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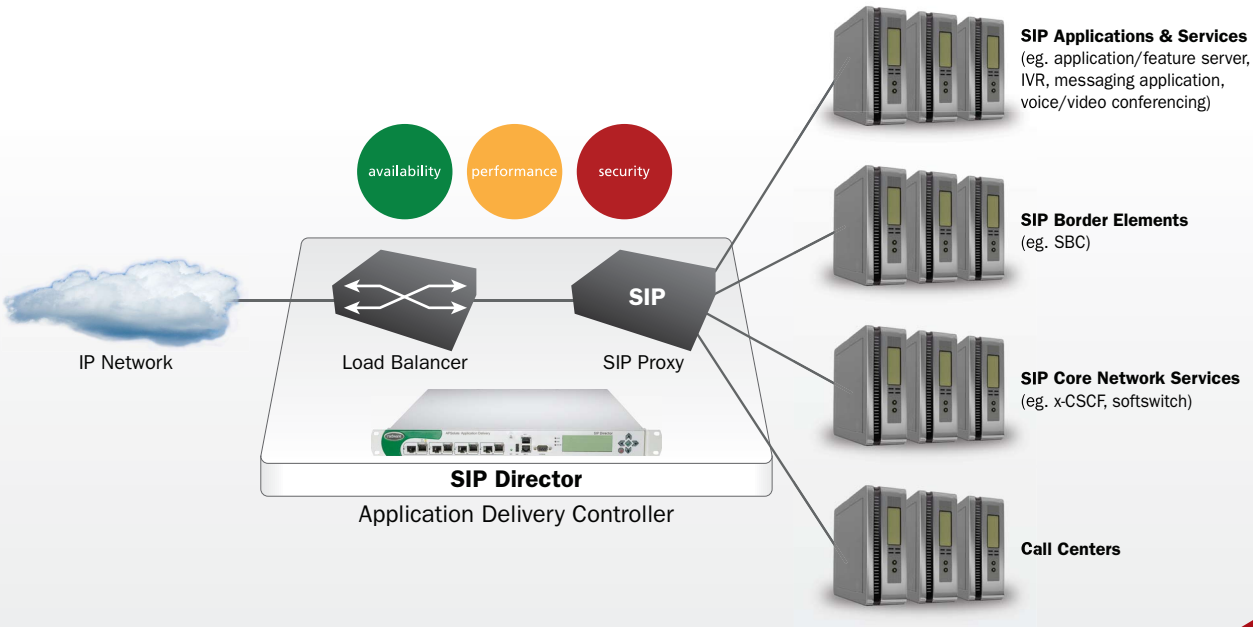
availability | performance | security

# SIP Director Data Sheet


Radware's SIP Director is a SIP Application Delivery Controller that allows operators, vendors and system integrators to guarantee the high availability, performance and security of SIP-based applications and services. SIP Director utilizes Radware's 10 years of experience in application delivery, providing:

- High availability, fail-over and disaster recovery
- Scalability and performance
- Flexibility
- SIP interoperability and feature support
- System security
- Reduced time-to-market

For providing this solution, Radware has adopted the ITU Open Communication Architecture Forum (OCAF) recommendation for SIP Carrier Grade Open Environment Components (CGOE) specifying a three tiered SIP service architecture. Within the scope of this architecture, Radware provides both IP load balancing and SIP load balancing using an internal purpose-built SIP Proxy. The use of a purpose-built SIP Proxy for the handling of SIP traffic allows a standard and non-intrusive operation of the SIP Director.



## High Availability, Fail-over and Disaster Recovery

Radware's SIP Director provides optimal call completion, failure recovery and disaster recovery.

SIP Director provides service continuity by monitoring availability for all SIP proxies and application servers and distributing incoming sessions between available servers.

A backup server may be defined for each online server allowing for server cluster architecture and state sharing. Once an online server failure is identified traffic is automatically routed to the backup server. With this mechanism in place, SIP Director guarantees failure bypass, at all call states, thus providing optimal call completion.

Call and user admission control are used to avoid forwarding of session messages and registration requests to overloaded servers thus assuring server availability.

The Radware solution is designed as a fully redundant system with a multi-box approach avoiding single point of failure. Internal resilience is supported using the IETF protocol - Virtual Router Redundancy Protocol (VRRP) - defined in RFC 3768.

## Scalability and Performance

Radware's SIP Director functions as an intelligent SIP-aware application delivery controller capable of handling call capacities of 10 million Busy Hour Call Attempts (BHCA). It offers clustering of SIP servers to any required capacity by load balancing and distribution of SIP messages between servers based on parameters such as call handling capacity of each server.

SIP Director offers intelligent SIP-aware persistency capabilities based on pre-defined methods (Call ID, Conference ID and User) or any other SIP parameter. It also provides automatic outbound call persistency critical for gateways and B2BUAs to ensure that requests will continue to be routed to the server that initiated the related call.

