

The Dialogic® 2000 Media Gateway Series (DMG2000 Gateways) is a set of turnkey appliances that seamlessly merge traditional PSTN technology with IP networks. These economical gateways help consolidate typically separate voice and data networks and provide new and differentiated communication services. Without making radical, disruptive, and expensive upgrades to existing PBX equipment, service providers and enterprises can realize the benefits of a converged voice and data network with these gateways. The DMG2000 is fully certified for use with Microsoft® Office Communications Server 2007 Release 2; including both the basic certification and the optional TLS/SRTP certification.



## Features

**Provides an interconnect between legacy PBXs and various IP endpoints**

**Available in single, dual, and quad density T1/E1 rack mount appliances**

**Compatible with a variety of popular PBX manufacturers including Avaya, Mitel, NEC, Nortel, and Siemens**

**Support for IP load balancing and IP fault tolerance**

**Supports supplementary services on CAS, QSIG, Euro ISDN, NI2, DMS100, 5ESS protocols, enabling call transfer, call hold, MWI, and call party information**

**Supports configuration via serial, telnet, and a web browser including context-sensitive Help**

**IP security features include TLS, SRTP, and HTTPS**

**Support for TDM-to-TDM routing on dual- and quad-density "S" models with survivability capabilities**

**Supports Any-to-Any call routing**

## Benefits

Enables communication between a circuit-switched telephony network and Session Initiated Protocol (SIP) compatible remote devices such as IP voice mail, unified messaging applications, and IP phones

Offers a range of product densities to fit the needs of a variety of applications and business sizes

Protects investment in legacy telecommunications equipment and allows a phased migration to IP

Allows the ability for inbound (TDM-to-IP) calls to round-robin between available media servers and automatically routes calls away from unresponsive media or proxy servers

Helps retain key supplementary services in the new IP environment

Easy to install, configure, debug, and maintain

Enables secure communications for SIP messages via TLS, media streams via SRTP, and web interfaces via HTTPS

Allows flexible deployment and survivability; options include IP failover to TDM circuits and PSTN-to-PBX or PSTN-to-IP routing

Allows for routing of calls from TDM-to-SIP, SIP-to-TDM, TDM-to-TDM, and SIP-to-SIP

## Applications

- Centralized VoIP and FoIP applications servers, including IP-based voice mail and unified messaging
- Interactive voice response (IVR) and announcements
- IP PBX
- Voice over Internet Protocol (VoIP) extension to branch offices
- Contact centers

The DMG2000 Gateways can be installed and configured “plug and play,” reducing the total cost of ownership. Operations, Administration, and Maintenance (OA&M) features such as network alarm events and remote management enabled by a user-friendly web interface, along with advanced diagnostics and administration tools, make the installation and maintenance of these appliances quick and easy.

The cost of the DMG2000 Gateways make them a unique and ideal solution for enterprises interested in deploying a variety of applications such as PBX extension, remote office connectivity, long-distance consolidation, call centers, and IP media servers. Available in a 19-inch standard rack mountable chassis, these appliances are also ideal for service providers offering hosted IP-PBX, IP Centrex, and enhanced messaging servers.

## Save Time, Money — and Existing PBX Equipment

Many enterprises today have legacy PBX equipment installed on their premises. These enterprises want to cut their communications costs by implementing a VoIP solution, but wish to retain their investment in legacy equipment. Because these enterprises have a diverse base of PBX equipment, solution providers need a product that will help them address this wide customer base with a single, simple solution.

The DMG2000 Gateways have been tested for interoperability with legacy PBXs from vendors such as Alcatel, Avaya, Mitel, NEC, Nortel, and Siemens. This testing lets solution providers focus on customer applications rather than integration efforts with legacy PBXs.

In addition to providing IP connectivity, the DMG2000 Gateways support key supplementary services such as call transfer, call forwarding, call hold, message waiting indicator (MWI), and call party information on most T1/E1 protocols including CAS, QSIG, Euro ISDN, NI2, DMS100, and 5ESS, enabling customers to retain application-critical PBX functionality in the new VoIP environment.

