Dialogic®

Application Note

Bandwidth Optimization Solutions: Squeezing Satellite Link Costs while Providing High-Quality Services

NETWORK FUEL™

Executive Summary

Transporting voice services over IP or TDM satellite links remains a challenge for telecom operators and service providers due to the high capital expenditures (CAPEX) and operating expenses (OPEX) involved as well as the bandwidth limitations for expanding capacity.

Fortunately, telecom operators and service providers carrying voice and/or signaling traffic over costly or bandwidth-bounded satellite links can benefit from bandwidth optimization systems that use Dialogic® I-Gate® 4000 products. Dialogic's products provide a unique solution that can deliver substantial savings on bandwidth resources, network equipment, and operations while also providing high quality services in addition to a more efficient and profitable utilization of the existing transmission infrastructure.

This application note briefly discusses typical applications that can stand to benefit from bandwidth optimization systems that use I-Gate 4000 products, including 3G mobile core network systems, VoIP media gateway networking, 2G and 3G mobile backhaul network systems, 2G and PSTN TDM switches, signaling gateway/STP systems, and backup network applications. Also discussed are the Dialogic® products that address solutions pertaining to the challenges for fixed and mobile service operators related to handling SS7 signaling traffic, for telecom operators carrying voice and signaling traffic between 2G MSC switches and/or PSTN switches over costly or bandwidth-bounded satellite links, and for telecom carriers and service providers worldwide who are challenged to build Critical Disaster Protection solutions to ensure service and revenue generation continuity.

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Introduction

Despite general trends toward plunging costs of bandwidth resources, the transport of voice services over IP or TDM satellite links still challenges telecom operators and service providers due to high capital expenditures (CAPEX) and operating expenses (OPEX), and bandwidth-bounded capacity expansion capability.

For telecom operators and service providers carrying voice and/or signaling traffic over costly or bandwidth-bounded satellite links, bandwidth optimization systems that use Dialogic® I-Gate® 4000 Products provide a unique solution that can deliver substantial savings on bandwidth resources, network equipment and operations, while also providing high quality services in addition to a more efficient and profitable utilization of the existing transmission infrastructure.

Typical applications that can benefit from bandwidth optimization systems that incorporate I-Gate 4000 Products include:

- **3G mobile core network applications** — For traffic carried between 3G mobile media gateways (Nb interface traffic) and/or between a 3G mobile media gateway and a Radio Network Controller (IuCS interface traffic) system.
- **VoIP media gateway networking applications** — For traffic carried between VoIP media gateways providing IP network interconnection to 2G mobile network switches (for example, Mobile Switching Center [MSCs]) and/or TDM switches (for example, tandem national or international).
- **2G and 3G mobile backhaul network applications** — For mobile backhaul links traffic carried between RNC and MSC systems (Abis interface traffic) and/or between Node B and 3G media gateway (Iub interface traffic).
- **2G and PSTN TDM switch applications** — For TDM (PCM) traffic carried between MSC and/or PSTN switches over long-distance TDM links.
- **Signaling Gateway/STP applications** — For M3UA/SCTP (SIGTRAN) traffic carried between signaling gateways or integrated media gateways and Signaling Transfer Points (STPs).
- **Backup network applications** — For implementation of highly resilient and cost-reducing network protection solutions.

Figure 1 presents a generic graph, which is applicable to the above applications, showing the bandwidth-associated expenses versus time for the following conditions:

- **Red line** — Transmission bandwidth expenses before deployment of a bandwidth solution
- **Green line** — Total expenses (Bandwidth Optimization equipment and transmission bandwidth) after deployment of a bandwidth solution

The shaded area between the green and red lines after the Return On Investment (ROI) period (time = t1) represents the generic total expense savings achieved by deployment of the Bandwidth Optimization solution. In typical solutions, the ROI period is less than 1 year.

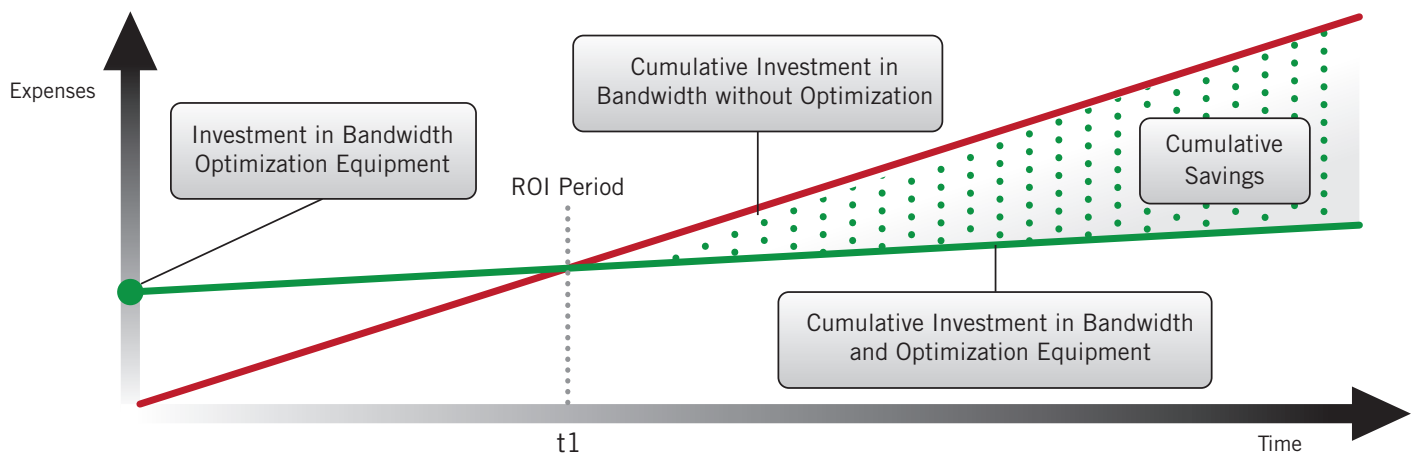

Figure 1. Expenses-Versus-Time Graph for Typical Bandwidth Optimization Solutions

Dialogic® I-Gate® 4000 Product Lines and Solutions

Bandwidth optimization systems that use I-Gate 4000 Products for voice and/or signaling traffic carried over IP or TDM satellite links can be implemented using one of the following Dialogic® product lines:

Product	Solution
Dialogic® I-Gate® 4000 Session Bandwidth Optimizer Core X	3G mobile core network applications — for traffic carried between 3G mobile media gateways (Nb interface traffic) and/or between a 3G mobile media gateway and a Radio Network Controller (IuCS interface traffic) system.
	VoIP media gateway networking applications — for traffic carried between VoIP media gateways providing IP network interconnection to 2G mobile network switches (for example, MSCs) and/or TDM switches (for example, tandem national or international).
	Signaling Gateway / STP applications — for M3UA/SCTP (SIGTRAN) traffic carried between signaling gateways or integrated media gateways and STPs (Signaling Transfer Points).
Dialogic® I-Gate® 4000 Session Bandwidth Optimizer Mobile Backhaul	2G and 3G mobile backhaul network applications — for mobile backhaul links traffic carried between RNC and MSC systems (Abis interface traffic) and/or between Node B and 3G media gateway (Iub interface traffic).
Dialogic® I-Gate® 4000 EDGE Media Gateway and Dialogic® I-Gate® 4000 PRO Media Gateway	2G and PSTN TDM switch applications — for TDM (PCM) traffic carried between MSC and/or PSTN switches over long-distance TDM links.
	Backup network applications — for implementation of highly resilient and cost-reducing network protection solutions.

