Oracle Communications Subscriber-Aware Load Balancer

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COMMUNICATIONS

Oracle Communications Subscriber-Aware Load Balancer enables linear, non-disruptive scaling of capacity up to ten million subscribers from a single Session Initiation Protocol (SIP) Internet Protocol (IP) address. It supports the delivery of any IP Multimedia Subsystem (IMS), Rich Communications Services (RCS), or next-generation network (NGN) service as well as any SIP application—voice, video, presence, messaging, and multimedia—over any mobile or fixed line access network, including the internet.

Linear, non-disruptive SBC capacity

APPLICATIONS

- Session border controller (SBC) or Unified Session Manager clustering
- Any subscriber-based IP Multimedia Subsystem (IMS) or non-IMS service
- Any private or public, fixed or mobile access network

KEY FEATURES

- Adaptive, session-aware load balancing of Session Initiation Protocol (SIP) sessions
- Dynamic expansion and contraction of subscriber capacity
- Intracluster protocol for state exchange between Oracle Communications Subscriber-Aware Load Balancer and SBC cluster members
- Low-latency, hardware-based control plane
- Geographical distribution of SBC clusters
- Carrier-class high availability

KEY BENEFITS

- Maintains network wide SIP session and subscriber awareness for intelligent SBC selection and rebalancing
- Scales to support up to 10 million subscribers with no additional signaling latency
- Delivers greater security than SIP-

Overview

Oracle Communications Subscriber-Aware Load Balancer operates on Acme Packet 6100 platform and is used to front-end clusters of Oracle Communications Session Border Controller (SBC) or Oracle Communications Unified Session Manager (USM), for SIP signaling. The Oracle Communications Subscriber-Aware Load Balancer is a high-performance Layer 5/Layer 7 aware load balancer optimized for clustering SBCs. It provides dynamic, adaptive load balancing of subscribers based on SBC availability and health score, subscriber capacity, and load and session state.

The Oracle Communications Subscriber-Aware Load Balancer features carrier-class high availability. Deployed as 1:1 active-standby units, Oracle Communications Subscriber-Aware Load Balancers checkpoint configuration and cluster state to ensure no loss of active sessions in the event of single system failures.

An Oracle Communications Session Border Controller cluster scales subscriber capacity without requiring architectural forklifts or network disruptions. As all elements of the cluster are SIP subscriber and session-aware, it provides a superior solution in terms of scalability, dynamic adaptive load balancing, redundancy, and management compared to traditional Layer 3/Layer 5 web load balancers and SIP redirect servers.

High-Capacity, High-Throughput Access SBC and USM Clusters

Oracle Communications Subscriber-Aware Load Balancer enables the creation of Oracle Communications Session Border Controller and Oracle Communications Unified Session Manager clusters that can each support up to ten million subscribers from a single IP address for SIP signaling.

Real-time Transport Protocol (RTP) media flows directly from endpoints to the SBCs when needed and can be released within an access network, maximizing cluster throughput and minimizing media latency.

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aware load balancers

- Simplifies endpoint management
- Protects against site disasters and loss of connectivity
- Satisfies all access border control requirements
- Protects SBC investment
- Allows cluster composed of heterogeneous members and protects each against overload

Dynamic, Adaptive Stateful Load Balancing

Oracle Communications Subscriber-Aware Load Balancer distributes subscribers to specific SBCs in the cluster at time of registration based upon SBC availability, health score, capacity, and current load. This information is exchanged between SBCs and Oracle Communications Subscriber-Aware Load Balancer using an intra-cluster protocol. Moreover, if the cluster is composed of dissimilar members (such as a mix of SBCs based on Acme Packet 4600 and Acme Packet 6300, or even on virtualized platforms such as Oracle X5-2, for example) Oracle Communications Subscriber-Aware Load Balancer uses each individual member's performance characteristics so as to optimize performance of the cluster as a whole without overloading slower members.

SBCs can be easily added or even removed from the cluster without any service disruption, assuming that sufficient capacity exists in the cluster. Subscribers are redistributed across the reconfigured cluster only when they do not have active calls or sessions in progress.

Low-Latency, Hardware-Based Signaling Plane

Only the packets of a subscriber's initial SIP REGISTER message are processed by the Oracle Communications Subscriber-Aware Load Balancer's software system.

Once a subscriber is assigned to a specific SBC, all subsequent SIP signaling messages are processed in hardware. Hardware latency is an order of magnitude lower than software processing latency.

Catalyst to NFV Transition

If desired, Oracle Communications Subscriber-Aware Load Balancer can help in operators' transition to virtualization by enabling a strategy where virtualized SBCs may be introduced in SBC clusters alongside their physical counterparts.

Such so-called hybrid clusters may support multiple services, applications, and access networks.

- Any service: mobile, residential, or enterprise
- Any application: voice, video, presence, messaging, videoconferencing, content and video share, unified communications, and collaboration
- Any access network: 3G, Long-Term Evolution (LTE), Worldwide Interoperability for Microwave Access (WiMAX), DSL, cable, fiber to the x (FTTx), leased line, internet, IPv4, IPv6, and IPv4/IPv6 interworking.

