GENBAND

DRIVING THE **NETWORK EVOLUTION**

S3

The S3™ delivers secure carrier class, real-time communications for fixed and mobile operators, enabling new service offerings, rapid revenue generation and network cost-savings. With extensive security, policy enforcement, and session management capabilities, the S3 brings service providers advanced levels of functionality, flexibility, and performance at IP network borders. The S3 2U Server scales up to 64,000 concurrent sessions and 250 CPS. At the top of its class, GENBAND's high performance S3 on GENiUS is massively scalable with signaling bandwidth up to 12Gbps, media bandwidth up to 24Gbps, and up to 384,000 concurrent sessions and 1,500 Calls Per Second.

Carrier-to-Carrier: The S3 provides secure connectivity with granular controls to proactively manage interconnect quality, capacity, and availability, supporting bilateral and multilateral carrier interconnect agreements for national call routing, international long distance, and local PSTN termination.

Carrier-to-Enterprise Access: Normalizing traffic for seamless connectivity between carrier and enterprise networks, the S3 provides extensive SLA management, SIP trunking, PBX/IP PBX and H.323/SIP interworking, and call center and hosted VoIP application support.

Carrier-to-Consumer Access: The S3 protects the network edge with overload protection via multi-stage rate limiting policies, registration throttling, and subscriber authentication and authorization, enabling service providers to deliver highly differentiated voice and multimedia services.

Security: The S3 protects service provider and enterprise networks by providing multi-layered security against a wide variety of Internet threats meant to disrupt or disable IP networks including flood attacks, DoS/DDoS attacks, and SIP signaling attacks. Capabilities include intelligent access and admission control, private-to-public IP network address and port address translation (NAT and PAT) and NAT traversal, and topology hiding.

Hardware: Based on a 14-slot ATCA chassis, the S3 on GENiUS uses a modular single board computer solution that offers carrier-class, symmetric multiprocessing performance with next generation dual processors, in addition to full high-availability (HA) with sub-second failover, hot-swappable components, and in-service platform upgrades. The S3 2U Server is based on a carrier-grade 2U NEBS configuration, including hot standby for redundancy and high availability with state migration of active sessions in less than 200 milliseconds.

Interoperability and Interworking: The S3 normalizes the network edge, providing a wide range of flexible policies to seamlessly interoperate with multi-vendor and multi-protocol VoIP equipment. Normalization includes ANI/DNIS, network address, protocol, DTMF, and codec interworking for smooth interworking between interconnect and access networks. Compatibility across firewalls, application servers, proxies, endpoints, media gateways, and softswitches is ensured with a large community of interoperability partners. Able to separate media and control planes for efficient decoupled networks, the S3 supports 3GPP™, IMS/LTE, NGN, MSF, and PacketCable™ networks.

Advanced Routing via MSX Feature Set: The MSX feature set in the S3 provides intelligent routing at interconnect borders, including adaptive, least cost, and percent-based routing as well as dynamic route hunting. It enables state-of-the-art dynamic routing of traffic between interconnect peers based on call completion rates, route profit, and route availability. Sophisticated routing intelligence reduces IP-IP session routing complexity, and policy enforcement enables advanced traffic engineering at the session layer for managed service assurance and SLA compliance. The MSX feature set also facilitates VoIP traffic management by monitoring and maximizing utilization of high-value feature servers, application servers, and media gateways.

Policy Enforcement, SLA Management and Session Visibility: The S3 provides a comprehensive SLA management solution with multi-staged policies to admit, inspect, and shape traffic. It manages network access using real-time and aggregated admission control policies; prevents service theft by authenticating users, inspecting media address, and codec; and shapes traffic per QoS marking. Visibility is provided into each IP session by generating real-time session detail records (SDRs) with over 90 fields.

IP NETWORK SECURITY

- Access Control Firewall, including Signaling Control of Media Pinholes; Firewall/Hosted NAT traversal – with and without SIP ALG-enabled NAT device
- Topology Hiding, Rogue RTP Detection, Blacklisting, TLS
- Session Admission Control
- Denial of Service

RATE LIMITING AND SLA ASURANCE

- Admission Control via Call Utilization and Capacity
- SIP Method-based Transaction Rate Limiting
- Layer 2,3 Rate Limiting, including TCP, ICMP, Syn; Registration Rate Limiting
- Detect and Drop Malformed Packets
- Per Flow Bandwidth RTP Policing, Codec Policing
- Optimized registration

INTERWORKING FUNCTION AND INTEROPERABILITY

- B2BUA, Outbound Proxy Mode (OBP)
- H.323/SIP Protocols: H.323/SIP Interworking Function (IWF); H.323/SIP RADIUS AAA Support; H.323 Version 4 with Version 2, 3 Compatibility; H.323 Fast and Slow Start; SIP timers, media inactivity timers; SIP over UDP/ TCP/ TLS; SIP/Tel URI; SIP-T/SIP-I; SIP Support for Instant Messaging and Presence
- H.245 Tunneling Support; H.225 RAS Messages Support for Alternative Gatekeeper Functionality; Stateful H.225 and H.245 Routing
- Support for 3GPP Rx Interface (PCRF)
- Endpoint detection availability
- Overlapping realm and IP signaling addresses
- Simultaneous Peering with Multiple Gatekeepers and Gateways

ADVANCED ROUTING SERVICES

- Adaptive, Least Cost, Percent-based Routing
- Digit Matching/Manipulation
- Called Number Translation; Calling Number Translation/ Randomizations; Call Blocking; Call Loop Detection and Prevention
- Call Route Hunting with Route Advances Determined by Static and Dynamic Parameters
- Flexible policy to enable Hosted or Direct Media routing between endpoints behind the same NAT
- Source and Destination Trunk Groups
- 2 Million routes
- ENUM interface
- DNS SRV interface
- Service Partitioning Based on Customer and Service Type

TRANSCODING AND MEDIA ADAPTATION

- Voice Transcoding and DTMF Translation, SIP Info, SIP Notify, RFC 2833; G.711/T.38 Fax Relay

SLA REPORTING AND MANAGEMENT

- Comprehensive Session Detail Records (SDRs) based on Trunk Groups, Signaling, and Protocol Information
- Over 90 SDR fields, QoS Metrics, RADIUS AAA Support
- CLI, SNMP (v2, v2c, v3), syslog, SSL, HTTPS, Web Services, User role-based system access

REGULATORY COMPLIANCE

- Lawful Intercept (LI)/CALEA, E911 prioritization

PERFORMANCE

- High Availability Active/Standby System with Call State Mirroring of Signaling and Media with no Loss of Service
- Call Rate - 1,500 Call Attempts per Second (CPS)
- Real World Session Capacity – SIP-SIP – up to 384,000 Concurrent Sessions/Active Calls

S3 ON GENIUS HARDWARE SPECIFICATIONS

- 14-slot ATCA chassis using a modular single board computer solution
- Symmetric multiprocessing performance with next generation dual processors
- Full high-availability (HA) with sub-second failover
- Hot-swappable components
- In-service platform upgrades