



# Enterprise Session Border Controllers (E-SBCs)

- Ingate SIParator® / Firewall®
- Ingate Software SIParator® / Firewall®

## Ingate's Product Family

SIParator/Firewall S21  
400 Calls maximum\*



SIParator/Firewall S52  
2000 Calls maximum\*



SIParator/Firewall S95/S97/S98  
4000/8000/20000 Calls maximum\*



Software SIParator/Firewall  
25 - 2000 Calls\*  
For x86 virtual machines

\* Calls = Concurrent RTP Sessions, SIP Trunks, 20 ms G.711 packets

Ingate makes it easy to connect SIP trunks to PBXs, Unified Communications (UC) solutions and call centers.

## Why Ingate?

- |                              |                                |                    |
|------------------------------|--------------------------------|--------------------|
| • Cost-effective             | • SIP normalization and repair | • Interoperability |
| • Ease of installation       | • Support for remote workers   | • Diagnostics      |
| • Scalable 1-20,000 sessions | • Security, firewall           | • SIP routing      |
| • Firewall and NAT traversal | • Quality of Service (QoS)     | • Proven, reliable |

In More Than 10,000 Installations Worldwide

# Functions and Features

## The Enterprise Session Border Controller For Your Network

The **Ingate SIParator®** is a powerful, flexible and cost-effective E-SBC for SIP connectivity, security and interoperability, such as connecting PBXs and Unified Communications (UC) solutions to SIP trunking service providers.

The **Ingate Firewall®**, which is always included in the product, makes the Ingate SIParator an all-in-one appliance for data security as well as the E-SBC.

**Ingate Software SIParator/Firewall** is a software deliverable for virtual machines and for native installation on supported hardware, allowing you to deploy Ingate's award-winning E-SBCs on your own hardware platform.

**Ingate's SIP Trunking Startup Tool** configures the SIParator in three easy steps.

## Feature Summary of the Ingate SIParator/Firewall®

### SIP Security Features

- Topology hiding
- Authentication against a RADIUS server or local database
- Access control
- Intrusion Detection System (IDS)/Intrusion Protection System (IPS)
- Protection against:
  - Denial of Service and Distributed Denial of Service attacks
  - Malformed message attacks
  - Buffer overflow attacks
  - RTP session hijacking
  - Packet-level intrusion
  - Session hijacking and redirection
  - Vmail bombing
  - SIP spam (SPIT)

### SIP Functions

- SIP proxy
- B2BUA on a per call basis
- SIP Registrar
- UDP/TLS/TLS SIP signaling in any combination
- Supports all SIP services
- PBX and ITSP interoperability
- Monitoring any SIP signaling ports
- Load balancing of SIP traffic
- DNS Override for SIP requests
- Strict SIP parser (optional, security enhancing)
- Dynamic port opening/closing, controlled by SIP proxy
- Maintains the state of all sessions and rejects all unrelated SIP packets
- Header manipulation and regular expressions
- Encryption interworking

### VPN Functionality

- X.509 certificate and shared secret
- Generation of X.509 certificate for clients
- PPTP server
- IPsec (3DES, AES, NULL, MD5 and SHA1)

### Firewall/Routing

- Stateful inspection
- Packet filtering
- Provides flexible NAT and PAT
- Handles all data traffic
- Dynamic port forwarding
- Default gateway of the LAN
- DHCP proxy and server

### Monitoring and Diagnostics

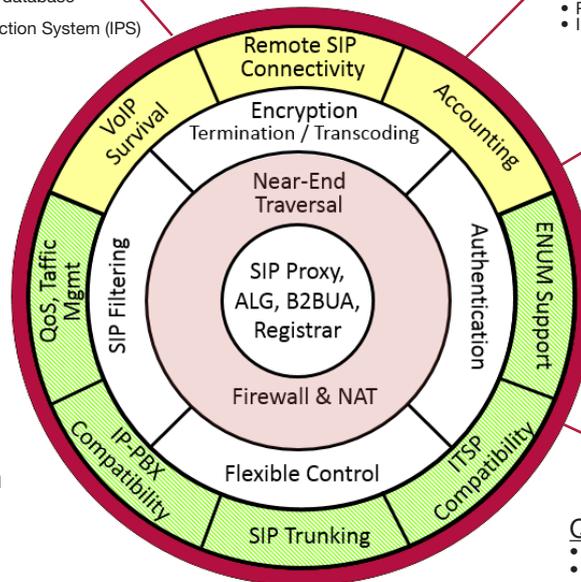
- SNMP V1, V2, V3
- Internal logging to HD
- Logging to PCAP file
- Syslog
- E-mail events
- Automatic check for new releases

### Enhanced SIP Security

Provides signaling (TLS) and media (SRTP) encryption, including transcoding.

