

Oracle Communications Session Border Controller



Oracle Communications Session Border Controller is the industry-leading session border controller (SBC) for fixed line, mobile, and over-the-top (OTT) services. Along with specifically written Acme Packet Operating Software, Oracle Communications Session Border Controller runs on Oracle's range of purpose-built hardware platforms and virtualized servers to deliver a unique combination of performance, capacity, high availability, and manageability that has made it the most widely deployed SBC in the world.

FIRST-CLASS INTERACTIVE COMMUNICATIONS SERVICES

APPLICATIONS

- Access SBC in next-generation fixed line, mobile, and OTT services
- SIP trunking and hosted business services for enterprises
- Interconnect SBC for peering, Public Switched Telephone Network (PSTN) termination/origination, and wholesale services
- VoLTE, VoWiFi, RCS, and other IMS services access and interconnect

KEY FEATURES

- Comprehensive security based on the Net-SAFE™ framework
- Maximum service reach enabled by interworking and normalization of signaling, media, transport, and security protocols and codec management
- Regulatory compliance supported by lawful intercept, prioritized routing of E911 calls, and session replication
- High QoS and quality of experience (QoE) ensured through high availability and session routing
- Revenue and cost optimization features, including accounting and protection against service theft/fraud
- Available for both purpose built appliance and virtualized COTS servers

Overview

Oracle Communications Session Border Controller (OCSBC) enables service providers to deliver trusted, first-class real-time communications services across Internet Protocol (IP) network borders. Services and applications ranging from basic Voice over IP (VoIP) to any services enabled by IP Multimedia Subsystem (IMS)—including Voice over Long-term Evolution (VoLTE), Wi-Fi calling (VoWiFi) video conferencing and calling, presence, instant messaging, IP television (IPTV), GSM Association's IP Exchange (IPX), and femtocell or Wi-Fi-enabled fixed-mobile convergence—leverage Oracle Communications Session Border Controller with its unparalleled control functions/ features, protocol support, programmability and manageability in any type of IP network.

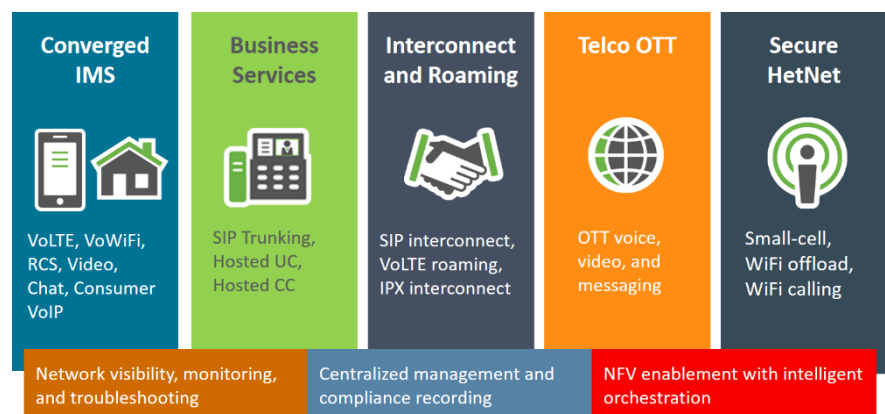


Figure 1: Real-time communications solutions enabled by Oracle Communications Session Border Controller

The functions offered by Oracle Communications Session Border Controller satisfy critical service provider requirements in five major areas: security, interoperability, reliability and quality, regulatory compliance, and revenue/cost optimization.

KEY BENEFITS

- Comprehensive signaling, programmability, and control functions and features with Acme Packet OS
- Range of platforms to provide operators a broad array of price/performance points allowing them to utilize what matches their needs
- Advanced hardware for offloading of critical functions such as transcoding and security so as to not impact or compromise a user's targeted application of the base platforms
- Virtualization for deployment on lower cost, data center class systems often already in place
- Symmetrical Multi-processing (SMP) technology allows operators to make an investment today that is designed to meet current and future network performance demands
- Full IMS integration combined with legacy SBC feature sets on a single system allows gradual user migration to IMS and LTE networks
- Clustering for industry-leading performance, capacity, and availability