Dialogic® I Gate® 4000 Session Bandwidth Optimizer Core X for Mobile and Wireline Core IP Network Solutions

I-Gate 4000 SBO-CX is a standalone equipment solution designed to minimize the bandwidth requirements and packet rate (packets per second) of the Voice over IP (VoIP) packet streams carried in any of the following IP network/link transport scenarios:

- **3G mobile core network applications** — For traffic carried between 3G mobile media gateways (Nb interface) and between 3G mobile media gateway and Radio Network Controller (IuCS interface). The “3G Mobile Media Gateway Applications — Nb Interface Side” and “3G Mobile Media Gateway Applications — IuCS Interface Side” sections provide more details.
- **VoIP media gateway networking applications** — For traffic carried in new generation switching networks including VoIP media gateways interconnecting 2G mobile network switches (for example, MSCs) and/or TDM switches (for example, C4, C5). The “New Generation Network VoIP Media Gateways Applications” section provides more details.

In this case, “standalone” equipment means that the I-Gate 4000 SBO-CX is fully autonomous and does not require call control (MSC-server or softswitch) or external equipment for its operation.

3G Mobile Media Gateway Applications — Nb Interface Side

A 3G mobile network includes 3G mobile media gateways controlled by MSC server(s).

The interconnection between the 3G mobile media gateways is implemented through a core IP network, and voice traffic is carried between the mobile media gateways as IP streams of Voice over IP (VoIP) packets. The mobile media gateways are connected to the IP network through their Nb interfaces. Most of the voice payloads are transported in the VoIP packets using the original low-rate encoded signals, which are generated in the access mobile network segment (for example, GSM-AMR). In many networks, the core IP network interconnecting the 3G mobile media gateways are implemented over satellite transport links.

The I-Gate 4000 SBO-CX provides a cost-effective solution that optimizes the VoIP sessions transported between the mobile media gateways while maintaining the quality and reliability of the transported calls. VoIP session optimization means savings in the bandwidth requirements and reduction in the packet rate (packets per second).

Figure 2 is an example of this type of solution. At site **A**, VoIP packet streams are sent from a 3G mobile media gateway (Nb-interface) to the near-end I-Gate 4000 SBO-CX terminal **a** where, after optimization processes, the optimized IP packet streams are sent to the peer far-end I-Gate 4000 SBO-CX terminal b at site **B**. At the peer terminal **b**, the received optimized IP packet streams are decompressed, and the decompressed IP packet streams are sent to the other (far-end) 3G mobile media gateway.

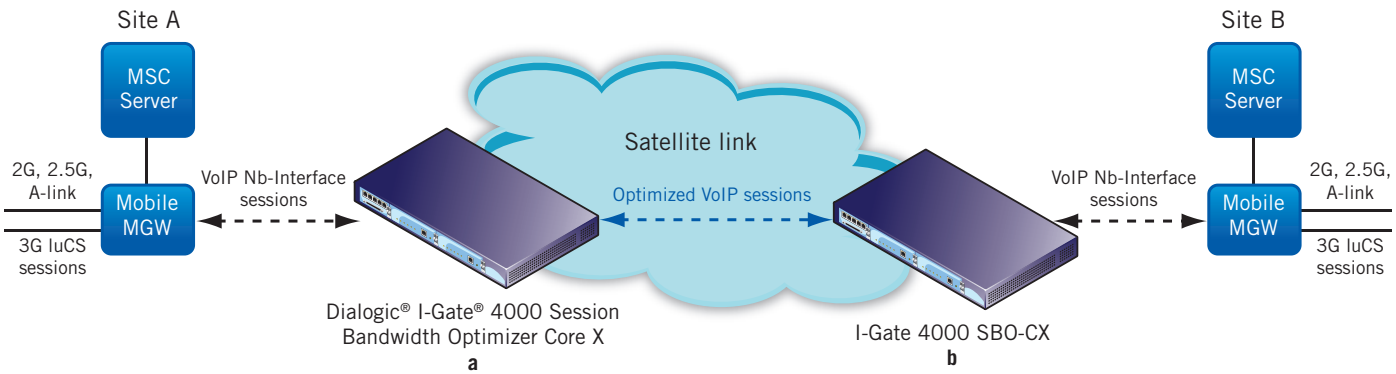

Figure 2. 3G Mobile Network Dialogic® I Gate® 4000 Session Bandwidth Optimizer Core X Solution — Nb Interface Traffic

For these types of solutions, bandwidth savings provided by the I-Gate 4000 SBO-CX are typically more than 64% (with the exact value depending on factors such as the traffic profile characteristics), thus allowing a significant reduction in CAPEX and OPEX.

In addition, the I-Gate 4000 SBO-CX generally provides a 98% reduction in the packet rate, which in turn benefits the operator with an accompanying significant reduction in the processing requirements (CPU load capability) of the satellite modem/routers (not shown in Figure 2), thus further contributing to a reduction in CAPEX and OPEX, as well as enhancing the quality of the voice traffic transported through the satellite link.

Note that Figure 2 provides an example of an I-Gate 4000 SBO-CX solution. For simplicity, the figure does not show all the elements that generally exist in actual networks.

Figures 3 and 4 provide examples that further demonstrate the kinds of benefits that can be realized by implementations of the I-Gate 4000 SBO-CX.

In Figure 3:

- **Column A** — Shows bandwidth requirements before deploying an I-Gate 4000 SBO-CX solution for the VoIP traffic carried between 3G mobile media gateways for 2,500 voice calls, assuming GSM-AMR 12.2 kbps encoding, 20 msec Packetization Interval (PI), and 50% speech activity.
- **Column B** — Shows bandwidth requirements after deploying an I-Gate 4000 SBO-CX solution for the optimized VoIP traffic carried between a pair of I-Gate 4000 SBO-CX terminals, for the same traffic load and traffic characteristics as column A.

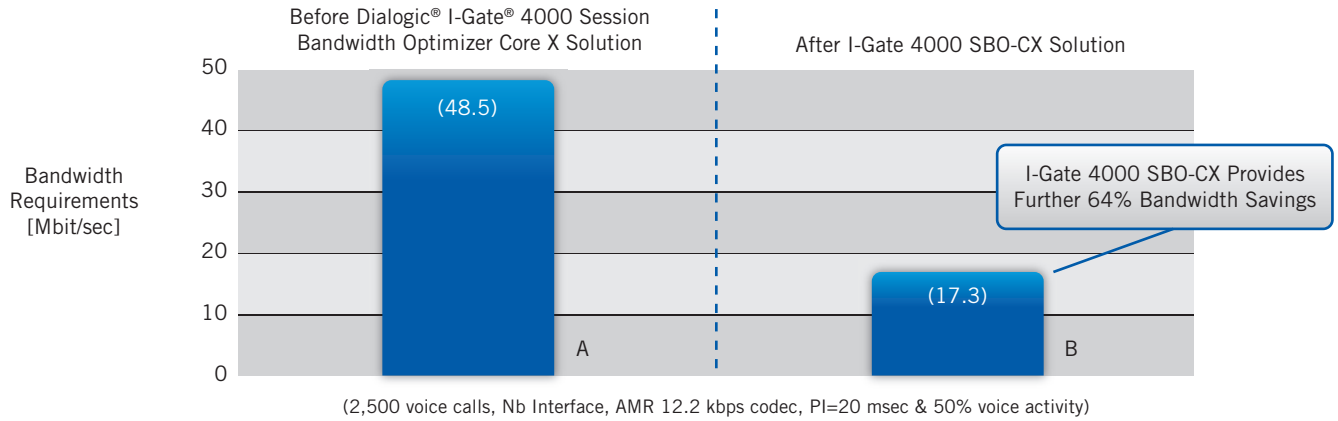

Figure 3. Dialogic® I Gate® 4000 Session Bandwidth Optimizer Core X Bandwidth Savings Benefits — Nb Interface Traffic

In Figure 4:

- **Column C** — Shows packets-per-second rate before deploying an I-Gate 4000 SBO-CX solution for the VoIP traffic carried between 3G mobile media gateways shown in Figure 3, column A.
- **Column D** — Shows packets-per-second rate after deploying an I-Gate 4000 SBO-CX solution for the optimized VoIP traffic carried between a pair of I-Gate 4000 SBO-CX terminals shown in Figure 3, column B.