### Quality of Service (QoS)

- Prioritization
- Bandwidth limitation
- DSCP (diffserv)
- Classification



## Bringing Global SIP Communications to the Private Network

Ingate SIParators are enterprise session border controllers (E-SBCs) made for small to large enterprises and service providers to provide a secure solution for bringing SIP into the private network. Traditional firewalls block SIP communications. The SIParator works with existing SIP-unaware firewalls to allow and secure SIP traffic, maintaining the existing security infrastructure.

Available in a range of sizes, Ingate's security products offer unprecedented value to enterprises adopting SIP.

Ingate's award-winning SIParators also include a fully featured stateful inspection and packet filtering enterprise firewall. The SIParator, in addition to its SIP functionality, can also be used as the enterprise's main firewall. The built-in firewall also provides a complete and secure environment for the SIParator functions and customer services, all in one and the same product.

Firewall and NAT (Network Address Translation) traversal and SIP security are fundamental functions of an E-SBC. SIP, like all real-time communication protocols, is blocked by firewalls, not being aware of SIP signaling and media. The SIParator's SIP proxy routes the SIP traffic and opens media ports in the built-in NAT/firewall to securely deliver calls to the protected enterprise LAN.

The SIParator connects any type of ITSP's SIP trunk, managed like MPLS or over the public Internet, and also connects home workers and road warriors. Ingate's FENT (Far

End NAT Traversal) function connects SIP phones and soft clients behind remote NAT/firewalls.

## Trusted Network Security for VoIP and Unified Communications

Ingate's SIP proxy architecture grants fully secure NAT/firewall traversal of the SIP traffic.

The SIParator's enhanced security can handle and add TLS (Transport Layer Security) for secure SIP signaling. It also supports and transcodes SRTP (Secure Real-Time Transport Protocol) for encrypted voice and video. The high level of security and confidentiality further includes authentication and replay protection and other firewall means to shield users from eavesdroppers, hackers and spoofer and protect against theft of service.

SIP IDS/IPS (Intrusion Detection System/Intrusion Prevention System) works in tandem with Ingate's existing security technologies, further strengthening security for VoIP, SIP trunking, UC and other SIP applications.

## Diagnostics, Troubleshooting and Monitoring

The SIParator has extensive logging and diagnostic features, to ease troubleshooting and resolve problems quickly. It can also directly generate PCAP traces, allowing more extensive analyses with WireShark and similar tools. The SIParator also has a built-in test agent that can be used to make test calls in either direction to assess MOS scores. The client can also be programmed to perform these tests on a scheduled basis.

# Functions and Features

The voice quality of calls can be monitored and reported via RADIUS, including packet loss, jitter, delay, MOS score and more.

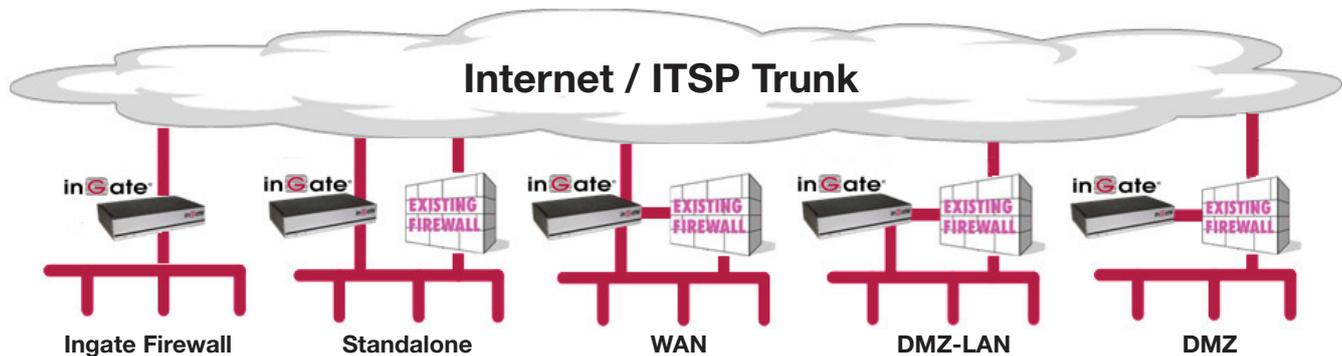
## Reliability, Load Balancing and High Availability Failover