Security

Leveraging Oracle's comprehensive Net-SAFE™ security framework for real-time communications, Oracle Communications Session Border Controller secures all service provider access and interconnect/peering borders. The tight coupling of Net-SAFE™ and advanced hardware enables Oracle Communications Session Border Controller to protect itself, the service delivery infrastructure, and communications sessions from a wide range of malicious and non-malicious threats. Oracle Communications Session Border Controller leverages Net-SAFE™ to ensure confidentiality, integrity, and availability of real-time interactive communications services. It preempts attacks, eliminates vulnerabilities, and applies powerful mitigation to counteract events as they happen, while ensuring continuity and high quality for subscribers and operators using the services.

Interoperability

SIP, H.323, and SIP-H.323 interworking capabilities of Oracle Communications Session Border Controller are designed to maximize service reach by ensuring interoperability with and between subscriber endpoints, softswitches, IMS Call Session Control Function (CSCF) elements, application servers, media and recording servers, media gateways, and SBCs in peering networks and SIP/H.323-trunked enterprise networks. OCSBC enables sessions traverse network address translation (NAT)/firewalls, IPv4 or IPv6 networks, public and private networks using overlapping IP addresses, and virtual private networks (VPNs). Oracle Communications Session Border Controller mediates between different signaling, transport, and encryption protocols; converts incompatible codecs; and translates signaling-layer telephone numbers, addresses, and response codes.

Reliability and Quality

Oracle Communications Session Border Controller plays a critical role in ensuring service availability and user quality of experience. It performs admission control via local policies or external policy servers to ensure that both the network and service infrastructure have the capacity to support high-quality communications. It also monitors and reports actual session quality to determine compliance with performance specifications set forth in service-level agreements (SLAs) between service providers. Intelligent session routing and high-availability configurations minimize outages caused by upstream link failure or equipment problems.

Regulatory Compliance

Oracle Communications Session Border Controller supports government-mandated regulations worldwide, including national emergency services such as E911, national security emergency preparedness services such as Government Emergency Telecommunications Service (GETS), and lawful intercept as mandated by the U.S. Communications Assistance for Law Enforcement Act (CALEA) as well as similar laws enforced in other countries.

Revenue and Cost Optimization

Oracle Communications Session Border Controller helps service providers control costs and increase revenues with options for integrating many IMS functions—routing sessions optimally to minimize costs, providing accounting and related mechanisms to

maximize billable sessions, and protecting against theft of bandwidth and quality of service (QoS).

Oracle Communications Session Border Controller delivers the performance, capacity and throughput needed for any type and size of service provider. Leveraging state-of-the-art hardware with symmetrical multiprocessing across a purpose-built platform family, Oracle Communications Session Border Controller scales to support up to one million subscribers on a single chassis, and it can support massively scalable access networks operating in an SBC cluster controlled by Oracle Communications Subscriber-Aware Load Balancer.

Oracle Communications Session Border Controller Advantage

With its flexibility, IMS integration, unmatched software design and capabilities, and support for a range of SBC-optimized hardware platforms as well as virtualized variants, it's easy to understand why Oracle Communications Session Border Controller is the world's most widely deployed session border controller.

Architectural Flexibility

Oracle Communications Session Border Controller can be configured as an Access SBC (A-SBC), Interconnect SBC (I-SBC), or both roles simultaneously depending on service requirements. The flexibility of Oracle Communications Session Border Controller extends to smaller service providers wishing to consolidate access and interconnect functionality in a single system. Oracle Communications Session Border Controller also integrates a number of standard IMS functions used at access or interconnect borders, simplifying its integration with that next-generation service delivery architecture.

At service provider access borders (the borders facing enterprise locations, as well as public access networks such as the internet, 3G/4G mobile, or fixed line networks used by residential or cable subscribers) Oracle Communications Session Border Controller enables new service build-out and consolidation of service infrastructure. It protects the service delivery infrastructure from malicious and equally dangerous non-malicious threats while maximizing service reach, reliability, and user quality of experience.

