

# Dialogic® I-Gate® 4000 Session Bandwidth Optimizer Core

Datasheet

The Dialogic® I-Gate® 4000 Session Bandwidth Optimizer (SBO) Core is a standalone system that enables cost-effective transport of VoIP traffic in 3G mobile and next-generation switching networks and offers significantly reduced CAPEX and OPEX associated with bandwidth and IP routing resources.

The I-Gate 4000 SBO Core leverages sophisticated in-house bandwidth and IP packet rate optimization technologies, while preserving the quality and reliability of the original VoIP traffic (for example, voice or fax). By combining high-quality VoIP payload optimization and Quality of Service (QoS) protection techniques, the I-Gate 4000 SBO Core can serve as a powerful CAPEX and OPEX savings solution for 3G mobile and VoIP wireline operators.



## Features

**Leverages sophisticated in-house bandwidth and IP packet rate optimization technologies, while preserving the quality and reliability of the original VoIP traffic**

**Automatically detects and processes VoIP sessions without impacting any control or signaling element**

**Combines high-quality VoIP payload optimization and QoS protection techniques**

**Uses unique bandwidth optimization algorithms and techniques to optimize the already-compressed VoIP sessions**

**99.99995% (six 9s) availability**

**Supports wide range of transmission infrastructure**

## Benefits

Enables cost-effective transport of VoIP traffic in 3G mobile and next-generation switching networks

Allows seamless interconnection to deployed IP network topologies

Delivers substantial CAPEX and OPEX savings for VoIP and 3G mobile media gateway bandwidth applications

Reduces VoIP bandwidth by more than 70% without degrading original voice quality

Provides high reliability at both the terminal and network level

Can be used in terrestrial, radiolink, and satellite installations

## High Bandwidth Savings without Compromise

The I-Gate 4000 SBO Core minimizes the bandwidth required for 3G VoIP Nb and luCS sessions, as well as VoIP sessions from service provider or enterprise media gateways, while preserving the original voice quality. The I-Gate 4000 SBO Core automatically detects and processes the VoIP sessions with no need for interworking with a control or signaling element (MSC-server or softswitch).

Many VoIP and 3G mobile media gateways use bandwidth optimization techniques such as low bitrate codecs and silence suppression, but the overall optimization level of these systems can be relatively low. The I-Gate 4000 SBO Core uses distinctive bandwidth optimization algorithms and techniques to optimize the already-compressed VoIP sessions without degrading the original voice quality. An I-Gate 4000 SBO Core can reduce the original VoIP bandwidth by more than 70%.

## IP Network Optimization

The I-Gate 4000 SBO Core reduces the original VoIP packet rate (packets per second) load by more than 98% while providing full application and services transparency. Packet rate reduction helps to release core IP network router resources, which, in addition to yielding CAPEX and OPEX savings, contributes to enhancing the overall QoS.

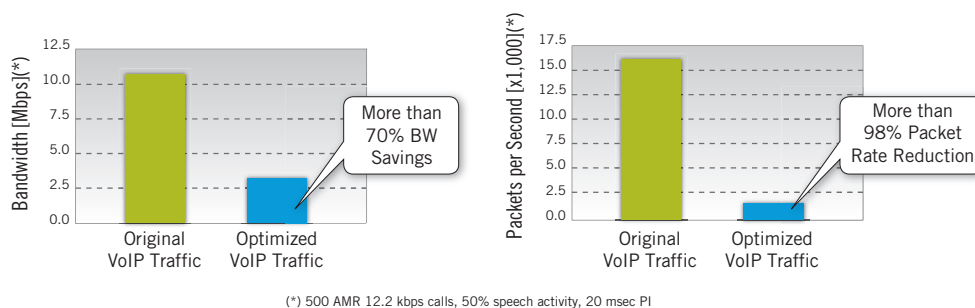


Figure 1. Dialogic® I-Gate® 4000 Session Bandwidth Optimizer Core Performance

## Applications

### 3G Mobile Media Gateway

Mobile carriers deploying 3G network infrastructure, either as part of a migration from a 2G TDM network to a 3G IP core or as part of a new 3G mobile network, are faced with the high CAPEX and OPEX associated with bandwidth and IP network routing resources.

In addition, the transport of packetized voice over an IP network, where the VoIP packets are routed through a non-deterministic router-based network path, poses planning and quality challenges for operators.