Traffic acceleration is achieved by the offloading and optimizing of computing intensive tasks - such as TLS handling - from the application server to dedicated SIP Director hardware. SIP Director also supports standard connection optimization schemes (based on the specification - Connection Reuse in the Session Initiation Protocol) such as connection reuse and aliasing when using reliable transport. This frees up server resources which in turn increase its total service capacity and performance.

## Interoperability

SIP Director helps in minimizing interoperability and feature support challenges by implementing a high capacity RFC 3261 compliant SIP proxy engine with extensive feature and extensions support and by performing protocol mitigation. This extensive standard support includes a long list of RFCs and Internet Drafts (3261, 3263, 3265 and many IMS features) as well as specific requirements of 3GPP and TISPAN. The internal purpose built SIP Proxy allows for the standard function and implementation of SIP Director, increasing interoperability.

The solution was pre-tested at private and public interoperability events (e.g. SIPit) guaranteeing a high level of interoperability with all types of SIP entities.

## Flexibility

SIP director comes with an easy–to-use configuration interface giving users and administrators full control over routing, load balancing and fail-over rules. The system performs in-depth SIP message analysis allowing for setting of SIP message based routing rules. These rules can be defined according to service classification, user classification, any message part and system status (i.e. load).

SIP Director performs FW/NAT traversal for SIP signaling allowing flexibility in system architecture and location of SIP Director in the network including the placement of it as a border solution.

Flexibility is also provided via intelligent bandwidth management allowing for traffic classification and bandwidth allocation based on traffic type. This includes SIP internal classification for example, allowing higher bandwidth for a specific user class such as authenticated users or group of users.

## Security

Radware's SIP Director provides SIP user and network service security via signature-based Intrusion Protection System (IPS) and behavioral anomaly detection for flood mitigation (DDoS). It delivers 'zero-touch, zero-minute, zero false positives' detection and mitigates SIP layer floods (targeting SIP devices) immediately, thwarting attacks to ensure service continuity. SIP Director inspects and verifies SIP message integrity and protects the SIP servers and network elements (such as network edge SBCs) against specific SIP protocol exploits. In addition, Radware Security Update Service provides automatic updates for SIP signature groups to safeguard against new exploits and emerging threats. Advanced worm propagation and Bot detection algorithms provide additional security to protect the 'trusted' zone behind the SBCs.

## Time-To-Market

Building a solution that solves challenges of high availability, resilience, scalability, security and interoperability will usually result in a long development cycle which in turn causes delays in release of product to market. Radware's SIP Director opens the door for vendors, system integrators and carriers to enhance and accelerate solutions and systems deployed in the network by providing a ready to use configurable out-of-the-box carrier grade solution that requires no coding for its deployment.

SIP Director supports all common SIP transports thus functioning as the server's GW to other transports not supported by it. By that, SIP Director guarantees on-the-fly support for SIP/TCP, SIP/TLS or SIPS/TLS connecting with SIP Servers, Proxies, Gateways and UAs.

## Features & Benefits

| | |
|---|---|
| **High Availability** | |
| Three-tier high availability | Complete High Availability (HA) of system on three levels:<br>1. SIP Director monitors and identifies failure of SIP servers and automatically routes traffic to backup server<br>2. Internal resilience - SIP Director performs internal monitoring and HA of the internal proxy components<br>3. Using VRRP SIP Director performs high availability between two SIP Director products |
| Intelligent SIP application health monitoring and failure recovery | • SIP Director uses the SIP OPTIONS method for periodic and configurable health checks.<br>• Service continuity (1-to-N server backup)<br>• Mid-call failure recovery (specific 1-to-1 server backup) |
| Call / User Admission Control | Automatic no new calls/registrations state based on call/user admission control (protect the servers from extra load) |
| **Scalability** | |
| SIP Call / Message Load Balancing | Intelligent and configurable load balancing based on a wide range of algorithms – Round Robin, Weighted Round Robin, Least number of calls, Least number of users and user defined parameters. |
| SIP-aware persistency | • SIP-aware persistency by pre-defined schemes (Call ID, Conference ID, User) as well as any other SIP parameter<br>• Automatic persistency for outbound calls (crucial for B2BUA / Gateways) |
| Performance acceleration | • TLS offloading – SIP Director performs hardware-based processing of TLS CPU intensive tasks such as key generation and encryption/decryption<br>• SIP Director enhances system performance by limiting the number of connections opened by SIP Director to any SIP entity. This technique is specifically beneficial when TLS is used:<br>1. Connection reuse –Saving the need to open multiple connections per each call<br>2. Aliasing – Using the same connection for incoming and outgoing messages of one or more calls |
| **Interoperability** | |
| Transport agnostic and conversion | • Supports SIP over UDP/TCP/TLS<br>• Performs transport conversion based on message source and destination support |
| SIPS conversion | SIP Director can convert between the standard method (RFC 3261) that defines SIPS URI for TLS and the previous method of using SIP URIs for TLS, thus increasing interoperability |
| SIP Proxy | SIP Director includes an integrated SIP Proxy. This allows it to perform its operations in a SIP standard manner |
| Standard compliant | Supports all major SIP RFCs and internet drafts such as RFC 3261, 3263, 3265 as well as many IMS and TISPAN extensions |
| Field tested for interoperability | SIP Director has been tested with leading SIP based solutions both on private interoperability initiatives and public ones such as SIPit |
| **Flexibility** | |
| SIP intelligent switching and system context-aware routing | Highly configurable rule-based SIP routing. Rules may be based on Layer 3/4 information, SIP message content and system status or any combination of these. This provides the best service selection per user capabilities. |
| FW/NAT traversal | Based on outbound standard or proprietary mechanism |
| **Time-to-Market** | • Out-of-the-box Carrier Grade Compliance<br>• Easily configurable, no coding required<br>• Interoperability with SIP Servers, Proxies, Gateways and UAs<br>• SIP TLS/TCP on-the-fly enablement |
| **Security** | |
| User and Network protection<br>Privacy enablement | • DoS flood protection (SYN, TCP, UDP floods)<br>• SIP application flood mitigation<br>• SIP vulnerability protection<br>• Configurable Access Control<br>• Authenticated TLS Encryption |