At interconnect borders (the borders between service provider networks), Oracle Communications Session Border Controller accelerates initial offering or expansion of next-generation IMS or IP services, which helps drive down time-division multiplexing (TDM) costs and expand service provider partnerships. Oracle Communications Session Border Controller delivers key functions for service provider interconnects such as highly scalable and flexible routing as well as hardware-accelerated security and transcoding.

NETWORK SESSION DELIVERY AND CONTROL INFRASTRUCTURE

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 operators, 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 Communications Operations Monitor
- Acme Packet 3820
- Acme Packet 4600
- Acme Packet 6100

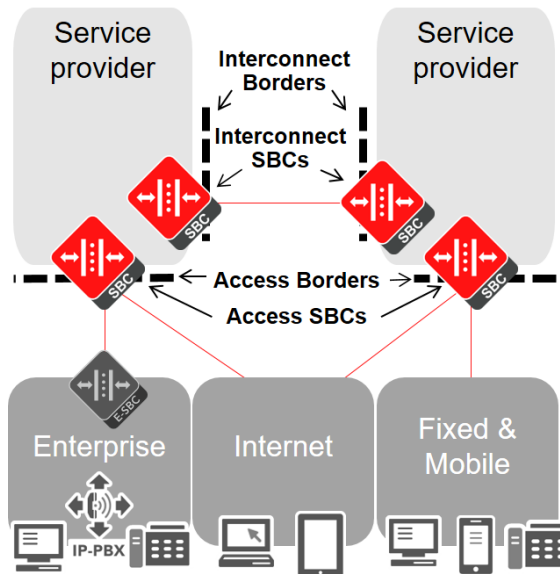


Figure 2: Oracle Communications Session Border Controller can be configured as an A-SBC or I-SBC depending on service requirements

Acme Packet Operating Software

Oracle Communications Session Border Controller is based on Acme Packet OS, which delivers comprehensive multiprotocol signaling, programmability, and control functions and features.

Oracle Communications Session Border Controller supports all commonly used IP signaling protocols including SIP, SIP-I, SIP-T, Diameter, H.323, MGCP, H.248, Message Session Relay Protocol (MSRP), and Real Time Streaming Protocol (RTSP), allowing service providers to extend services to the greatest number of endpoints, as well as services offered via interconnect borders. Extensive signaling protocol Interworking Function (IWF) allows service providers to consolidate signaling traffic within their networks. This reduces the number of required network elements, simplifies management, and reduces capital and operating expenditures. Oracle Communications Session Border Controller IWF also allows the integration of next-generation SIP with legacy networks and endpoints, maximizing service revenues.

Oracle's implementation of SIP offers unmatched interoperability, maturity, and functionality, with thousands of production deployments throughout the world. To normalize session signaling between SIP implementations that often feature vendor-specific messages and response codes, Oracle Communications Session Border Controller features extensive signaling programmability. This empowers inspection or modification of elements within protocol headers or payload, including information found in SIP, Session Description Protocol (SDP), and Diameter headers.

Oracle Communications Session Border Controller is unmatched in the number and scope of functions and features it supports to control the signaling, media, and media control flows that comprise IP communications between endpoints. Oracle Communications Session Border Controller implements a full back-to-back user agent (B2BUA) approach that divides each session flowing through Oracle Communications Session Border Controller into two discrete segments. In this way, Oracle Communications Session Border Controller maintains session state with each endpoint

- Acme Packet 6300
- Netra X5-2 for Communications

simultaneously, empowering the application of a wide range of control functions over the end-to-end session without modification to either the behavior or configuration of either endpoint.

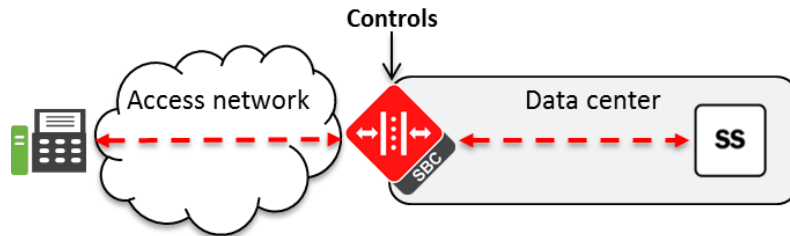


Figure 3: Oracle Communications Session Border Controller functions as a back-to-back user agent to maintain full session state with endpoints and service platforms, perform 7-layer packet inspection, and apply fine-grained controls to session traffic at wire rate