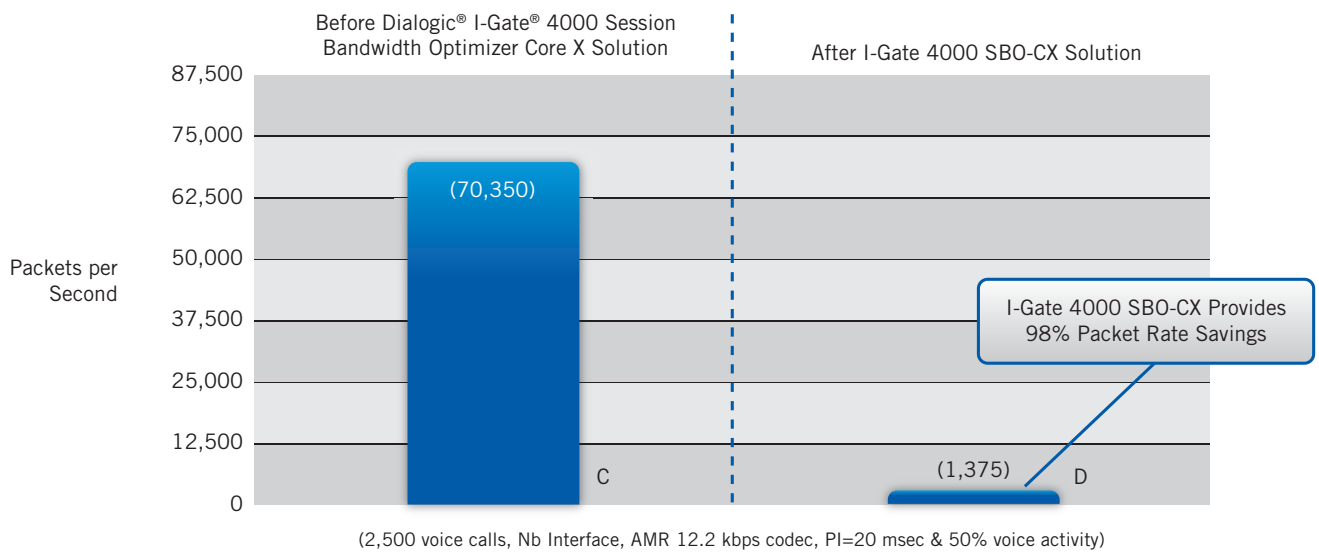

Figure 4. Dialogic® I Gate® 4000 Session Bandwidth Optimizer Core X Packet Rate Reduction Benefits — Nb Interface Traffic

An I-Gate 4000 SBO-CX terminal can be deployed at the same site as the connected 3G mobile media gateway(s), or at a different site provided that an IP interconnection is available between the I-Gate SBO-CX and the mobile media gateway(s).

It should be noted that an I-Gate 4000 SBO-CX is designed to interconnect seamlessly to an IP network architecture “as-is”, without the need to introduce architectural modifications. This also includes the capability to interconnect to routers deployed in accordance with a redundant protection topology (router redundancy and link redundancy).

An I-Gate 4000 SBO-CX solution can include one or more pairs of I-Gate 4000 SBO-CX terminals that optimize the VoIP streams carried between them (single-destination solution), or multiple I-Gate 4000 SBO-CX terminals where each terminal simultaneously optimizes the VoIP streams carried between it and several terminals (multi-destination solution).

3G Mobile Media Gateway Applications — IuCS Interface Side

In a 3G mobile network, the 3G mobile media gateways are connected to the Radio Network Controllers (RNCs) through the IuCS interface.

The voice traffic is carried between a 3G mobile gateway and an RNC as IP streams of VoIP packets, where most of the voice payloads are transported in the VoIP packets using the original low-rate encoded signals, which are generated in the access mobile network segment (for example, GSM-AMR). In many networks, the IuCS traffic is carried over satellite transport links.

The I-Gate 4000 SBO-CX offers a cost-effective solution that optimizes (that is, saves bandwidth requirements and reduces the packet rate) the VoIP sessions transported between the 3G mobile media gateways and the RNCs while maintaining the quality and reliability of the transported calls.

Figure 5 is an example of such a solution. At the RNC site, VoIP packet streams are sent from an RNC (IuCS interface) to the near-end I-Gate 4000 SBO-CX terminal where, after optimization processes, the optimized IP packet streams are sent to the peer far-end I-Gate 4000 SBO-CX terminal. At the peer terminal, the received optimized IP packet streams are decompressed, and the decompressed IP packet streams are sent to the 3G mobile media gateway.

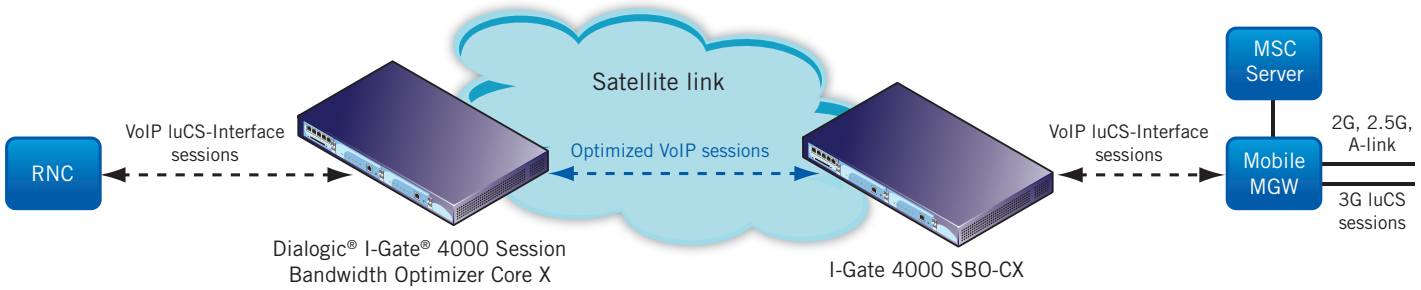

Figure 5. 3G Mobile Network Dialogic® I Gate® 4000 Session Bandwidth Optimizer Core X Solution — IuCS Interface Traffic

The bandwidth savings and packet rate reduction benefits described in "3G Mobile Media Gateway Applications — Nb Interface Side" section are also applicable to the IuCS traffic applications.