The dual- and quad-density “S” models (DMG2060DTISQ and DMG2120DTISQ respectively) provide failover relays and expanded call routing options, allowing connectivity to, and flexible routing between, the PSTN, IP networks, and TDM PBX networks. Possible configurations include TDM-to-TDM and TDM-to-IP with survivability support.

## Advanced Voice Features Provide Superior Caller Experience

The extensive features of the DMG2000 Gateways can help build a reliable, high-quality VoIP application. The DMG2000 Gateways support Any-to-Any call routing for maximum flexibility. The gateways provide the interoperability needed for high-quality media streaming with a wide variety of industry-standard IP endpoints by supporting advanced coders including:

- G.711 (packet size 10 ms, 20 ms, and 30 ms)
- G.723.1
- G.729ab

Echo cancellation is essential for packet-switched networks to carry voice traffic successfully. The DMG2000 Gateways conform to ITU G.168 echo cancellation with a tail length up to 128 ms. Voice quality is further enhanced with features such as comfort noise generation, silence detection, and adaptive jitter buffering.

The DMG2000 Gateways have QoS features, including type of service (TOS)/IP precedence, and DiffServ, providing a low-latency, high-reliability path for sensitive voice traffic through today's networks. In addition, the gateways support advanced call progress analysis on all channels.

## Configurations

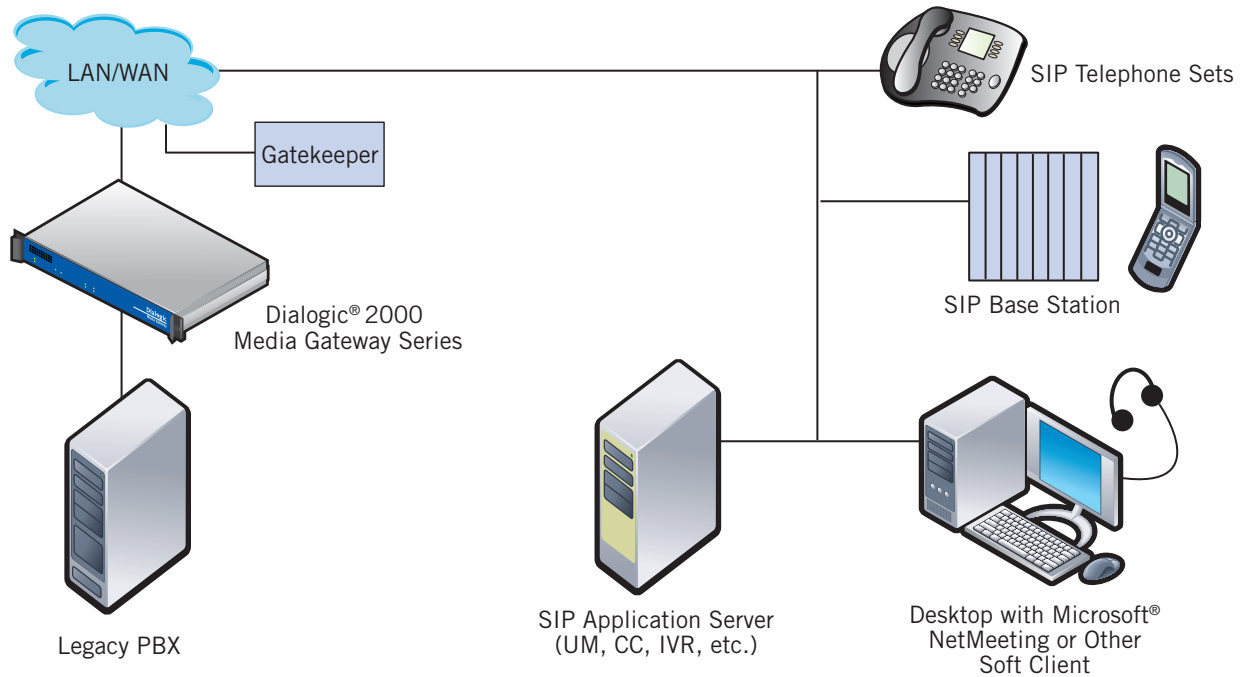


Figure 1. Bridge the Gap Between PSTN and IP End Points

The DMG2000 Gateways provide a cost-effective way to connect various IP end points to the circuit-switched network (see Figure 1), eliminating the need to swap out legacy PBXs and helping to protect telecom investment.