The I-Gate 4000 SBO Core provides a cost-effective solution that optimizes the VoIP sessions transported between the 3G mobile media gateways (Nb interface) while maintaining the quality and reliability of the transported calls and significantly reducing IP router processing resources and operations. See Figure 2 for a sample configuration.

The same benefits can be achieved when deploying the I-Gate 4000 SBO Core to optimize the VoIP sessions transported between Radio Network Controllers (RNCs) and 3G mobile media gateways (luCS interface). See Figure 3 for a sample configuration.

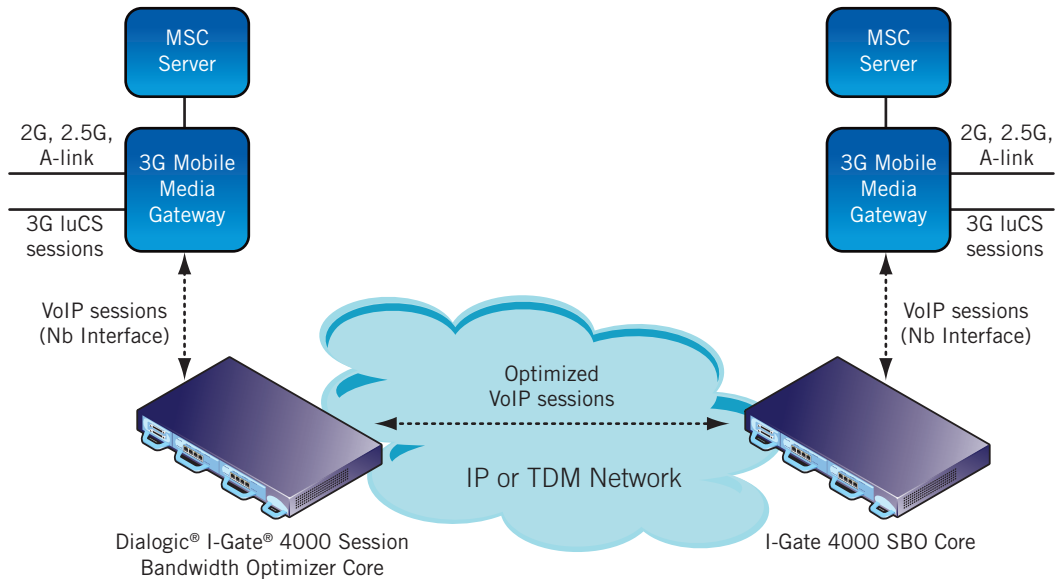


Figure 2. 3G Mobile Network Nb VoIP Sessions Optimization

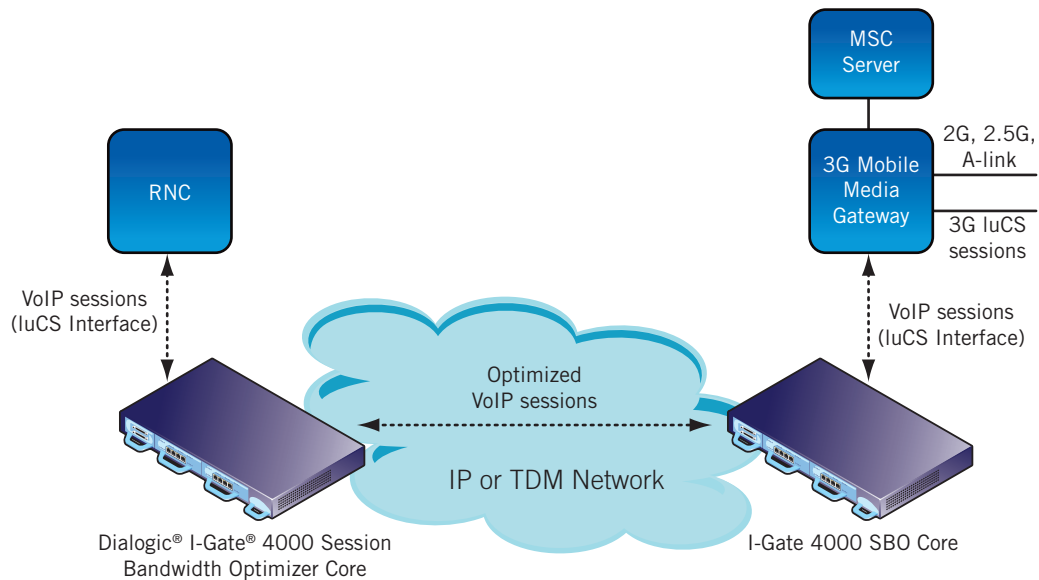


Figure 3. 3G Mobile Network IuCS VoIP Sessions Optimization

## Next Generation Networking VoIP Media Gateway

Today, operators are deploying next-generation switching networks that include VoIP media gateways and softswitches.