New Generation Network VoIP Media Gateways Applications

Many mobile and wireless operators are deploying new generation switching networks that include VoIP media gateways and one or more softswitches.

The VoIP media gateways are deployed at various sites and are connected to mobile network MSC switches and/or to PSTN Class 4 or Class 5 switches, through TDM links and to distant VoIP media gateways through IP packet-switched network(s). Telephony traffic is carried between the media gateways as IP streams of VoIP packets. In many networks, the IP network interconnecting the VoIP media gateways is implemented over satellite transport links.

For operators who have deployed other vendors' VoIP media gateways, I-Gate 4000 SBO-CX systems can represent a cost-effective solution, providing a reduction in the bandwidth requirements and in the payload rate of the VoIP sessions generated by the VoIP media gateways, while maintaining the quality and reliability levels of the transported calls.

Designed to fit transparently between any vendor's media gateways, the I-Gate 4000 SBO-CX can enable service providers to achieve the same overall bandwidth and packet-rate savings as those achieved when directly using Dialogic® I Gate® 4000 Media Gateways.

Figure 6 is an example of a solution In which the VoIP packet streams generated by a VoIP media gateway (for example, at site **A**) are sent to a near-end I-Gate 4000 SBO-CX terminal (for example, denoted by "a") where, after optimization processes occur, the optimized IP packet streams are sent to a far-end I-Gate 4000 SBO-CX terminal. At this far-end terminal (for example, denoted by "d"), the received optimized IP packet streams are decompressed, and the decompressed IP packet streams are sent to a VoIP media gateway (for example, at site **D**).

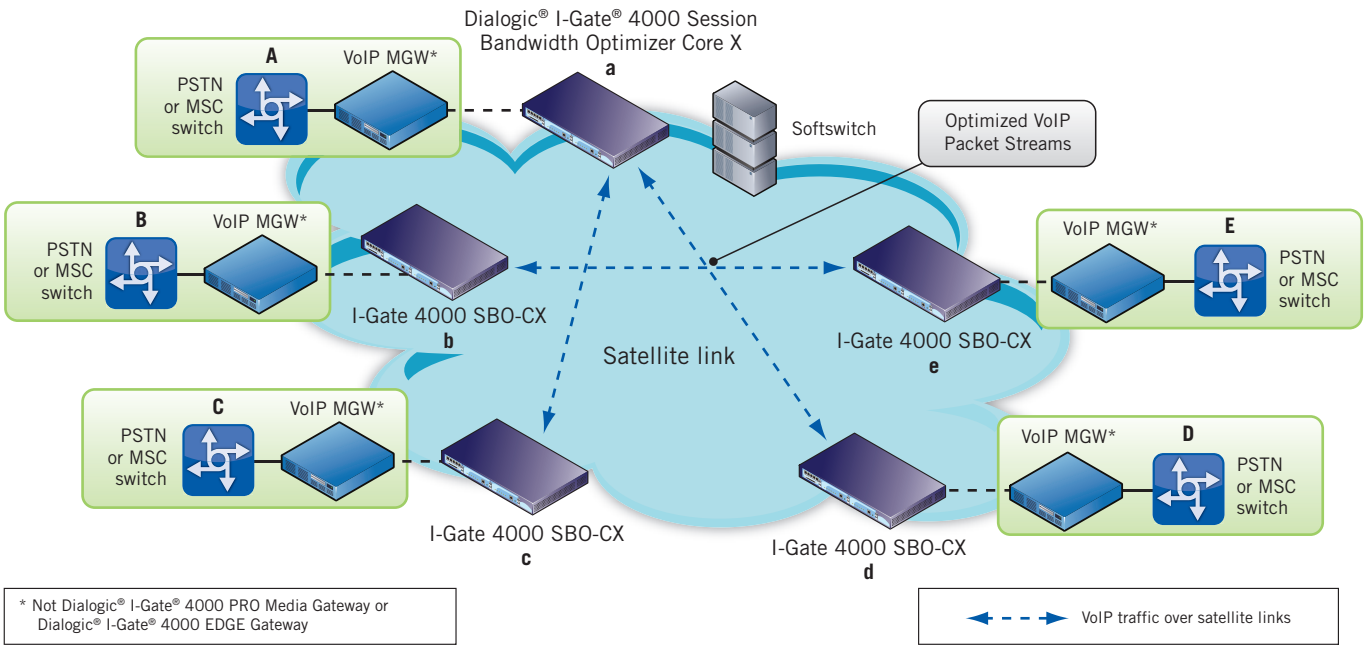

Figure 6. New Generation Network Dialogic® I Gate® 4000 Session Bandwidth Optimizer Core X Solution

For these types of applications, bandwidth savings provided by the I-Gate 4000 SBO-CX are typically more than 70% (with the exact value depending on factors such as the traffic profile characteristics), thus allowing a significant reduction in CAPEX and OPEX.

In addition, the I-Gate 4000 SBO-CX generally provides a 98% reduction in the packet rate, which in turn benefits the operator with an accompanying significant reduction in the processing requirements (CPU load capability) of the satellite modem/routers (not shown in Figure 6), thus further contributing to a reduction in CAPEX and OPEX while also enhancing the quality of the voice traffic transported through the satellite link.

Note that Figure 6 provides an example of an I-Gate 4000 SBO-CX solution. For simplicity, the figure does not show all the elements that generally exist in actual networks.

Figures 7 and 8 further demonstrate the kinds of benefits that can be realized by implementations of the I-Gate 4000 SBO-CX.

In Figure 7:

- **Column A** — Shows the bandwidth requirements before deploying an I-Gate 4000 SBO-CX solution for the VoIP media gateways for 2,500 voice calls, assuming G.729A codec, 20 msec PI, and 50% speech activity.
- **Column B** — Shows the bandwidth requirements after deploying an I-Gate 4000 SBO-CX solution for the optimized VoIP traffic carried between a pair of I-Gate 4000 SBO-CX terminals, for the same traffic load and traffic characteristics as column A.

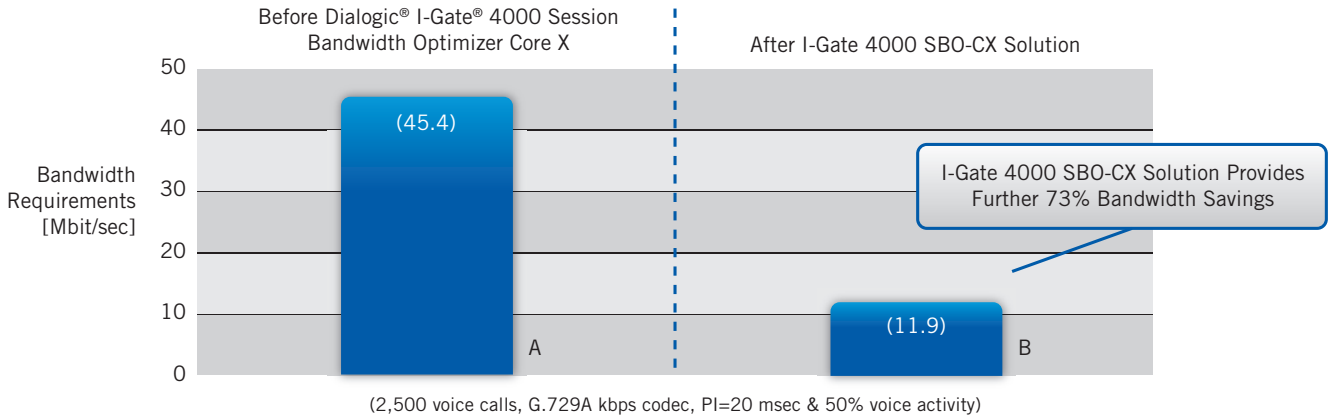

Figure 7. Dialogic® I Gate® 4000 Session Bandwidth Optimizer Core X Bandwidth Savings Benefits — VoIP Media Gateway Traffic

In Figure 8:

- **Column C** — Shows the packets-per-second rate before deploying an I-Gate 4000 SBO-CX solution for the VoIP traffic carried between the VoIP media gateways shown in Figure 7, column A.
- **Column D** — Shows the packets-per-second rate after deploying an I-Gate 4000 SBO-CX solution for the optimized VoIP traffic carried between a pair of I-Gate 4000 SBO-CX terminals shown in Figure 7, column B.