The DMG2000 Gateways along with Dialogic® HMP Software support the development of cost-effective IP media servers accessible from both PSTN and IP networks (see Figure 2). IP media servers can provide a central and efficient messaging server in existing Time Division Multiplex (TDM) voice infrastructures by servicing remote locations via an IP network.

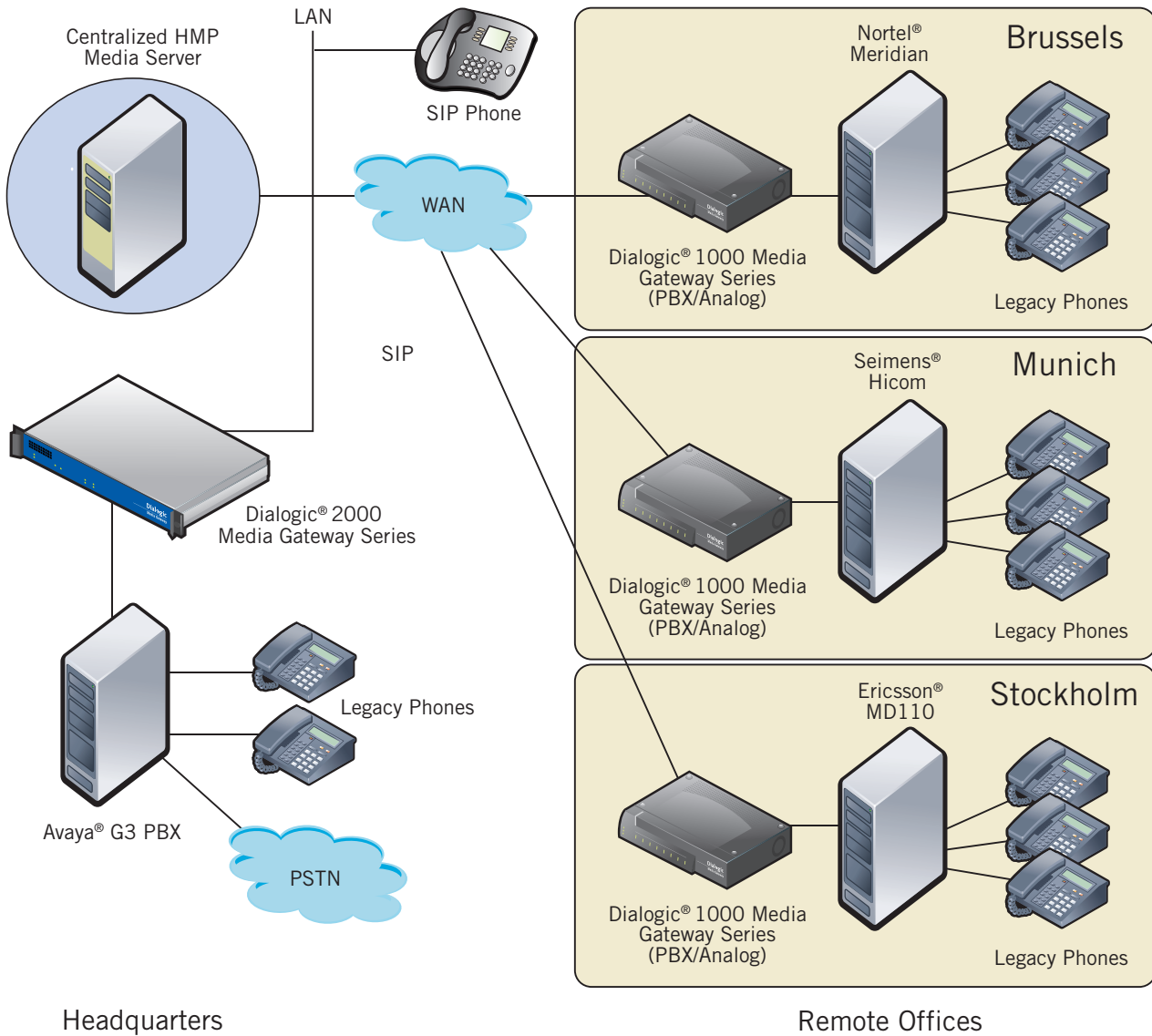


Figure 2. Converged IP Media Server Architecture

Media gateways help service providers and enterprises offer cost-saving voice, data, and multimedia convergence services. One such solution is an application for telecommuters.