The SIParator fully supports load balancing and failover using DNS SRV and speeds up failover by monitoring SIP servers. In addition, the SIParators can be used in failover pairs,

protecting from catastrophic failure. By synchronizing configuration and long time states (like SIP registrations), the idle device takes over at the Ethernet level should the active device fail. This Ingate failover method also protects against software faults, since it directly allows dropped calls to be setup freshly again. The largest Ingate E-SBCs (S95/S97/S98) are highly protected against hardware failure with redundant dual power supplies and RAID 1 hard disks.

## Flexible Network Deployment Scenarios

The Ingate SIParator/Firewall can be implemented in various ways to fit the customer network:



QoS (voice quality over data-crowded accesses) is provided by the SIParator. DMZ-LAN & DMZ modes also require QoS setup in existing firewall.

## Software Modules and Licenses

**SIP Trunking** allows 1 – 100 trunk groups and configures the SIP trunk between IP-PBXs and SIP trunking services in three easy steps. Licenses for the number of concurrent calls needed over a particular trunk group are easily added. The Back-to-Back User Agent (B2BUA) brings extensive SIP normalization for interoperability and a dial plan including support for regular expressions, header manipulation, prefix addition / removal and much more.

**Remote SIP Connectivity** lets remote workers leverage the benefits of Unified Communications by performing Far-End NAT Traversal (FENT) to allow home workers and road warriors to use their SIP clients behind well-behaved remote NATs and firewalls. One simply adds the number of Remote User SIP Session licenses needed.

**Quality of Service (QoS)** prioritizes voice and video traffic and allocates bandwidth to assure the highest voice quality, undisturbed by data traffic. This is a standard feature and also

enables computation and reporting of Mean Opinion Scores (MOS) and other voice quality metrics on a per call basis.

**Ingate VoIP Survival** is another standard feature, allowing an enterprise using a hosted PBX solution to fail over to the Ingate, to enable internal calls and redirect outside calls to a local PSTN gateway.

**SIP Registrar** user licenses make the Ingate SIParator or Firewall the primary registrar server and permits SIP clients to register.

**Q-TURN** session licenses enable WebRTC to be used with quality on security-restrictive enterprise networks. A built-in TURN server between the LAN and WAN allows and prioritizes real-time traffic, separating it from data traffic often congesting the Internet access. It can also be used standalone as a conventional TURN server for service providers' users, and works with WebRTC and other real-time protocols using ICE/STUN/TURN (product not yet launched - awaiting standards finalization.)

## The Ingate Advantage

**For enterprises**, Ingate provides for a seamless transition to SIP and Unified Communications globally. Ingate enables fast, simplified deployments.

**For service providers**, Ingate products offer a high-quality, reliable SIP trunk demarcation point between the customer's IP-PBX and the service provider network. Placed at the customer network edge (locally as a CPE, at the service provider or in the cloud), Ingate provides secure firewall traversal, interoperability, diagnostics and security to simplify SIP trunk deployments whether over a managed connection or the public Internet.

Since 2001, Ingate® Systems has been developing firewall technology to enable SIP-based communication to provide the best access for telephony, global real-time and unified person-to-person communication. Ingate offers enterprises, service providers and carriers elegant solutions for SIP trunking and trusted real-time communications beyond the LAN. Ingate products are used by retail companies, financial institutions, industrial firms, government agencies, call centers and small-to-large enterprises throughout Europe, Asia and North America.