## Technical Specifications

| Features | OnDemand Switch 1* |
|---|---|
| License Based Capacity | SIP Director 300: Up to 3,000 concurrent calls, 200Mb throughput, 250 CPS<br>SIP Director 600: Up to 10,000 concurrent calls, 4Gb throughput, 500 CPS<br>SIP Director 1200: Up to 50,000 concurrent calls, 4Gb throughput, 1,000 CPS<br>SIP Director 2400: Up to 100,000 concurrent calls, 4Gb throughput, 2,000 CPS<br>SIP Director 10000: Max concurrent calls**, 4Gb throughput, Max CPS** |
| Processor | AMD Opteron dual-core 2.2 GHz |
| Memory | Up to 2GB |
| Gigabit/GBIC Ports | 4 Gigabit Ethernet Ports (Copper or Fiber) |
| 1000Base-SX/LX/ZX Ports | All Fiber ports delivers SX/LX/ZX interfaces depending on GBIC |
| 1000Base-SX (850 nm) Operating Distance | • 62.5 micron MM fiber .2 m to 275 m<br>• 50 micron MM fiber .2 m to 550 m |
| 1000Base-LX/ZX Operating Distance | • LX: Up to 10 km (6.2 mi)<br>• ZX: Up to 80 km (49.7 mi) |
| USB Port | On front panel |
| LCD Screen | On front panel |
| RS-232C Console | • DB-9 serial connection<br>• Female DCE interface for out-of-band management |
| Dimensions and Weight | 1U:<br>• Width: 424 mm (17 in.)<br>• Depth: 600 mm (24 in.)<br>• Height: 44 mm (1.7 in.)<br>• Weight: 9.1 kg (20 lbs)<br>2U (dual power supply):<br>• Width: 424 mm (17 in.)<br>• Depth: 600 mm (24 in.)<br>• Height: 88 mm (3.4 in.)<br>• Weight: 10.4 kg (23 lbs)<br>EIA Rack or Standalone: 484 mm (19 in.) |
| Environmental | • Operating temperature: 0°C to 40°C (32°F to 104°F)<br>• Humidity: 5% to 95% non-condensing |
| Power | • Auto-range supply:<br>o AC: 90V - 264V<br>o DC: 36V - 72V<br>• Frequency: 47Hz - 63Hz<br>• Power consumption: 151W<br>• Heat dissipation: 515 BTU/h<br>• Dual power supply (AC/DC) in 2U form |
| Certifications | • Safety: EN 60950; UL 1950, CSA 22.2 No 950<br>• EMI: EN 55022 Class A, EN 50024 FCC, Part 15B Class A<br>• CE, FCC, VCCI, CB, LVD, TUV, UL/cUL, CCC, RoHS |
| | **XS2*** |
| Memory | 3 GB |
| Network Interfaces | 2× 10/100/1000BaseTX ports<br>RS-232C connector |
| Dimensions and Weight | Width: 430.0 mm (16.93 in.)<br>Depth: 504.7 mm (19.87 in.)<br>Height: 43.7 mm (1.72 in.)<br>Weight: 7.25 kg (15.87 lbs)<br>EIA rack or standalone: 482.6 mm (19 in.) |
| Environmental | • Operating temperature: 0°C to 40°C (32°F to 104°F)<br>• Relative humidity: 5% to 95% non-condensing |
| Power | Auto-range supply: 100 V to 250 V<br>DC: 50 Hz to 60 Hz<br>Power consumption: 148 W<br>Heat dissipation: 505 BTU/h |
| Certifications | EMI : EN 55022, FCC Part 15B Class B |

** Maximum capacity of box; no software license limitation

* SIP Director is based on two hardware components: A load balancing SIP Director component (OnDemand Switch 1 platform) and a proxy component (SIP Director PS; XS2 platform). Configuration and management is performed via the load balancing SIP Director component.