The number of employees working from home on a permanent or periodic basis continues to rise. These employees need full access to company voice and data services. By installing a DMG2000 Gateway (see Figure 3), employees working from home can have the same telephony experience as their counterparts in the corporate office. They can make and receive calls and access other features such as voice mail from home, just as if they were in the office. Their office extension can be “bridged” onto a gateway port so that their “phone” rings, no matter where they are working. This enhances productivity, reduces costs, and improves both customer and employee satisfaction.

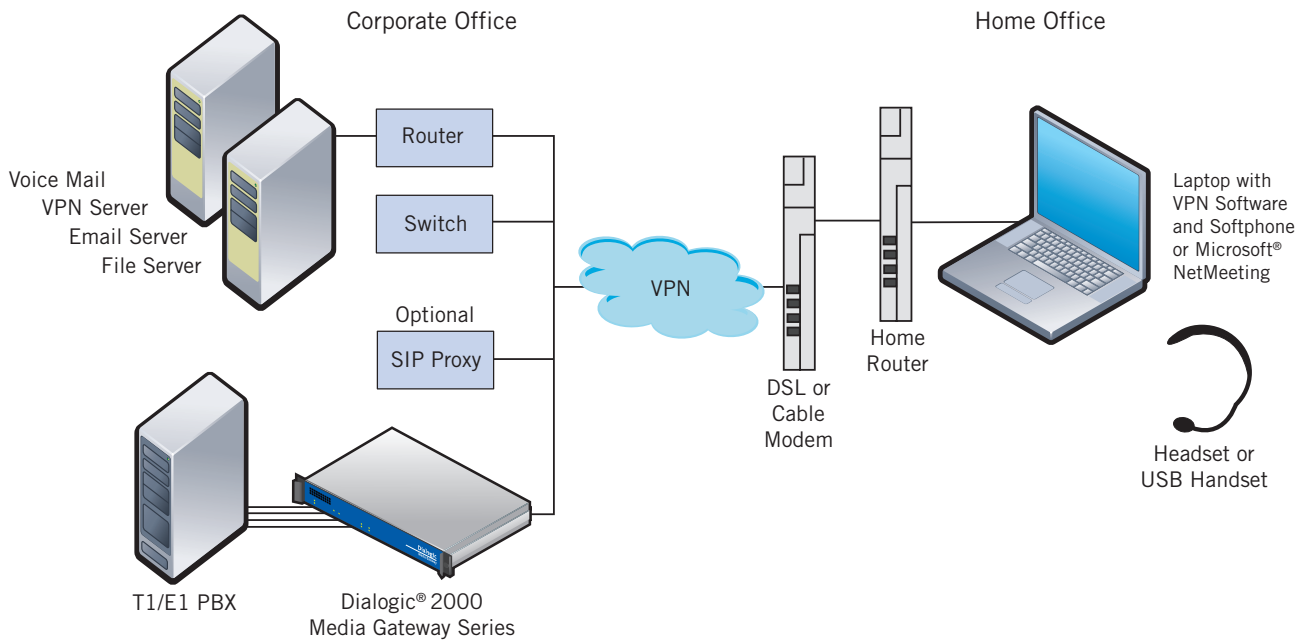


Figure 3. Next-generation Application Solutions — Telecommuting

The DMG2000 Gateway “S” models can be used for SIP trunking, PSTN toll bypass, and other access gateway applications because of their TDM-to-TDM routing capability, which is included along with traditional SIP-to-TDM and TDM-to-SIP routing. The addition of failover relays for direct TDM-to-TDM connectivity in case of power failures or IP network issues provides a survivable telephony connection as well. For a sample configuration, see Figure 4.