Full IMS/Next-Generation Network Integration

Oracle Communications Session Border Controller is the world's most widely deployed SBC in Third Generation Partnership Project (3GPP) IMS services, as well as in services based on other next-generation network (NGN) standards, such as PacketCable 2.0, European Telecommunications Standards Institute's (ETSI) Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN), and MSF Version 4. Oracle Communications Session Border Controller implements numerous 3GPP-compliant functions and interfaces for seamless IMS integration. It also offers added capabilities to enhance security, interoperability, and reliability beyond standard IMS requirements.

Oracle Communications Session Border Controller offers full IMS functionality at access and interconnect borders to fully control the SIP, Real-time Transport Protocol (RTP), and Message Session Relay Protocol (MSRP) traffic flows that comprise IMS sessions. At IMS access borders, Oracle Communications Session Border Controller implements signaling and media-related IMS functions such as Proxy Call Session Control Function (P-CSCF), Emergency Call Session Control Function (E-CSCF), Break-out Gateway Control Function (BGCF), Access Gateway (AGW), Access Transfer Control Function (ATCF), and Access Transfer Gateway (ATGW). IMS I-SBC functions include Interconnect Border Control Function (I-BCF), IWF, and Interconnect Border Gateway Function (I-BGF)/Translation Gateway (TrGW).

Telco OTT Service Delivery

The universal availability of broadband Internet and the widespread adoption of smartphones and tablets are enabling a new hyper-connected enterprise where employees are always on-line, always collaborating. Forward-looking enterprises are implementing remote communications services to improve productivity and collaboration for on-the-go workers. Often referred to as over-the-top (OTT) communications, these services eliminate the telephony-only constraints of cellular services and extend full UC functionality (voice, video, presence and instant messaging) to enterprise operators over mobile data networks. But connectivity obstacles, security concerns or poor service quality can impede OTT rollouts, impair user satisfaction and burden the help desk.

Tunnel Session Control Function (TSCF) is an enabling feature on the Oracle Communications Session Border Controller (OCSBC) designed to mitigate common

OTT deployment and operations challenges. TSCF is ideal for a wide variety of OTT communications applications including Bring Your Own Device (BYOD) and fixed-mobile convergence (FMC) initiatives

Highly Scalable Platforms and SBC Clustering

Oracle Communications Session Border Controller operates on a wide range of platforms that leverage the rich functionality of Acme Packet OS. Oracle's SBC platforms feature high availability, carrier-class manageability, and redundancy for uncompromised quality, interoperability, and security.

When deployed in conjunction with Oracle Communications Subscriber-Aware Load Balancer, Oracle Communications Session Border Controller can also function as a member of an SBC cluster. SBC clusters provide dynamic, adaptive load balancing of subscriber traffic across the cluster, allowing services to scale to support millions of subscribers without architectural forklifts or network disruptions. SBC clusters also deliver enhanced redundancy and manageability not achievable with traditional Layer 3/Layer 5 web load balancers or SIP redirect servers.

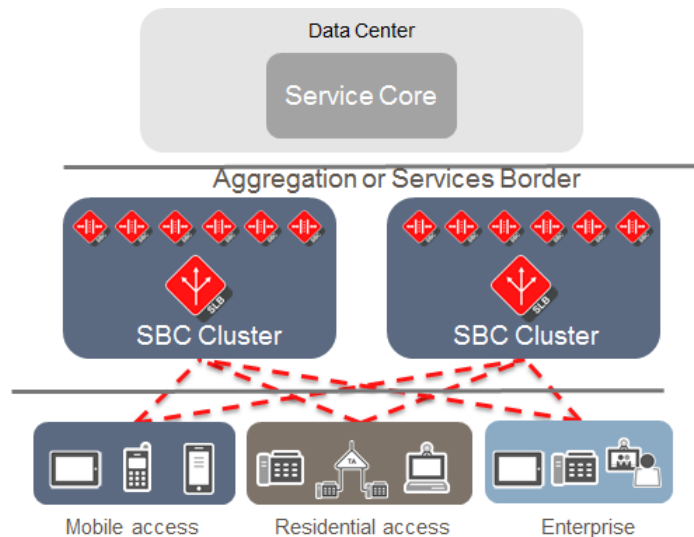


Figure 4: Oracle Communications Subscriber-Aware Load Balancer enables formation of SBC clusters for enhanced scalability

