

## Dialogic® IMG 2020 Integrated Media Gateway

Integrated gateway solutions to enable connections between networks, services and subscribers with ease and scale

The Dialogic® IMG 2020 Integrated Media Gateway connects and secures sessions across IP and mixed network boundaries to support the seamless delivery of services. The IMG 2020 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 IP multimedia and Time Division Multiplexing (TDM) gateway functionality in a single chassis in the IMG 2020 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 IMG 2020 handles signaling and media in a single chassis and can deliver SIP services into SS7, SIGTRAN, PRI, and SIP-I networks. The IMG 2020 also provides basic IP session control and security features 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, fax and tones.

The IMG 2020 is part of a line of gateway solutions 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
<b>Scalable from 50 to 2250 simultaneous SIP sessions with multimedia transcoding, and 128 to 2016 channels of SS7 signaling</b>	Scalable IP and TDM connectivity solution provides high performance in a small footprint to help lower OPEX and CAPEX
<b>Combined IP and TDM gateway features on a single platform</b>	Integrated multimedia gateway features facilitate TDM and IP interworking to provide service delivery flexibility and automated failover between domains
<b>Any-to-any signaling and media support</b>	Support for SS7, SIP signaling, and IPv6 and IPv4 interworking along with voice transcoding provides a cost-effective platform to help service providers evolve from a TDM to an all-IP environment
<b>SIP profiler, web based user interface and offline configuration</b>	Easy-to-use service configuration and management tools can help accelerate service deployment and simplify platform management
<b>Integrated encryption and transcoding support for voice, tones and faxing</b>	Eliminates the need to add separate hardware to support both security and transcoding requirements, helping to reduce CAPEX and number of platforms deployed
<b>Carrier class solution</b>	Carrier class design and features provide high availability, reliable throughput and enhanced service delivery

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## Scalable Gateway Solution

With its scalable density and versatility, the IMG 2020 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. Session management functionality in the IMG 2020 includes transcoding, security, service assurance and optimization and border control features such as an embedded firewall. It can scale up to 2250 simultaneous IP sessions and at the same time provide media transcoding and impressive sessions per second performance. 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 IMG 2020 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. The integrated gateway 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 TCO and facilitate an evolution from gateway to all-IP supported services. These capabilities make the IMG 2020 an excellent option for mobile VAS, SIP trunking, contact center and emergency service deployments, as well as for retail, wholesale, business, and enhanced Voice over IP (VoIP) services.

The IMG 2020 provides carrier class features 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 to help increase reliability in the field. The choice of single user WebUI or the Dialogic® Multi-Node Element Management System (EMS) provides operational flexibility and makes the IMG 2020 easy to manage. These tools are supplemented by Offline Configuration software which enables rapid copy and modification of configuration files to accelerate remote deployments.

## Any-to-Any Signaling and Media Connectivity

The IMG 2020 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, H,323 and SIP-T/I formats.

The IMG 2020 also supports any-to-any media transcoding for popular voice and HD voice codecs. T.38 and G.711 fax interworking and support for RTP, in-band 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.

Incorporation of selected Session Border Control (SBC) features including support for IPV6, an embedded firewall and bulk SIP registration facilitates customer migration from TDM fixed and mobile networks to IP networks. This enables customers to update their gateways via software and licenses to support new services such as high definition (HD) voice, transcoding between IP networks and SIP trunking.

## 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 IMG 2020. It allows operators to graphically configure and perform real-time monitoring and provisioning of a single IMG 2020. Configuration changes can be applied to connected nodes with simple point-and-click actions, and high level alarms can be viewed without the need to reference or decode log files. All configuration changes made via the Web UI or Multi-Node EMS can be tracked and show the user responsible for the changes. SNMP support includes both standard and private MIBs, enabling customers to integrate statistics into their existing management systems, for example:

- Performance intelligence such as call reporting by channel group
- CPU and memory utilization
- Alarms

Powerful SIP profiling tools on the IMG 2020 allow operators to configure attributes and features needed to communicate with specific external network components and IP endpoints. This allows the IMG 2020 to easily mediate SIP signaling variants between networks that use different types of SIP headers to convey message attributes. Graceful out of service provisioning allows customers to schedule service windows without impacting current calls. The IMG 2020 also features the Dialogic® Programmable Protocol Language (PPL), which allows rapid implementation of SS7 ISUP variants and other signaling changes.

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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  $\mu$ -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
- Echo cancellation: G.168 128 ms tail length
- Voice activity detection and packet loss concealment
- Comfort noise generation
- T.38 real-time fax, T.38 – G.711 interworking
- Fax/modem bypass
- Digit transmission via RFC 2833 (SIP)
- G.711 tones, SIP INFO, RFC 2833 interworking
- Hosted NAT
- VLAN tagging
- Secure RTP (SRTP) to RTP interworking (SIP audio media only)

### OAM&P

- Web User Interface (WebUI) supports configuration via browser
- Dialogic® Multi-Node Element Management System — Enables monitoring and provisioning of up to six (6) nodes via web browser
- Offline Configuration software utility
- Trace Server software for logging
- Centralized routing engine simultaneously configures gateways in the network
- Radius (billing, authentication, prepaid)
- Local time zone support and Network Time Protocol (NTP)
- Configuration tracking and reporting by user
- 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)
- Note:** AC power supply will operate at frequencies between 47 Hz and 63 Hz
- DC Power Supply Range
  - 36 to -60 VDC (-48 VDC nominal)

### 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

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## 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 out of service per node and channel group
- Virtual IP addresses for SIP load balancing (via Dialogic® PowerVille™ LB - Load Balancer)
- 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 VoIP 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 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

## 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 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)

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## 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, ETSI and ANSI variants supported through the Dialogic® Programmable Protocol Language (PPL); JT-ISUP with TTC, PTC 331
- 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)
- ISUP call transfer and bridging via Explicit Call Transfer (initiated via SIP REFER)
- Delayed ANM for ISUP (triggered by third-party SIP call transfers)
- ISDN and ISUP 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

## 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)
- RFC 3966 –Tel URI
- RFC 5806 – SIP Diversion Header
- RFC 6140 – Bulk SIP Registration
- RFC 6157 – IPv6 Transition in SIP
- RFC 7433 – SIP User to User Information (UUI)
- ITU-T Q.1912.5 - IP and ISUP interworking
- 3GPP 29.163 – SS7 to SIP interworking (partial)

## 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

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## Approvals and Compliance

For information about global approvals, visit [www.dialogic.com/declarations](http://www.dialogic.com/declarations) or contact your Dialogic sales representative.

For information about RoHS compliance visit [www.dialogic.com/rohs](http://www.dialogic.com/rohs) or contact your Dialogic sales representative.

The IMG 2020 may be approved as the BorderNet 2020 (BN 2020) or Equipment Type MMG.

## Reliability/Warranty

Warranty information:

[www.dialogic.com/warranties](http://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

## REMINDER:

The Dialogic® IMG 2020 Integrated Media Gateway (“IMG 2020”) had been formerly known as the Dialogic® BorderNet™ 2020 Session Border Controller (“BorderNet 2020 SBC” or “BN2020”). Should you have any questions regarding current features and functionality of the IMG 2020 versus those of the BN2020, please contact your Dialogic sales representative.



[www.dialogic.com](http://www.dialogic.com)

For a list of Dialogic locations and offices, please visit: <https://www.dialogic.com/contact.aspx>

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08/17 12098-16