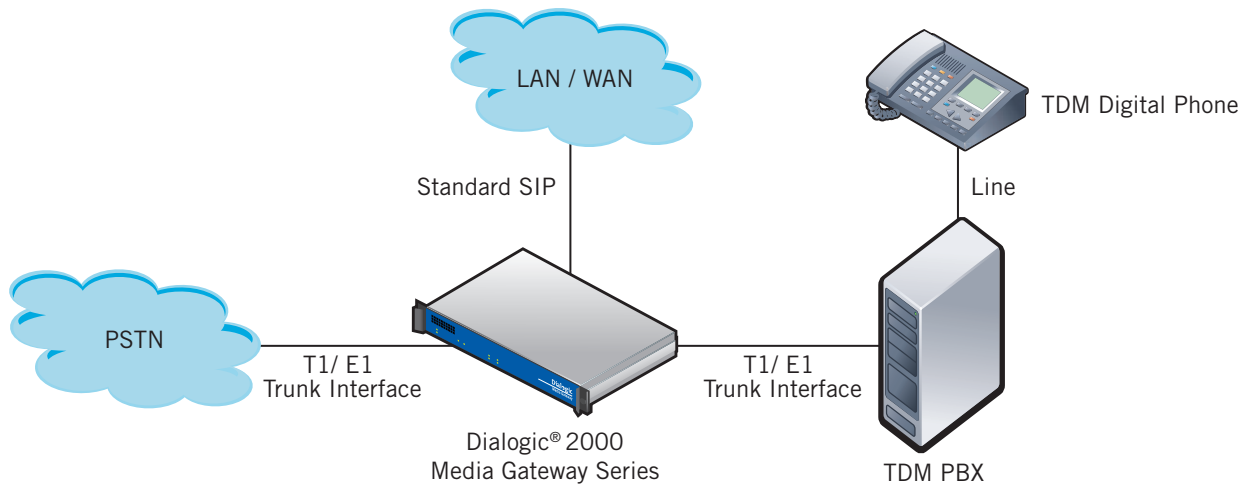


Figure 4. Access Gateway with Survivability Capabilities

## Technical Specifications

### TDM Port Density by Model

|            |              |
|------------|--------------|
| DMG2030DTI | 1 T1 or 1 E1 |
| DMG2060DTI | 2 T1 or 2 E1 |
| DMG2120DTI | 4 T1 or 4 E1 |

### IP Channel Density by Model

|            |     |
|------------|-----|
| DMG2030DTI | 30  |
| DMG2060DTI | 60  |
| DMG2120DTI | 120 |

### Connectors

RJ-45 jacks

### Network Interfaces

10/100 BaseT Ethernet LAN port  
Connector 1 shielded female RJ-45 jack for LAN

### Configuration and Management

Web browser with context-sensitive Help facility  
Telnet  
BOOTP client and TFTP client built-in  
SNMP v1 read-only for alarm reporting

### Call Routing

Any-to-Any call routing (TDM-to-SIP, SIP-to-TDM, TDM-to-TDM, and SIP-to-SIP)

### IP Security

TLS for SIP messages  
SRTP for media stream  
HTTPS for web interface

### Power Requirements

|              |                 |
|--------------|-----------------|
| Line voltage | 90VAC to 264VAC |
| Frequency    | 47 Hz to 63 Hz  |

## Technical Specifications *(continued)*

### Physical Dimensions

|        |                     |
|--------|---------------------|
| Height | 1.68 in. (4.27 cm)  |
| Width  | 19 in. (48.26 cm)   |
| Length | 14.2 in. (36.07 cm) |
| Weight | 11.1 lbs (5.03 kg)  |

### Environmental Requirements

|                       |                                |
|-----------------------|--------------------------------|
| Operating temperature | +32°F to +122°F (0°C to 40°C)  |
| Storage temperature   | −4°F to +158°F (−20°C to 70°C) |