Virtualization

Oracle Communications Session Border Controller may be run as a Virtual Network Function (VNF). Supported hypervisors for Oracle Communications Session Border Controller – Virtual Network Function include Oracle Virtual Machine (OVM), Kernel-Based Virtual Machine (KVM), and VMware ESXi. As a VNF, Oracle Communications Session Border Controller may be deployed as a standalone instance or within an orchestrated Network Function Virtualization (NFV) environment, and offers the same level of functionality, security, interoperability, and reliability as it does on purpose-built platforms. Instances of virtualized Oracle Communications Session Border Controllers may be clustered with their counterparts on purpose-built platforms, creating what are known as “hybrid clusters”, providing a way for their gradual introduction and for even greater deployment flexibility and network agility.

To eliminate time consuming and error prone manual virtual network function turn-up by

operations personnel, Oracle Communications Application Orchestrator (OCAO) optimizes service centric virtual network function design & realization and improves provisioning times significantly (days to minutes) while enabling service agility via elastic control.

Oracle Communications Session Border Controller Key Functions and Features	
Functional Area	SBC Function/Feature
General	<ul style="list-style-type: none"> Supported on Oracle's purpose-built hardware and virtualized server platforms A-SBC or I-SBC functionality Software only offering for virtualized platforms HA: signaling, media, configuration checkpointing
Signaling protocols	<ul style="list-style-type: none"> Session Initiation Protocol (SIP): user interface or back-to-back user agent (B2BUA) Message Session Relay Protocol (MSRP) B2BUA H.323: gatekeeper (GK), gateway (GW), back-to-back GK or GW MGCP/NCS: virtual gateway and call agent, back-to-back virtual gateway H.248: virtual call agent and virtual gateway DNS: application layer gateway (ALG)
IMS/NGN support	<ul style="list-style-type: none"> Proxy Call Session Control Function (P-CSCF) Serving Policy Decision Function (SPDF) Access/Core Border Gateway Function (A/C-BGF) Access Transfer Control Function (ATCF) Access Transfer Gateway (ATGW) Interconnect Border Control Function (I-BCF) Interworking Function (IWF) Interconnect Border Gateway Function (I-BGF) Emergency Access Transfer Function (EATF) Signaling interfaces: Gm, Mw, Ic, Iw Diameter interfaces: Rf, Rq, e2, Gq, Rx COPS interfaces: Rq, e2 H.248 interfaces: Ia
Net-SAFE security	<ul style="list-style-type: none"> SBC denial of service (DoS) self-protection Static or dynamic access controls (permit/deny) Self-protection against signaling overloads and distributed denial of service (DDoS) attacks Protection of IMS core from registration overloads and attacks Media and signaling validation to prevent service theft and fraud IPsec, TLS, and SRTP encryption for privacy and confidentiality
Interoperability	<ul style="list-style-type: none"> SIP signaling protocol interworking and mediation SIP/SIP-I/SIP-T interworking SIP IPv6-IPv4 interworking NAT traversal and IP address mediation Signaling and dial plan normalization Dual Tone Multi-Frequency (DTMF) extraction Transcoding/transrating with flexible, dynamic codec management
SLA assurance	<ul style="list-style-type: none"> Check-pointing of signaling, media, and configuration for nonstop availability Define and enforce QoS marking/mapping Traffic and session prioritization QoS monitoring, accounting, and reporting Admission controls to maximize service infrastructure availability Policy enforcement to ensure bandwidth availability Session reroute around upstream outages

