP
WAN IP
Optical Transceiver
Dual redundant 100/1000 Base-T Ethernet for control; 2 - 100/1000 Base-T Ethernet Aux ports (reserved for later use)
4 - 100/1000 Base-T Ethernet for VoIP payload and signaling (additional 4 reserved for later use)
Hot plug LC connector type SFP modules (1310 nm 15 KM)

TDM Signaling Protocols

ISDN PRI (FAS and NFAS): NI2, Euro ISDN, DMS 250, 5ESS, JATE/Japan INS-NET1500, ISDN Net 5
Q.699 ISDN to SS7 mapping
ISDN/SS7 UUI mapping to SIP
SS7/C7 ISUP: ITU and ANSI variants supported through the Dialogic® Programmable Protocol Language (PPL)
SS7 TCAP for message-waiting-indication (MWI) and Caller Name (CNAM) service
64 SS7 links in standalone configuration
128 SS7 links in redundant configuration
A-links and F-Links supported
E1 to DS3 mapping for third-party multiplexor compatibility
ISDN call transfer and bridging via Explicit Call Transfer, Two B Channel Transfer, and Release Link Trunking (initiated via SIP REFER)
Delayed ANM for ISUP (triggered by third-party SIP call transfers)
ISDN Multilevel Precedence and Preemption (MLPP)

IP Protocols

H.323
H.323 v2
H.323 RAS, H.245, and H.225
H.323 Tunneling
H.246 Annex C — ISDN User Part Function — H.225.0 Interworking

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Core SIP Specifications and Notable Extensions

- RFC 3261 SIP Basic
- RFC 3262 SIP PRACK
- RFC 3263 Locating SIP servers for DNS lookup SRV and A records (partial support)
- RFC 3264 SDP Offer/Answer Model
- RFC 3265 SIP Subscribe/Notify

Notable SIP Extensions – Partial List

- RFC 2246 Transport Layer Security (TLS) for SIP
- RFC 3372 SIP for Telephones (SIP-T)
- RFC 3398 ISUP/SIP Mapping
- RFC 3711 SRTP (for SIP)
- Tel URI – RFC 3966
- RFC 6157 – IPV6 Transition in SIP
- ITU-T Q.1912.5 - IP and ISUP interworking

SIGTRAN

- RFC 3332 — M3UA Adaption Layer
- M3UA Application Server
- M3UA Signaling Gateway for TCAP/SCCP

QoS

- Adaptive jitter buffer
- Packet loss compensation
- Configurable Type of Service (ToS) fields for packet prioritization and routing

Approvals and Compliance

For information about RoHS compliance and global approvals, visit www.dialogic.com/declarations/ or contact your Dialogic sales representative.

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The BorderNet 2020 SBC may be approved as Equipment Type MMG.

EMC/EMI

- | | |
|-----------------------|--|
| USA/Canada | FCC 47 CFR Part 15, ICES-003 |
| European Union | EN55022: 2006/A1:2007, EN55024: 1998/A1:2001/A2:2003, EN 300 386 V1.4.1 (2008) |
| Australia/New Zealand | AS/NZS CISPR 22:2009 |
| Japan | VCCI |

Safety

- | | |
|-----------------------|-------------------------------------|
| USA/Canada | UL/CSA 60950-1 – 2nd Edition (2007) |
| European Union | EN60950-1:2006/A11:2009/A12:2011 |
| Australia/New Zealand | AS/NZS 60950.1:2003 |
| CB Scheme | IEC 60950-1 2nd Edition (2005) |

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Telecom Approvals

USA/Canada

FCC Part 68/IC CS-03

European Union

TBRs 4, 12, 13

Australia/New Zealand

AS/ACIF S-016:2001 and AS/ACIF S-038:2001

Reliability/Warranty

Warranty information at www.dialogic.com/warranties

Estimated MTBF per Telcordia Method 1:

With Dual Redundant AC or DC Power Supplies

Rear I/O Type 1 — T1/E1	
No DSP Modules	148000 hours
1 DSP Module	121000 hours
2 DSP Modules	103000 hours
3 DSP Modules	89000 hours
4 DSP Modules	79000 hours

Rear I/O Type — High Density: DS-3 OC-3 I/O

No DSP Modules	162000 hours
1 DSP Module	130000 hours
2 DSP Modules	109000 hours
3 DSP Modules	94000 hours
4 DSP Modules	83000 hours

Dialogic®

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The logo for Network Fuel, featuring the words "NETWORK FUEL" in a bold, sans-serif font. The text is white and set against a dark, rounded rectangular background. The entire logo is centered within a decorative border of a network diagram, consisting of numerous small nodes connected by thin lines, creating a complex web-like pattern.