### Protocol Support

|          |  |
|----------|--|
| Serial   | MCI  |
|          | MD-110   |
|          | SMDI   |
| T-1 ISDN | 5ESS   |
|          | DMS100   |
|          | NI2  |
|          | QSIG   |
| T-1 CAS  | E&M  |
|          | GroundStart  |
|          | LoopStart  |
| E-1      | EuroISDN   |
|          | QSIG   |
| VoIP     | Call transfer/call hold/message waiting indicator  |
|          | SIP per RFC 3261   |
|          | RTP/RTCP for delivery of voice   |
| FoIP     | T.38 FoIP emulating units transcode fax from T.30 fax protocol, supporting V.21, V.27, V.29, and V.17 modulation schemes, to T.38 for transmission over a packet network |
| Security | SRTP   |
|          | HTTPS  |
|          | TLS  |

## Technical Specifications *(continued)*

### Voice Support

G.711  $\mu$ -law and A-law  
 G.723.1  
 G.729ab  
 Silence suppression with comfort noise  
 Dynamic jitter buffer  
 G.168 automatic echo cancellation  
 Call Progress Analysis (CPA), including Positive Voice Detection, Positive Answering Machine Detection (PAMD), DTMF detection, and fax tone detection

### Quality of Service

Type of service (ToS)/IP precedence  
 DiffServ

### Approvals

#### *Safety*

European Union EN 60950  
 United States ANSI/UL 60950, third edition  
 Canada CAN/CSA 60950, third edition

#### *EMC*

European Union EN 55022-1998 Class B  
 United States FCC Part 15 Class A  
 Canada IC ES-003 Class B

#### *Telecommunications*

European Union EN 55024:1998  
 United States FCC Part 68  
 Canada IC CS03, Issue 7  
 Country-specific Approvals See the global product approvals database at <http://www.dialogic.com/declarations>  
 Hazardous Substances RoHS compliance information at <http://www.dialogic.com/rohs>

### Reliability/Warranty

Estimated MTBF Nine years  
 Warranty Warranty information at <http://www.dialogic.com/warranties>

## PBXs Interoperability

Any PBX that follows one of the protocol specifications listed in the Technical Specifications section will interoperate with the DMG2000 Gateways. The following is a list of PBXs that were specifically tested either in a Dialogic, or a third party, interoperability lab.

| Manufacturer | Models                  | Software Version  | Supplemental Service Support |          |                  |
|--------------|-------------------------|---|------------------------------|----------|------------------|
|              |                         |   | Call Party ID                | Transfer | MWI              |
| Avaya        | DEFINITY G3             | Version 3 or greater  | Yes                          | Yes      | Yes              |
|              | S8500                   | Communications Manager SW V2.0 or greater                     | Yes                          | Yes      | Yes              |
| NEC          | 2400 IMX                | Release 5200 Dec. 92 1b or greater                            | Yes <sup>1</sup>             | Yes      | Yes <sup>1</sup> |
| Nortel       | Meridian 1 – Option 11c | Release 15 or greater and options 19 and 46 are required      | No                           | No       | No               |
| Siemens      | Hicom 300E CS           | Release 9006.4 or greater (North American software load only) | Yes <sup>2</sup>             | Yes      | Yes              |

For explanation of notes, see Table 7.