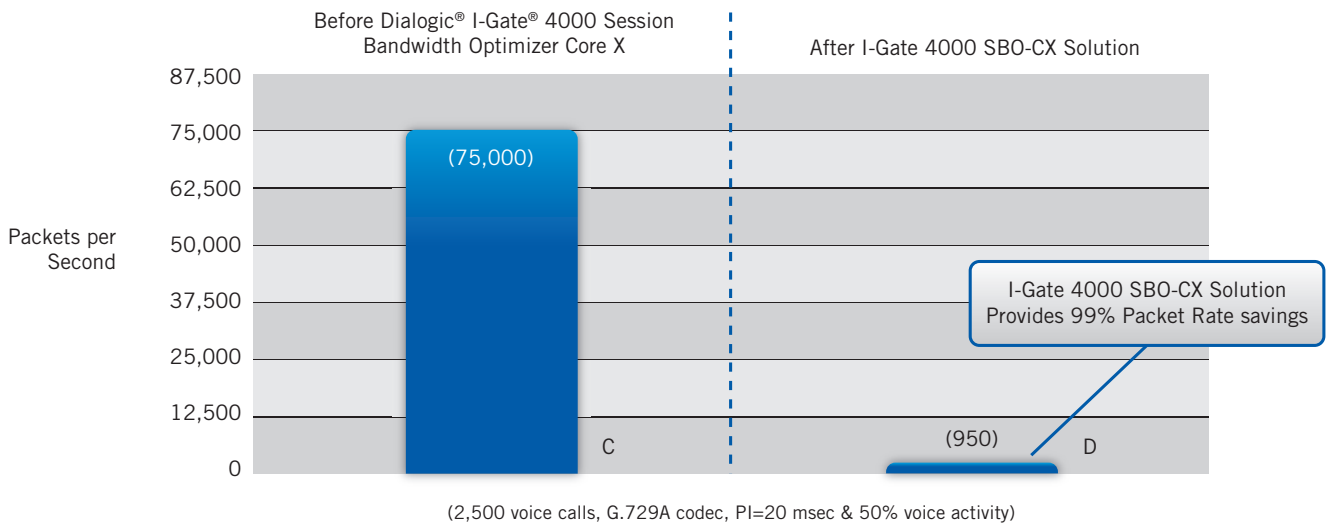

Figure 8. Dialogic® I Gate® 4000 Session Bandwidth Optimizer Core X Packet Rate Reduction Benefits — VoIP Media Gateway Traffic

An I-Gate 4000 SBO-CX terminal can be deployed at the same site as the connected VoIP media gateway(s), or at a different site provided that an IP interconnection is available between the I-Gate SBO-CX and the VoIP media gateway(s).

It should be noted that an I-Gate 4000 SBO-CX is designed to interconnect seamlessly to any IP network architecture "as-is", without the need to introduce architectural modifications. This also includes the capability to interconnect to routers deployed in accordance with a redundant protection topology (router redundancy and link redundancy).

An I-Gate 4000 SBO-CX solution can include one or more pairs of I-Gate 4000 SBO-CX terminals that optimize the VoIP streams carried between them (single-destination solution), or multiple I-Gate 4000 SBO-CX terminals where each terminal simultaneously optimizes the VoIP streams carried between it and several terminals (a multi-destination solution).

SIGTRAN Traffic Optimization

The deployment of IP-based transport networks presents the fixed and mobile service operators with additional challenges related to the handling of SS7 signaling traffic.

The protocols of SIGTRAN standards have been adopted worldwide, providing a solution that allows for both seamless migration from legacy to new generation network infrastructure and cost-saving backward compatibility with the deployed SS7 signaling systems. However, a 3G mobile network user demands substantially higher SS7 signaling bandwidth than a 2G mobile network user; accordingly, mobile network operators must find new solutions to minimize the associated CAPEX and OPEX.

In currently deployed networks, a high percentage of SS7 traffic is generated and transported to support the functions of location update and authentication (Mobile Application Part [MAP] transactions). The deployment of 3G networks is typically focused on densely populated areas, and traffic handling is characterized by a high volume of service handover between the 2G and the 3G systems. The growing location update traffic challenges the SS7 signaling links capacity of the MSC and HLR systems as well as the associated bandwidth requirements between those systems for the transport of the SIGTRAN traffic. In addition, the use of encryption makes 3G authentication signaling traffic more bandwidth-intensive than that of legacy infrastructure.

As an example, Figure 9 shows a 3GPP network diagram in which voice and signaling are transported over IP network infrastructure. The figure shows the SIGTRAN M3UA signaling link paths between the following subsystems:

- MSS-MSS
- MSS-MGW
- MSS-STP

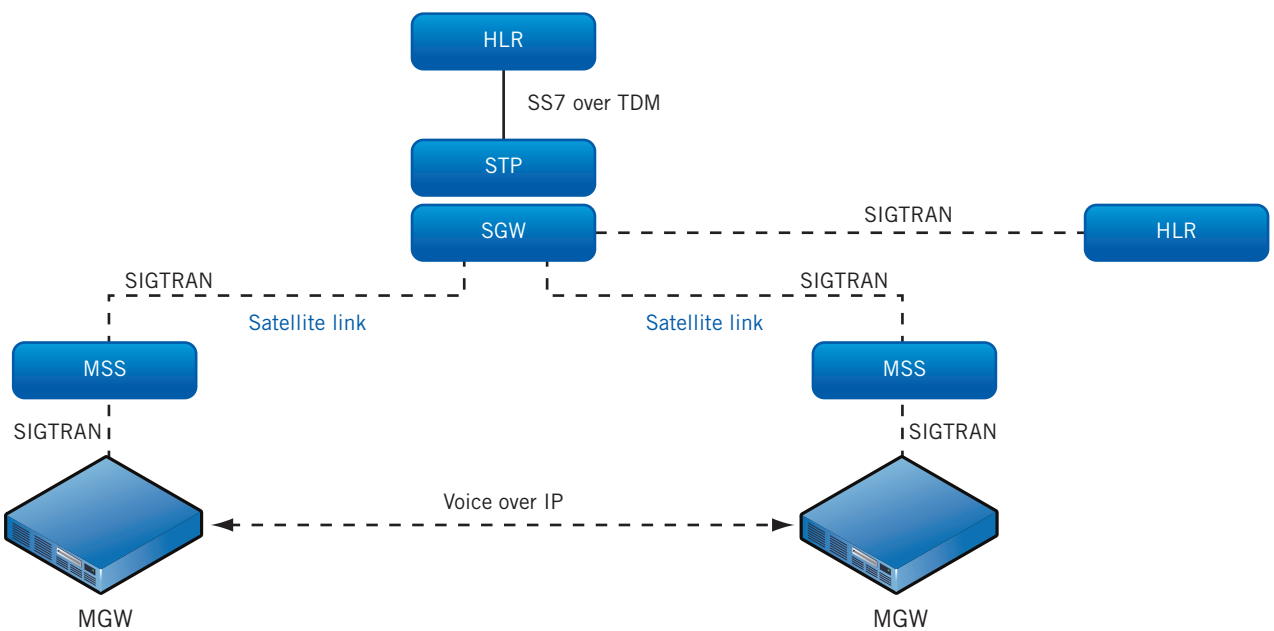

Figure 9. 3GPP Based Signaling Transactions Diagram

I-Gate 4000 SBO-CX systems can benefit the network operator by enabling a significant reduction in bandwidth requirements for the transport of SS7 SIGTRAN traffic. Figure 10 depicts an example of an I-Gate 4000 SBO-CX SIGTRAN optimization solution.

