

Dialogic® BorderNet™ 2020 Integrated Multimedia Gateway

Datasheet

The Dialogic® BorderNet™ 2020 Integrated Multimedia Gateway (IMG) enables interworking between IP and PSTN networks via high-density optical, telephony, and Ethernet connections in a compact 1U form factor. The BorderNet 2020 IMG's enhanced Voice over IP (VoIP) density offers the potential for significant reductions in capital and operating expenses when compared to earlier generations of gateways.

Along with providing a broad range of scalability in a small footprint, the BorderNet 2020 IMG handles signaling and media in a single carrier-ready chassis, provides any-to-any voice network connectivity, and can deliver SIP services into SS7, SIGTRAN, PRI, and SIP-I networks. The 2020 IMG also features SBC / multimedia border element functions, such as SIP mediation, SIP to H.323 interworking, SIP Back to Back User Agent and IP-to-IP transcoding for network access applications.



Features

Supports up to 2,016 channels of SS7 signaling, call routing, call translation, and IP transcoding in a single 1U chassis

Simultaneous support for SS7 ISUP, SIGTRAN M3UA, and PRI signaling interworking with SIP and SIP-I

SBC / Multimedia border element capabilities, including Back to Back User Agent, SIP mediation, topology hiding, and media transcoding

Field replaceable components, such as power supplies, optical modules, and motherboard tray

NEBS-3 carrier-ready design uses independent network interfaces to separate transport, signaling, and OAM&P

Software license upgrades

Works with load balancers

Benefits

Can significantly reduce capital and operating expenses

Provides a flexible, cost-effective platform that can evolve from a TDM-IP to an all-IP environment

Facilitates efficient operations between incompatible network elements in a service provider infrastructure

Supports ease of operation and maintenance coupled with increased reliability

Provides reliable throughput and enhanced service availability

Scales easily in-service as capacity requirements increase

Optimizes distribution of SIP traffic and improves scalability and fault tolerance

Scalable Density and Versatility

With its scalable density and versatility, the BorderNet 2020 IMG can help wireless and wireline service providers add new Value-Added Services (VAS) quickly, and provide a clear migration path to an all-IP network at densities ranging from 128 to 2016 channels. The 2020 IMG is also an excellent option for retail, wholesale, business, and enhanced service VoIP deployments, as well as contact centers, mobile VAS and SIP trunking.

The BorderNet 2020 IMG also offers energy efficiency and hardware components where hazardous substances have been minimized, which can help operators and contact centers seeking to fulfill “green” initiatives.

Easy Management and Fast Maintenance

1U high-density design, element management system, and software licensing that allows in-service capacity expansion make the BorderNet 2020 IMG easy to manage and scale. Its NEBS-3 carrier-ready design uses independent network interfaces to separate transport, signaling, and OAM&P for reliability and enhanced service availability.

Fast maintenance features, such as hot-swappable power supplies, field-replaceable motherboard trays, and graceful upgrades address the flexibility and ease of operation that carriers need and increases reliability in the field.

The BorderNet 2020 IMG also features the Dialogic® Programmable Protocol Language (PPL), which allows rapid implementation of SS7 ISUP variants and other signaling changes.

Technical Specifications

Routing Features

Call routing and translation based on ANI, DNIS, Generic Number (only translation is supported), Nature of Address (NOA), Time of Day, and Day of Week/Year

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, G.711, G.723.1, G.729 A/B, RFC 4040 Clear Channel

Echo cancellation: G.168 128 ms tail length

Voice activity detection

Comfort noise generation

T.38 real-time fax

Fax/modem bypass

Digit transmission via RFC 2833 (SIP)

Hosted NAT

OAM&P

Centralized Element Management System — GUI-based system allows monitoring and provisioning of up to 10 gateways

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, 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 any frequency between 47 Hz and 63 Hz

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

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

Technical Specifications *(continued)*

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 DSP Modules
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Resiliency

SS7 signaling: 1+1 active/standby redundancy
Redundant Element Management System servers
IP probing and redundancy failover (Ethernet links)
Failover via automatic protection switching (optical links)
Graceful software upgrade over multiple 2020 IMGs
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)
672 - 2016 VoIP channels per 1U shelf; 1008 IP – IP sessions

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

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

IP Interfaces

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

Technical Specifications *(continued)*

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

Telephony — T1 and E1, OC3/STM-1, and DS3	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)
Clock Sync	Stratum-3 via any T1/E1 interface or OC-3/STM-1 interface

IP Interfaces

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

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

SIP and Related Specifications

RFC 2246 Transport Layer Security (TLS) for SIP
RFC 2327 Session Description Protocol (SDP)
RFC 2976 SIP Info for digit transmission (#,*) and interworking DTMF
RFC 3204 MIME Media Types for ISUP and QSIG (ISUP only supported)
RFC 3261 SIP Basic
RFC 3262 SIP PRACK
RFC 3263 Locating SIP servers for DNS lookup SRV and A records
RFC 3264 SDP Offer/Answer Model
RFC 3265 SIP Subscribe/Notify

Technical Specifications *(continued)*

SIP and Related Specifications (continued)

RFC 3311 SIP Update
RFC 3323 Privacy Header Field (partial support)
RFC 3325 Asserted Identity
RFC 3326 SIP Reason Header
RFC 3372 SIP for Telephones (SIP-T)
RFC 3398 ISUP/SIP Mapping
RFC 3515 SIP REFER
RFC 3578 ISUP Overlap Signaling to SIP
RFC 3581 Symmetric Response Routing
RFC 3666 SIP to PSTN Call Flows
RFC 3725 Third Party Call Control for SIP
RFC 3764 ENUM for SIP Address of Record
RFC 3891 SIP Replaces Header
RFC 3892 SIP Referred-By Mechanism
RFC 4028 SIP Session Timer
RFC 4244 SIP History info (for call diversion)
RFC 4412 Communications Resource Priority for SIP (partial support)
RFC 4568 SDP Security Descriptions for Media Streams
RFC 4904 SIP tgrp (trunk group) parameter
SIP 3xx Gateway Responses and 302 Initiate
SIP Diversion Header
SIP Trunk Group IDs (OTG, DTG)
SIP Coder Negotiation
SIP Busy Out
SIP P-Charge-Info Header
ITU-T Q.1912.5 - IP and ISUP interworking (includes SIP-I) and overlap signaling (SIP-to-SIP ISUP)
SIP Mediation (SIP-to-SIP)
SIP to SIP-I/SIP-T

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

Technical Specifications *(continued)*

Approvals and Compliance

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

The BorderNet™ 2020 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 22:2006
Japan	VCCI

Safety

USA/Canada	UL/CSA 60950-1 – 2nd Edition (2007)
European Union	EN60950-1:2006
Australia/New Zealand	AS/NZS 60950.1:2003

<i>CB Scheme</i>	International CB Scheme IEC 60950-1 2nd Edition
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Telecom Approvals

USA/Canada	FCC Part (TIA-968-A)/IC CS-03
European Union	TBRs 4, 12, 13
Australia/New Zealand	AS/ACIF S-016 and AS/ACIF S-038

Reliability/Warranty

For warranty information, contact your Dialogic sales representative

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

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



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