Table 1. PBX Support — CAS

| Manufacturer | Models                     | Software Version   | Basic Call Control |          |      | Supplemental Service Support |          |                  |                 |                    |                  |
|--------------|----------------------------|--|--------------------|----------|------|------------------------------|----------|------------------|-----------------|--------------------|------------------|
|              |                            |  | Inbound            | Outbound | CPID | Diversion                    |          | Call Transfer    |                 | Path Replacement   | MWI              |
|              |                            |  |                    |          |      | Forward ID and Reason        | Redirect | Join (Hairpin)   | Re-Route (TBCT) | Route Optimization |                  |
| Alcatel      | OmniPCX 4400               | Version 3.2.712.5  | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | N/A             | Yes                | N/A              |
| Avaya        | S8500                      | Communications Manager SW V2.0                           | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | N/A             | Yes                | Yes              |
| Mitel        | SX-2000 S, SX-2000 VS      | LW 34  | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | N/A             | Yes                | Yes              |
|              | 3300                       | Version 5.1.4.8  | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | N/A             | Yes                | Yes              |
| NEC          | 2400 IPX                   | R17 Release 03.46.001                                    | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | Yes             | Yes                | Yes <sup>1</sup> |
| Nortel       | Meridian 1 – Option 11c    | Release 15 or greater and options 19 and 46 are required | Yes                | Yes      | Yes  | Yes                          | No       | Yes <sup>3</sup> | N/A             | Yes                | Yes              |
|              | Communications Server 1000 | Version 2121, Release 4, Issue 00 T                      | Yes                | Yes      | Yes  | Yes                          | No       | Yes <sup>3</sup> | N/A             | Yes                | Yes              |
| Siemens      | HiPath 4000                | V2 SMR 9 SMPO  | Yes                | Yes      | Yes  | Yes                          | No       | Yes <sup>3</sup> | N/A             | Yes                | Yes              |

For explanation of notes, see Table 7.

Table 2. PBX Support — T1 QSIG

| Manufacturer | Models                     | Software Version   | Basic Call Control |          |      | Supplemental Service Support |          |                  |                 |                    |     |
|--------------|----------------------------|--|--------------------|----------|------|------------------------------|----------|------------------|-----------------|--------------------|-----|
|              |                            |  | Inbound            | Outbound | CPID | Diversion                    |          | Call Transfer    |                 | Path Replacement   | MWI |
|              |                            |  |                    |          |      | Forward ID and Reason        | Redirect | Join (Hairpin)   | Re-Route (TBCT) | Route Optimization |     |
| Alcatel      | Omni PCX 4400              | Version 3.2.712.5  | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | N/A             | Yes                | N/A |
| Avaya        | S8500                      | Communications Manager SW V2.0 or greater                | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | N/A             | No                 | No  |
| Mitel        | SX-2000 S, SX-2000 VS      | LW 34  | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | N/A             | Yes                | Yes |
|              | 3300                       | Version 5.1.4.8  | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | N/A             | Yes                | Yes |
| Nortel       | Meridian 1 – Option 11c    | Release 15 or greater and options 19 and 46 are required | Yes                | Yes      | Yes  | Yes                          | No       | Yes <sup>3</sup> | N/A             | Yes                | Yes |
|              | Communications Server 1000 | Version 2121, Release 4, Issue 00 T                      | Yes                | Yes      | Yes  | Yes                          | No       | Yes <sup>3</sup> | N/A             | Yes                | No  |
| Siemens      | HiPath 4000                | V2 SMR 9 SMPO  | Yes                | Yes      | Yes  | Yes                          | No       | Yes <sup>3</sup> | No              | Yes                | Yes |
| Ericsson     | MD110                      | Release MX1 TSW R2A (BC13)                               | Yes                | Yes      | Yes  | Yes                          | No       | Yes <sup>3</sup> | N/A             | Yes                | Yes |
| Philips      | Sophos (iS3030-288)        | Version 6810.34  | Yes                | Yes      | Yes  | Yes                          | No       | Yes <sup>3</sup> | N/A             | Yes                | Yes |
| Tenovis      | Integral 3                 | E062 V01.0.0.2   | Yes                | Yes      | Yes  | Yes                          | No       | Yes              | N/A             | Yes                | Yes |

For explanation of notes, see Table 7.