As shown in Figure 10, at an I-Gate 4000 SBO-CX terminal (for example, the I-Gate 4000 SBO-CX denoted by "**A**"), standard SIGTRAN signaling streams are received from the associated MSS, and after SIGTRAN bandwidth optimization processes, are sent to a peer I-Gate 4000 SBO-CX terminal (for example, the I-Gate 4000 SBO-CX denoted by "**C**"). At the peer terminal, the received optimized SIGTRAN signaling streams are decompressed, and the decompressed SIGTRAN signaling streams are sent to the associated signaling gateway.

Similarly, the signaling SIGTRAN streams between the signaling gateway and the HLR can be optimized (for example, by the I-Gate 4000 SBO-CX units denoted by "**D**" and "**E**"). In such a solution, the I-Gate 4000 SBO-CX terminals execute all tasks automatically, with no need for external control or signaling, according to the terminals' configuration (provisioning) data.

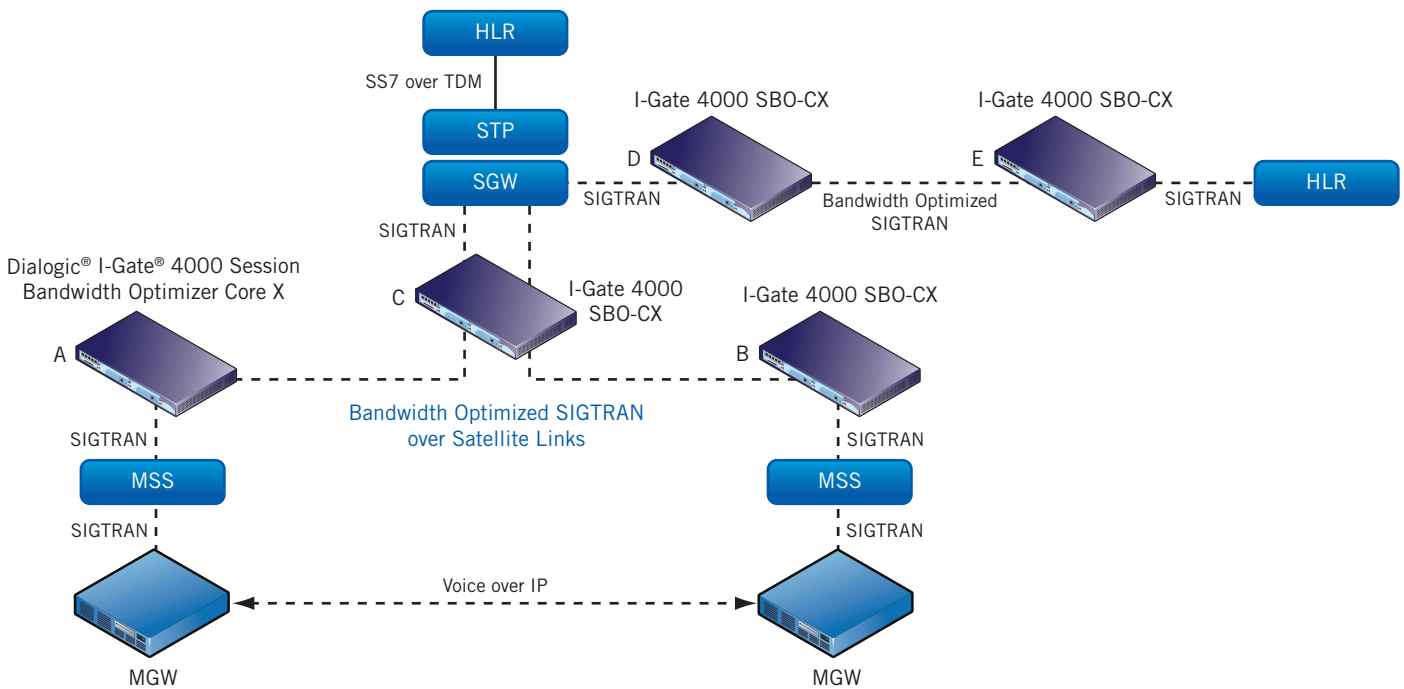

Figure 10. Dialogic® I Gate® 4000 Session Bandwidth Optimizer Core X SIGTRAN Bandwidth Optimization Solution

Figures 11 and 12 provide examples that further demonstrate the kinds of benefits that can be realized by implementing the I-Gate 4000 SBO-CX.

In Figure 11:

- **Column A** — Shows the bandwidth requirements before deploying an I-Gate 4000 SBO-CX solution for the SIGTRAN traffic between a Signaling Gateway and an HLR (5 Mbps).
- **Column B** — Shows the bandwidth requirements after deploying an I-Gate 4000 SBO-CX solution for the optimized SIGTRAN traffic carried between a pair of I-Gate 4000 SBO-CX terminals, for the same traffic load and traffic characteristics as Column A (2.4 Mbps).

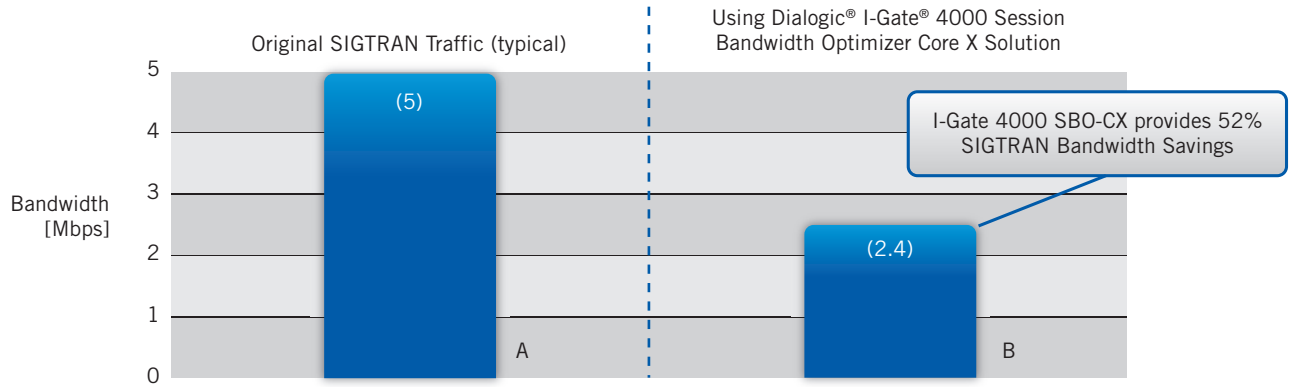

Figure 11. SIGTRAN Transport — Bandwidth Savings Benefits

In Figure 12:

- **Column C** — Shows the packets-per-second rate before deploying an I-Gate 4000 SBO-CX solution for the SIGTRAN traffic between a Signaling Gateway and an HLR shown in Figure 11, Column A.