Many VoIP media gateways use bandwidth and IP load optimization techniques that provide only a small reduction in bandwidth consumption and the packets-per-second rate.

Designed to fit transparently between media gateways, the I-Gate 4000 SBO Core can provide substantial CAPEX and OPEX savings by further reducing the bandwidth required and the payload rate of the VoIP sessions generated by the VoIP media gateway, while maintaining the quality and reliability of the transported calls. See Figure 4 for a sample configuration.

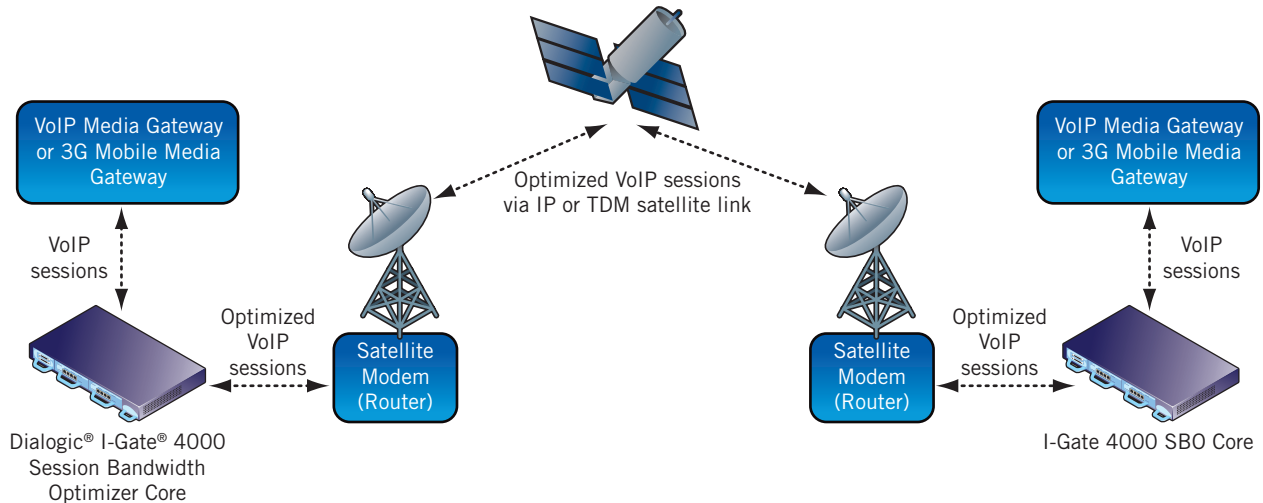


Figure 4. VoIP Sessions Optimization in a Satellite Network

## Enterprise VoIP

The rapid development of broadband access for enterprise customers and the growing demand for IP-based voice and data services poses a challenge to operators aiming to maximize the utilization of their access network infrastructure.

The I-Gate 4000 SBO Core system optimizes the VoIP sessions between multiple VoIP media gateways or IP PBXs while preserving the original voice quality.

The I-Gate 4000 SBO Core system provides a considerable bandwidth savings and a significant reduction in the VoIP packet rate (packets per second), while maintaining the quality of the voice traffic. See Figure 5 for a sample configuration.