Table 3. PBX Validation — E1 QSIG

| Manufacturer | Models                | Software Version   | Basic Call Control |          |      | Supplemental Service Support |          |                          |                 |                    |                  |
|--------------|-----------------------|--|--------------------|----------|------|------------------------------|----------|--------------------------|-----------------|--------------------|------------------|
|              |                       |  | Inbound            | Outbound | CPID | Diversion (ECMA-174)         |          | Call Transfer (ECMA-178) |                 | Path Replacement   | MWI              |
|              |                       |  |                    |          |      | Forward ID and Reason        | Redirect | Join (Hairpin)           | Re-Route (TBCT) | Route Optimization |                  |
| Avaya        | 5ESS                  | Version 5e16(2)02.00                                     | Yes                | Yes      | Yes  | Yes                          | No       | N/A                      | Yes             | N/A                | Yes <sup>4</sup> |
| Mitel        | SX-2000 S, SX-2000 VS | LW 34  | Yes                | Yes      | Yes  | N/A                          | N/A      | N/A                      | N/A             | N/A                | N/A              |
|              | 3300                  | Version 5.1.4.8  | Yes                | Yes      | Yes  | N/A                          | N/A      | N/A                      | N/A             | N/A                | N/A              |
| NEC          | All models            | N/A  | N/A                | N/A      | N/A  | N/A                          | N/A      | N/A                      | N/A             | N/A                | N/A              |
| Nortel       | DMS100                | Version SN000.007  | Yes                | Yes      | Yes  | Yes                          | No       | N/A                      | Yes             | N/A                | Yes              |
|              | Meridian - Option 11c | Release 15 or greater and options 19 and 46 are required | Yes                | Yes      | Yes  | No                           | No       | No                       | No              | No                 | No               |
| Siemens      | HiPath 4000           | V2 SMR 9 SMPO  | Yes                | Yes      | Yes  | No                           | No       | No                       | No              | No                 | No               |

For explanation of notes, see Table 7.

Table 4. PBX Validation — T1 NI2

| Manufacturer | Models | Software Version     | Basic Call Control |          |      | Supplemental Service Support |          |                |                 |                    |                  |
|--------------|--------|----------------------|--------------------|----------|------|------------------------------|----------|----------------|-----------------|--------------------|------------------|
|              |        |                      | Inbound            | Outbound | CPID | Diversion                    |          | Call Transfer  |                 | Path Replacement   | MWI              |
|              |        |                      |                    |          |      | Forward ID and Reason        | Redirect | Join (Hairpin) | Re-Route (TBCT) | Route Optimization |                  |
| Avaya        | 5ESS   | Version 5e16(2)02.00 | Yes                | Yes      | Yes  | Yes                          | No       | N/A            | Yes             | N/A                | Yes <sup>4</sup> |

For explanation of notes, see Table 7.

Table 5. PBX Validation — T1 5ESS

| Manufacturer | Models | Software Version  | Basic Call Control |          |      | Supplemental Service Support |          |                |                 |                    |                  |
|--------------|--------|-------------------|--------------------|----------|------|------------------------------|----------|----------------|-----------------|--------------------|------------------|
|              |        |                   | Inbound            | Outbound | CPID | Diversion                    |          | Call Transfer  |                 | Path Replacement   | MWI              |
|              |        |                   |                    |          |      | Forward ID and Reason        | Redirect | Join (Hairpin) | Re-Route (TBCT) | Route Optimization |                  |
| Nortel       | DMS100 | Version SN000.007 | Yes                | Yes      | Yes  | Yes                          | No       | N/A            | Yes             | N/A                | Yes <sup>4</sup> |

For explanation of notes, see Table 7.

Table 6. PBX Validation — T1 DMS100

| Note | Explanation  |
|------|--|
| 1    | Supported via the MCI serial protocol  |
| 2    | PBX does not send the Calling Party on inbound calls. However, the Called Party and the Call Reason Code fields are supported. |
| 3    | Display on the called party phone does not update after the Join transfer completes  |
| 4    | Supported via the SMDI serial protocol   |

Table 7. Explanation of Notes

## Ordering Information

| Dialogic® Product | Order Code | Description  |
|-------------------|------------|--|
| DMG2030DTIQ       | 886-427    |  |
| DMG2060DTIQ       | 886-418    | No support for TDM-to-TDM routing; not recommended for new designs |
| DMG2120DTIQ       | 886-426    | No support for TDM-to-TDM routing; not recommended for new designs |
| DMG2060DTISQ      | 310-891    | Dual-density “S” model with TDM-to-TDM routing; replaces 886-418   |
| DMG2120DTISQ      | 310-892    | Quad-density “S” model with TDM-to-TDM routing; replaces 886-426   |



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