Oracle's network session delivery and control infrastructure enables enterprises and service providers to manage the many challenges in the delivery of IP voice, video, and data services and applications. Service provider solutions are deployed at network borders and in the IP service core to help fixed-line, mobile, wholesale, and over-the-top service providers optimize revenues and realize long-term cost savings. In the enterprise, session delivery infrastructure solutions seamlessly connect fixed and mobile users, enabling rich multimedia interactions and automating business processes for significant increases in productivity and efficiency.

The following Oracle products are part of the network session delivery and control infrastructure:

• Oracle Communications Session Border Controller
• Oracle Communications Session Router
• Oracle Communications Subscriber-Aware Load Balancer
• Oracle Communications Unified Session Manager
• Oracle Communications Mobile Security Gateway
• Oracle Communications Core Session Manager
• Oracle Enterprise Session Border Controller
• Oracle Communications Session Delivery Manager
• Oracle Communication Operations Monitor
• Acme Packet 3820
• Acme Packet 4600
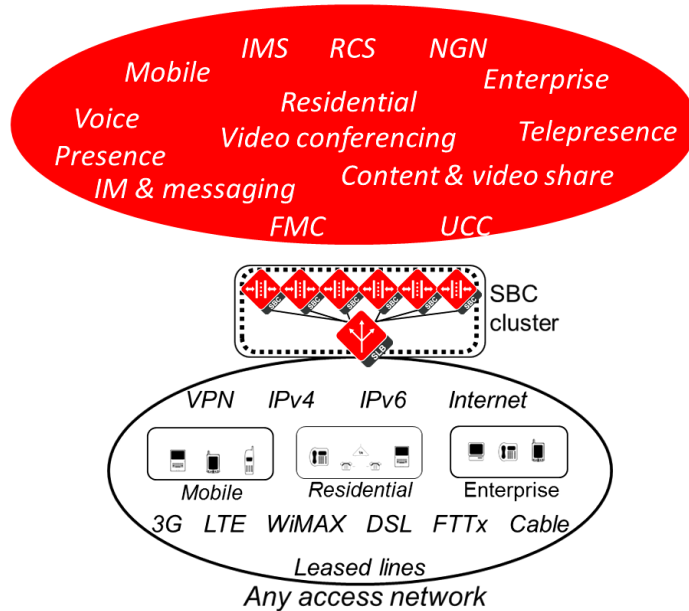• Acme Packet 6000 Series

Any service, any application

Figure 1: An Oracle Communications Session Border Controller cluster can be virtualized to physically support multiple services, applications, and access networks

Co-located or Geographically Distributed Deployment Models

To enable geographic distribution and preserve IP endpoint address transparency, the Oracle Communications Subscriber-Aware Load Balancer uses IP-in-IP encapsulation Request for Comment 2003 (RFC 2003) to forward traffic to the SBC.

The following deployment models provide geographic redundancy and network resiliency:

• **Co-located SBC cluster**: Oracle Communications Subscriber-Aware Load Balancers and SBCs are physically co-located in the same data center or aggregation Point of Presence (POP)
• **Distributed SBC cluster**: Oracle Communications Subscriber-Aware Load Balancers and SBCs are physically distributed and separated from each other. Each Oracle Communications Subscriber-Aware Load Balancer only has access to a specific group of SBCs. This solution provides geographic redundancy

Investment Protection

The Oracle Communications Session Border Controller cluster supports existing Oracle SBCs and can be comprised of a heterogeneous mix of SBC hardware platforms— Acme Packet 3820 and Acme Packet 4000 and 6000 series systems. It also supports all Access SBC (A-SBC) configurations, including Oracle Communications Unified Session Manager, A-SBC with Proxy Call Session Control Function (P-CSCF) and IMS Access Gateway (IMS-AGW), P-CSCF signaling function only or A-SBC only.

Industry-Leading SBC Functions and Features Including Net-SAFE Security

The Oracle Communications Session Border Controller cluster solution supports all of

Oracle's industry-leading SBC functions and features in the areas of security, service reach maximization, service-level agreement (SLA) assurance, revenue protection, and regulatory compliance.

Centralized Management

Cluster configuration and provisioning can be performed by Oracle Communications Session Delivery Manager product family, which manages the cluster as a single virtual SBC. From Oracle Communications Session Delivery Manager, SBCs can be added to or removed from the cluster, subscribers can be migrated, and software can be upgraded.

Centralized fault and performance management is supported through SNMPv2c and Oracle's historical data recording capabilities. The command-line interface (CLI) and syslog enable the management and troubleshooting of individual systems.

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For more information about Oracle Communications Subscriber-Aware Load Balancer, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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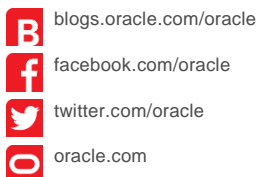
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