- **Column D** — Shows the packets-per-second rate after deploying an I-Gate 4000 SBO-CX solution for the optimized SIGTRAN traffic carried between a pair of I-Gate 4000 SBO-CX terminals shown in Figure 11, Column B.

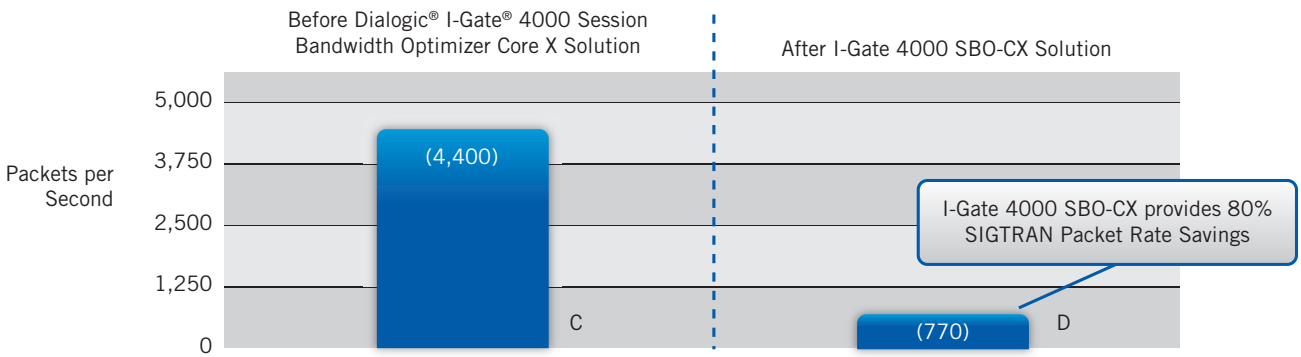

Figure 12. SIGTRAN Transport — Packet Rate Reduction Benefits

It should be noted that the reduction in bandwidth requirements and in the payload rate for the SIGTRAN traffic is achieved while maintaining the reliability of the signaling and transaction processes, thus providing a notable session success rate.

Static Trunking Solutions for Wireline and Wireless Networks

For telecom operators carrying voice and signaling traffic between 2G MSC switches and/or PSTN switches over costly or bandwidth-bounded satellite links, the Dialogic® I-Gate® 4000 Media Gateways' static trunking systems provide unmatched solutions that pave the way for substantial savings on equipment and operations, more efficient use of the deployed network resources, and new opportunities for improved competitiveness and increased profitability.

Typical applications that can stand to benefit from these solutions include:

- Transmission of long-distance international and domestic telephony services (voice, fax, modem, video) between MSC and/or PSTN switches
- Backhaul transmission between Points of Interconnection (POIs) to PSTN switch and MSC switch
- Call Centers
- Backup protection networks

Two I-Gate 4000 Media Gateways are available:

- **Dialogic® I-Gate® 4000 PRO Media Gateway** — for medium and heavy traffic applications
- **Dialogic® I-Gate® 4000 EDGE Media Gateway** — for lighter traffic applications

As an example of an I-Gate® 4000 Media Gateways static trunking solution, Figure 13 depicts a long-distance (international or domestic) network application.

The depicted configuration example has the following characteristics:

- The I-Gate 4000 Media Gateways' terminals are interconnected to the MSC or PSTN switches through standard TDM trunk interfaces. The TDM trunks contain 64 kbps DS0 channels carrying the uncompressed telephony signals (for example, voice, fax, modem) and/or signaling (for example, SS7, PRI).
- At the I-Gate 4000 Media Gateways' terminals, the uncompressed traffic from the MSC or PSTN switches is compressed and carried over the bearer (using long-distance transmission network) to the I-Gate 4000 Media Gateways terminals at the distant site where the received payloads are decompressed.
- The allocation of DS0 channels to a given destination is performed statically (semi-permanent connections provisioned by the operator), without the need for a softswitch or a signaling gateway.

I-Gate 4000 Media Gateways compression algorithms allow for a significant reduction in the required bandwidth resources (typically a 90% bandwidth savings) while also providing high voice quality performance. The compression mechanisms include low-rate encoding (for example, G.729A, G.723.1, GSM-AMR/EFR), Silence Suppression, and RTP Packet Aggregation. In addition, Toll Quality service is provided by implementation of processing techniques that include: Echo Cancellation, Voice Activity Detection, Spectral Background Noise Injection, Packet Loss Concealment, Adaptive Jitter Buffer, and Smart Packet Priority Selection.

The I-Gate 4000 Media Gateways terminals can support TDM as well as IP bearer satellite links.

An I-Gate 4000 Media Gateways static trunking solution can be deployed in a single-route point-to-point configuration, as shown in the example in Figure 13, or in a hub point-to-multipoint configuration, as shown in the example in Figure 14.