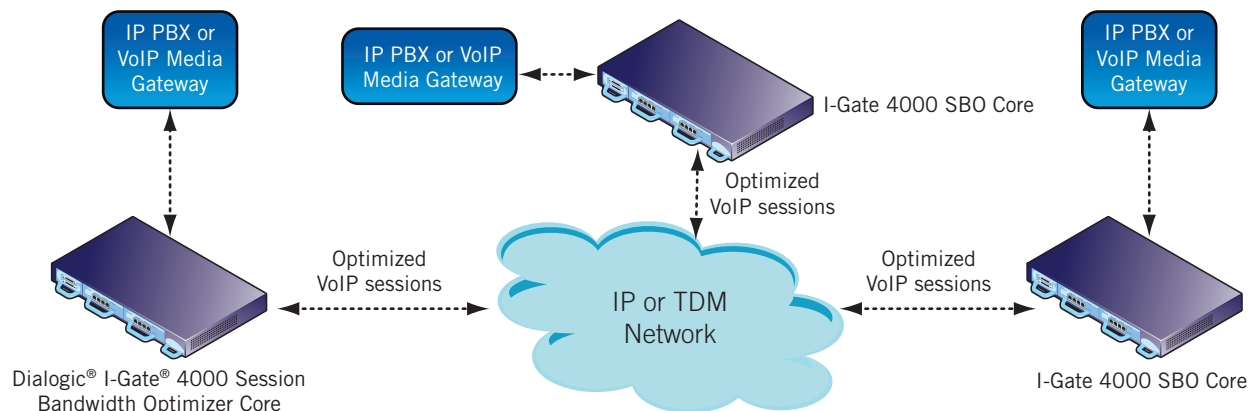


Figure 5. Enterprise VoIP Sessions Optimization

## Technical Specifications

### IP Session Optimization

IP session multiplexing payload aggregation  
IP Protocols header optimization  
G.711 Lossless Optimization

### Voice Codecs

G.711 PCM @64 kbps A-law/ $\mu$ -law  
G.729 CS-ACELP @8 kbps  
G.723.1 ACELP /MPMLQ @5.3, 6.3 kbps  
GSM-AMR (all rates)

### Security

Embedded firewall  
Access list

### QoS Management

Multiple queues  
IP packet classification and marking  
Multiple congestion avoidance mechanisms  
Scheduling and shaping  
Policing

### Ethernet Interfaces

1000BaseT (Gigabit Ethernet)  
100BaseT (Fast Ethernet)  
VLAN Tag — IEEE 802.1q

### TDM Interfaces

E1 complying with ITU G.703 and G.704  
T1 complying with ITU G.703 and G.704

### IP Protocols

IPv4  
SNMPv2 (RFC 1907)  
FTP (RFC 959)  
SNTP (RFC 2030 v4)  
IP (RFC 791)  
UDP (RFC 768)

## Technical Specifications *(continued)*

### Redundancy

Main module redundancy	1:1
Power input redundancy	1:1
Power supply redundancy	1:1
Fan redundancy and Turbo mode	

### Reliability

99.99995% (Six 9s)  
Hot module swapping  
Hitless SW upgrade  
Runtime configuration

### Power

AC power input	240 VAC / 100 VAC (nominal)
DC power input	-48 VDC / -60 VDC (nominal)
Max. DC power consumption	73 Watts
Max. AC power consumption	95 Watts

### Internal Clock Accuracy

4.7 ppm (Stratum 3)

### Electro-Magnetic Compatibility

Europe	EN300 386 V1.3.2 (2003-05) Emission - EN55022 Immunity - EN61000-4-2,3,4,5,6,11
North America	FCC rules CFR 47 part 15
Canada	ICES-003
Japan	VCCI V-3/2001.04
Australia/NZ	CISPR 22:04

### Product Safety

UL60950.1:2003 (US) (selected models)  
CAN/CSA-C22.2 No.60950-1-03 for Canada (selected models)  
CE EN60950-1:2001  
CB-Safety: IEC 60950-1:2001 (selected models)

## Technical Specifications *(continued)*

### Environmental standards

ETSI — ETS 300 019

Telcordia — GR-63 (selected sections)

EU Directive 2002/95/EC (Restriction of Hazardous Substances — RoHS)

EU Directive 2002/96/EC (Waste Electrical and Electronic Equipment — WEEE)

### Operating Temperature Range

-5°C to 50°C

### Dimensions

Height	44.45 mm (1.75" 1U)
Width	435 mm (17.1") (not including mounting brackets)
Depth	350 mm (13.8")

### Approvals, Compliance, and Warranty

Hazardous substances	RoHS compliance information at <a href="http://www.dialogic.com/rohs">www.dialogic.com/rohs</a>
Country-specific approvals	Call your local Dialogic sales representative
Warranty	Call your local Dialogic sales representative



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926 Rock Avenue  
San Jose, California 95131  
USA

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