# Technical Specifications Ingate SIParator® / Firewall®

| Feature                                                                                   | Ingate SIParator S21 | Ingate SIParator S52 | Ingate SIParator S95 | Ingate SIParator S97 | Ingate SIParator S98 |
|-------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Interfaces 10/100/1000 Mbps (10 Gbps opt)                                                 | 4                    | 6                    | 6, 2 Gbps opt        | 6, 2 Gbps opt        | 6, 2 Gbps opt        |
| Redundant power supply                                                                    | No                   | No                   | Yes                  | Yes                  | Yes                  |
| Type of disk                                                                              | CF                   | HDD                  | RAID 1               | RAID 1               | RAID 1               |
| Dimension WxDxH (mm)                                                                      | 300x145x44           | 438x292x44           | 426x607x43           | 426x705x43           | 426x705x43           |
| Certifications                                                                            | CE, FCC, UL, CB      |
| NEBS (Network Equipment-Building System)                                                  | No                   | No                   | No                   | Compliant            | Compliant            |
| Power consumption (typical)                                                               | 25W                  | 100W                 | 180W                 | 200W                 | 250W                 |
| Power supply 100 – 240 V AC, (48 V DC opt.)                                               | External             | Internal             | Internal             | Int. (DC opt.)       | Int. (DC opt.)       |
| Automatic check for new releases                                                          | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Management/Configuration options: Web GUI (HTTP, HTTPS) and CLI (SSH, serial cable)       | Yes                  | Yes                  | Yes                  | Yes, also DRAC       | Yes, also DRAC       |
| SNMP, V1, V2, V3                                                                          | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Max number of VLANs (802.1q compliant)                                                    | 32                   | 128                  | 512                  | 512                  | 512                  |
| Internal log to HD                                                                        | No                   | Yes                  | Yes                  | Yes                  | Yes                  |
| Logging to PCAP file                                                                      | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Syslog                                                                                    | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| E-mail events                                                                             | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Support for failover multiple ISPs                                                        | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Failover to secondary inactive device                                                     | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| External RADIUS server authentication for IPsec, GUI and SIP                              | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Unlimited data users                                                                      | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Free software upgrades, incl. with Support                                                | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <b>Firewall functionality*</b>                                                            |                      |                      |                      |                      |                      |
| Stateful inspection                                                                       | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Packet filtering                                                                          | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Throughput (Mbit/s) (1500 byte packets)                                                   | 400                  | 1 000                | 4 500                | 4 500                | 4 500                |
| Packets per second (46 byte packets)                                                      | 50 000               | 250 000              | 500 000              | 900 000              | 2 200 000            |
| DHCP client and PPPoE                                                                     | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| DHCP server                                                                               | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| DHCP proxy                                                                                | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Proxies for TCP, UDP and FTP                                                              | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Flexible NAT and PAT                                                                      | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <b>VPN functionality</b>                                                                  |                      |                      |                      |                      |                      |
| VPN tunnels                                                                               | 100                  | 600                  | 1200                 | 1 600                | 1 600                |
| 3DES (168) (Mbit/s) (1438 byte packets)                                                   | 20                   | 50                   | 100                  | 130                  | 130                  |
| AES (128-bit) (Mbit) (1438 byte packets)                                                  | 30                   | 100                  | 200                  | 270                  | 270                  |
| X.509 certificate or shared secret                                                        | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Generating of X.509 certificates for clients                                              | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| PPTP server                                                                               | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| IPsec (3DES, AES, NULL, MD5 and SHA1)                                                     | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <b>SIP functionality</b>                                                                  |                      |                      |                      |                      |                      |
| SIP proxy                                                                                 | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| SIP registrar                                                                             | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| SIP traffic to private IP addresses (NAT/PAT)                                             | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| SIP Connection set up, max calls/s                                                        | 40                   | 60                   | 80                   | 100                  | 100                  |
| RTP data delay (10Mbps/100 Mbps)                                                          | 0.19/0.08 ms         |
| Number of concurrent calls (20 ms G.711 voice packets)                                    | 400                  | 2000                 | 4000                 | 8 000                | 20 000               |
| Secure VoIP sessions (TLS + SRTP)                                                         | 300                  | 1500                 | 2500                 | 3 000                | 8 000                |
| Billing and authentication of SIP users from an external RADIUS server                    | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| SIP Connect compliance                                                                    | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <b>Add-on licenses</b>                                                                    |                      |                      |                      |                      |                      |
| Concurrent Calls SIP Trunk Session Licenses (CCS) can be added to up to 100 Trunk groups. | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Remote User SIP Session Licenses (RUS), can be added for the number of users needed.      | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| SIP Registrar User Licenses (SRU), can be added for the number of clients needed.         | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |

\* The Firewall functions in the SIParator/Firewall product are hidden by default — can be reconfigured to be available.

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Ingate's mission is to enable the best access for telephony, global real-time and unified person-to-person communication for everyone.