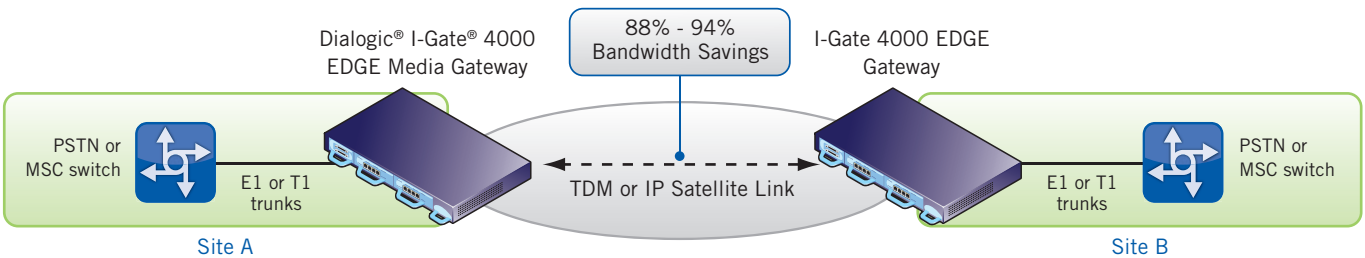

Figure 13. Single-Route Application — Point-to-Point Configuration

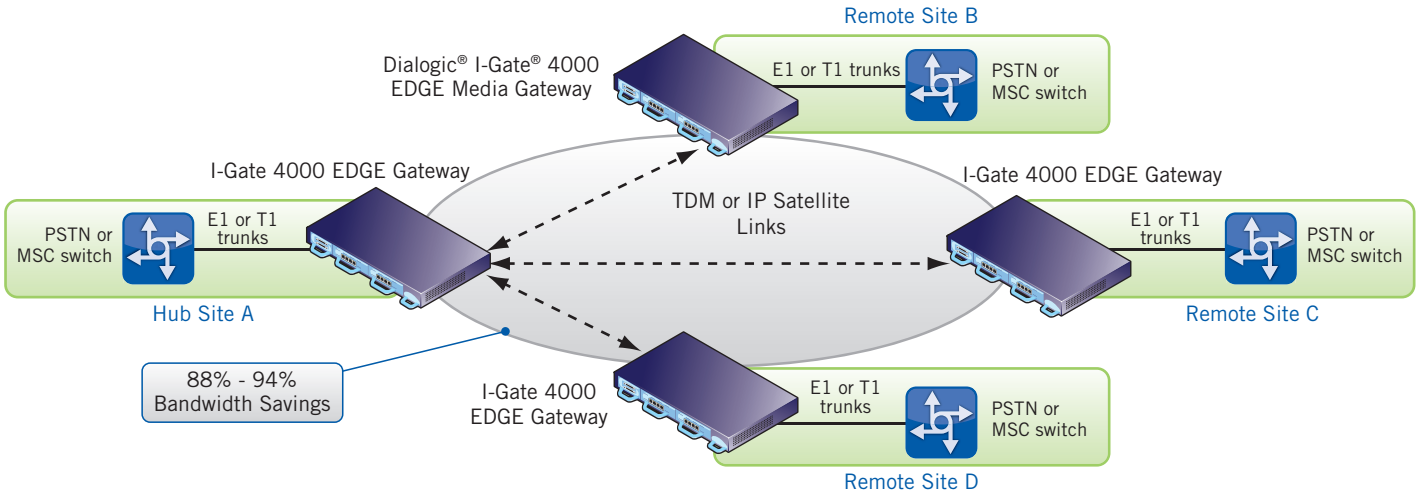

Figure 14. Point-to-Multipoint Configuration

Although Figures 13 and 14 show I Gate 4000 EDGE Media Gateway terminals only, an actual application could include a combination of I Gate 4000 EDGE Media Gateway and I Gate 4000 PRO Media Gateway terminals. For example, an I Gate 4000 PRO Media Gateway can be deployed at sites that have a high number of trunks between the PSTN/MSC switch and the terminal(s), and the I Gate 4000 EDGE Media Gateway can be deployed at sites requiring support for a low number of TDM trunks between the PSTN switch and the associated terminal(s).

As an example, Figure 15 depicts a network solution including an I Gate 4000 PRO Media Gateway terminal at the hub site (A) and I Gate 4000 EDGE Media Gateway terminal at each of the remote sites (B to G).

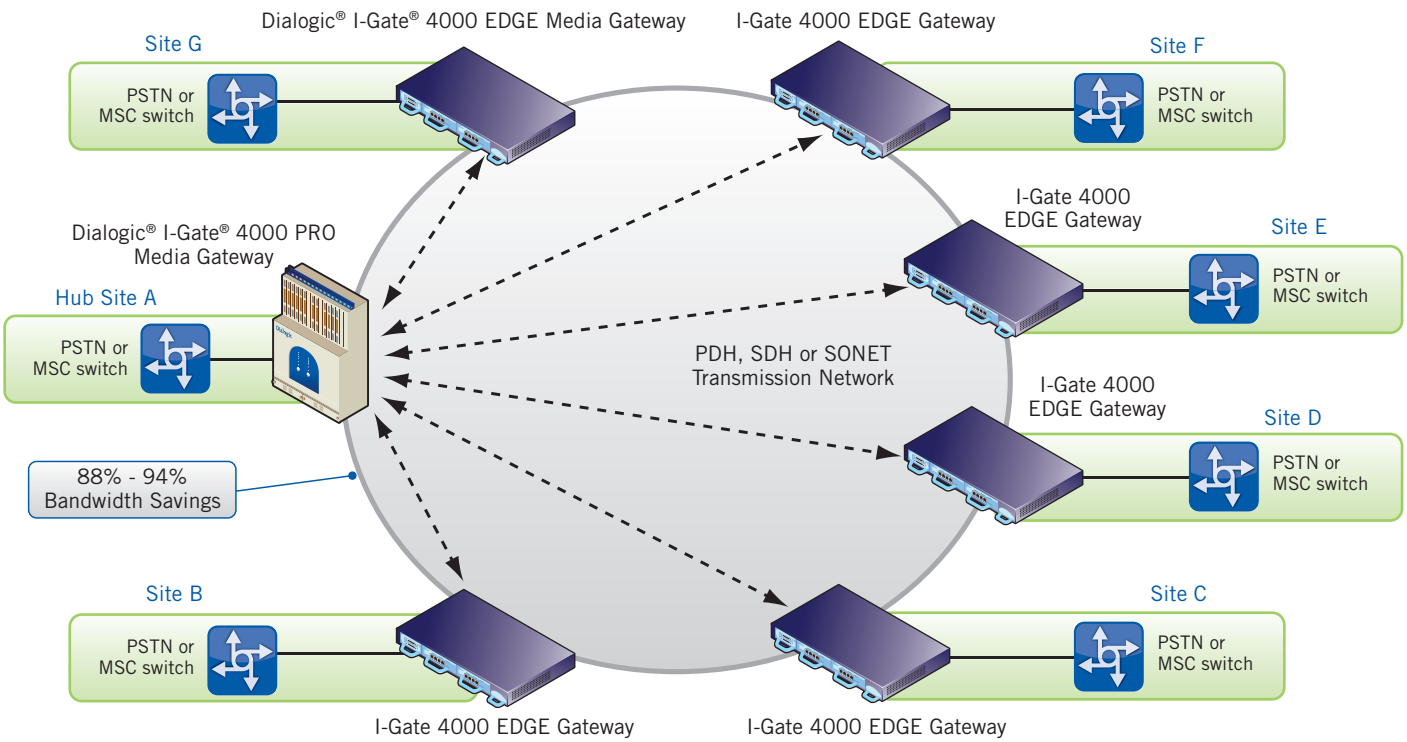

Figure15. Configuration supporting deployment of Dialogic® I Gate® 4000 PRO Media Gateway and I Gate 4000 EDGE Media Gateway Terminals

Backup Network Protection Solutions

Telecom carriers and service providers worldwide are being challenged to build Critical Disaster Protection solutions to ensure service and revenue generation continuity, in case critical segments of the telecom infrastructure are destroyed (for example, by earthquakes, terror attacks, and so on).

Despite the technical and operational benefits of highly resilient network architectures (for example, SDH/SONET dual-ring), maximal overall reliability demands physical separation between the primary or main transmission network and the protecting or backup network. Considering the multiple cost components of a network deployment project (for example, duct-laying, cable construction, right of passage, coordination with and authorization from government offices and services companies), the building of a backup network generally duplicates the investment demanded for the primary network alone.

The I-Gate 4000 Media Gateways products provide an unmatched opportunity for operators to achieve a high overall reliability target at a small fraction of the original CAPEX budget, while providing rapid infrastructure rollout and minimal OPEX and also maintaining high-quality telephony services.

Acronyms

3GPP	3rd Generation Partnership Project
C4	Class 4 Switch
C5	Class 5 Switch
GSM-AMR	GSM Adaptive Multi Rate
GSM-AMR/EFR	GSM Adaptive Multi Rate/Enhance Full Rate
HLR	Home Location Register
MAP	Mobile Application Part
Mobile MGW	Mobile Media Gateway
MSC	Mobile Switching Center
MSS	Mobile Satellite Service
PI	Packetization Interval
POIs	Points of Interconnection
PSTN/MSC	Public Switched Telephone Network/Mobile Switching Center
RNC	Radio Network Controller
ROI	Return on Investment
SBO	Session Bandwidth Optimizer
SGW	Signaling Gateway
STP	Signaling Transfer Point

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