Service enablement	<ul style="list-style-type: none"> • Flexible routing • SIP load balancing • Standards-based AAA (ENUM, DNS, Diameter, RADIUS) • Protocol interworking to simplify core network traffic • Dynamic bandwidth monitoring and control • Industry-standard Session Recording Protocol (SIPREC) • 3GPP Enhanced Firewall Traversal Function (EFTF), formerly TSCF • Accounting with Diameter, RADIUS, and comma-separated value (CSV) file formats
Regulatory compliance	<ul style="list-style-type: none"> • Prioritization and routing of emergency calls with Emergency Call Session Control Function (E-CSCF) • Lawful intercept • National Security Emergency Preparedness (NSEP)

Oracle-Supported SBC Hardware Platforms

	SBC-VNF	Acme Packet 3820	Acme Packet 4600	Acme Packet 6100	Acme Packet 6300
Form factor	Virtualized	1U system	1U system	1U system	3U system
System architecture	Data Center/COTS	Purpose-built	Purpose-built	Purpose-built	Purpose-built
Licensed session capacity	Up to 8,000 ¹	150–8,000	250–40,000	32,000–200,000	32,000–200,000

Monitoring and Management

Oracle Communications Session Border Controller features powerful embedded management and can also be managed with Oracle Communications Session Delivery Manager and monitored with Oracle Communications Operations Monitor.

Embedded element management delivers full administrative access to the command line interface (CLI), Simple Network Management Protocol (SNMP) management information bases (MIBs), statistics, system logs, packet trace information, and system software and configuration files via distinct management interfaces. Third-party management systems and operation support systems (OSS)/ business support systems (BSS) applications can also leverage Secure File Transfer Protocol (SFTP) and SNMP to access system accounting and performance data, MIBs, and historical data records (HDRs).

Oracle Communications Session Delivery Manager, the fully integrated and extensible management solution from Oracle, provides highly scalable configuration and fault, performance, and security management for Oracle's network session delivery and control infrastructure products. Oracle Communications Session Delivery Management Suite also features application add-ons for reporting, SIP trunk provisioning, and SIP session routing. Through multiple dashboard and configuration views, Oracle Communications Session Delivery Management Suite facilitates flow-through provisioning, capacity planning, and comprehensive performance and fault monitoring with at-a-glance status indicators to simplify real-time, network-wide management. Through standard interfaces including SNMP, SFTP, XML, and SOAP, Oracle Communications Session Delivery Management Suite also integrates with Oracle and third-party OSS and BSS to deliver advanced service fulfillment, service assurance, billing, and mediation.

Oracle Communications Operations Monitor is browser-based real-time network intelligence software that optimizes next-generation IP communications networks, enables rapid troubleshooting of customer experience issues down to the individual session level, proactively identifies and isolates communications network faults and events, and detects fraudulent network activity. Oracle Communications Operations Monitor delivers end-to-end network visibility to better align network resources with end-user application requirements and improves the performance of end-user services.

Oracle Communications Session Border Controller features an internal probe that captures and forwards session traffic at wire rate, enabling Oracle Communications Operations Monitor to instantly display fine-grained real-time communications performance metrics.

¹ With recommended hardware and hypervisor configurations

Since it is integrated with Oracle Communications Session Border Controller, the internal probe overcomes limitations of standalone external probes by capturing and analyzing encrypted sessions without compromising subscriber privacy or confidentiality. The embedded probe also analyzes voice quality metrics and reports it to Oracle Communications Operations Monitor.

Summary

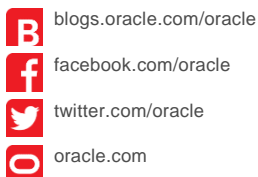
Oracle Communications Session Border Controller (OCSBC) is Oracle's industry-leading session border solution for fixed line, mobile and over-the-top service providers. Oracle Communications Session Border Controller is based on a product strategy that is aligned to support the continued growth of IMS based mobile and fixed broadband services. Via state-of-the art hardware platforms, virtualized offerings, industry-leading 3GPP, GSMA, and IETF compliance, and groundbreaking software enhancements such as TSCF and WebRTC, Oracle Communications Session Border Controller brings value-added solutions through integration with other key Oracle technologies and helps operators remain innovative and profitable.



CONTACT US

For more information about Oracle Communications Session Border Controller, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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