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Oracle Communications Cloud Native Session Border Controller

Oracle Communications Cloud Native Session Border Controller (SBC) is designed to support session delivery and edge protection for real-time communications networks with expanded scalability and availability, automated lifecycle management, and enhanced observability. It helps service providers streamline operations and speed up time to market for their products and services.

Overview

In an era marked by the rapid development of automation and artificial intelligence, communications service providers (CSPs) are eager to transform their organizations into agile, flexible, and adaptable businesses. Oracle Communications Cloud Native SBC is a microservices-based solution for delivering end-to-end IP real-time communications in containerized cloud environments. It enhances automation, reliability, and scaling potential, which can help service providers streamline operations and accelerate time to market for new features and solutions. Leveraging a container-orchestrated architecture, it offers auto healing and helps improve agility and scalability. By focusing on automation and flexibility enabled by cloud native architectures, Oracle Communications Cloud Native SBC is designed to support evolving communications technology.

Unlocking new possibilities

Cloud native technology can help communications service providers (CSPs) adapt in a fast-changing digital landscape, enabling them to meet the increasing demands for speed, scalability, and flexibility while helping streamline operations and reduce time to market for new services. A shift to cloud native environments is the path to unlock the full potential of the cloud.

- ✓ **Increased agility and innovation:** Cloud native architecture can help accelerate time to market for new features and services, allowing service providers to keep pace with rapidly evolving customer demands.
- ✓ **Enhanced scalability and elasticity:** The microservices architecture enables on-demand scaling of individual services, helping improve resource utilization and support efficient handling of peak traffic demands.
- ✓ **Improved observability and troubleshooting:** Open-source tools for logging, metrics, and tracing provide deep insights into network performance, simplifying troubleshooting and helping reduce the time to identify and address issues.
- ✓ **Reduced Operational Costs (OpEx) and Capital Expenditures (CapEx):** Cloud native deployments may help reduce costs by using shared infrastructure and leveraging automation to streamline operations.

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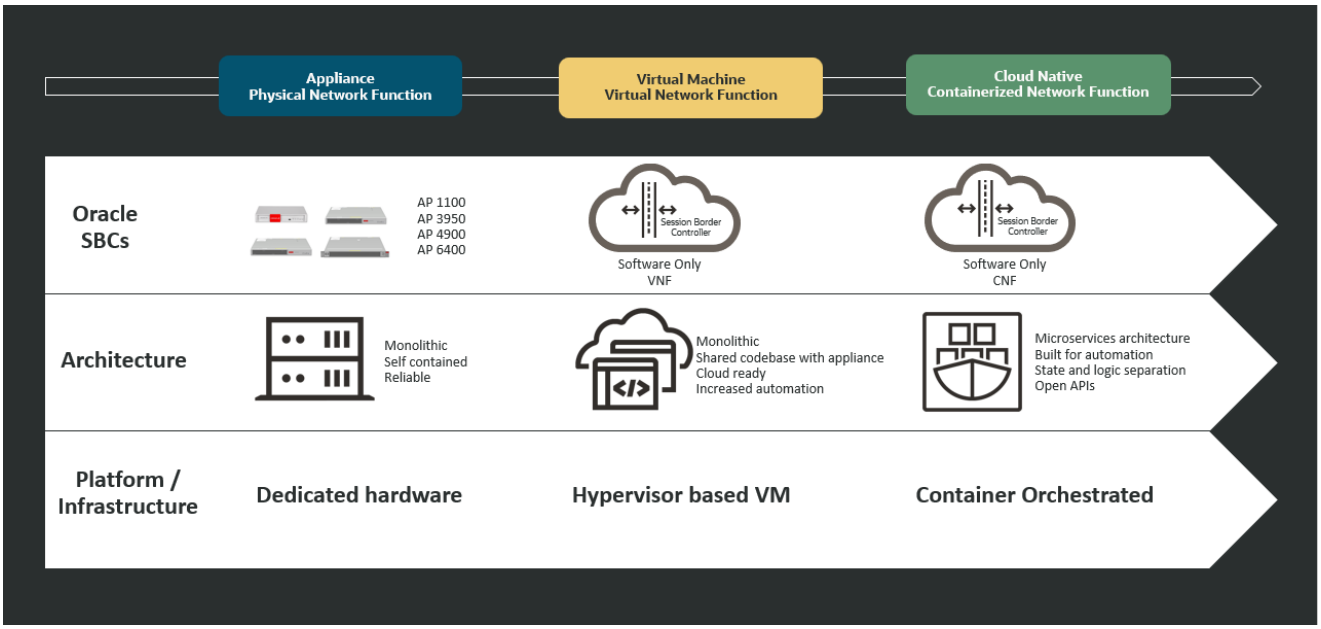
SBC solutions for wherever you are in your cloud journey

Virtualization was an initial step towards greater flexibility, orchestration automation, onboarding, and simplified configuration. Cloud native improves on virtualization concepts by changing the methodology, architecture and platform infrastructure options with containerized network functions using shared cloud native environment tools. Oracle Communications Cloud Native SBC is a Kubernetes-orchestrated, containerized network function solution. This includes a transition to decomposed signaling and media to support an independently scalable microservices-based approach.

Figure 1.SBC solutions for wherever you are in your cloud journey



Why Oracle Communications Cloud Native SBC?

Voice networks and cloud native experience

Oracle has a long-standing track record of addressing complex voice networking challenges in leading carriers' networks around the globe. Oracle's broad portfolio of cloud native applications reflects years of real-world deployments and optimization, directly benefiting the cloud native SBC and helping align development with the same principals and operational insights that power Oracle's most demanding carrier solutions.

Embracing microservices

Oracle has rearchitected the SBC to embrace microservices and cloud native automation principals. Microservices enable lightweight, dedicated services separation that can be independently scaled but also independently upgraded to minimize touch to the application. These benefits expand beyond signaling and media alone and Oracle is implementing a microservices architecture to maximize these benefits alongside architecture efficiency.

AI/ML services

Oracle Communications is investing in leveraging Oracle Cloud Infrastructure's integrated artificial intelligence (AI) and machine learning (ML) services so that SBC data can be analyzed in near real time to help detect anomalies and support network performance optimization. Oracle's AI strategy intends to empower carriers to make smarter, faster decisions to enable reliable, efficient voice services.

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Scalability and availability

The microservices architecture of Oracle Communications Cloud Native SBC allows media, signaling, service processing, and other common services to scale independently and adapt to fluctuations in traffic patterns on demand. By using Kubernetes as a container orchestrator, customers can harness the power of autohealing of micro services. This enables instances to be automatically restarted or recreated based on health checks and policy.

Automated lifecycle management and testing

Continuous deployment

Embracing DevOps methodologies and continuous integration/continuous delivery (CI/CD) significantly accelerates software delivery and shortens release cycles. Oracle Communications Cloud Native SBC embraces DevOps principles and CI/CD practices, enabling rapid development, testing, and deployment cycles for new features and updates. By using standardized and repeatable upgrade processes service providers can reduce the potential for error.

Automated testing

Zero-touch automation simplifies operations and frees up valuable resources to focus on other initiatives. Automated lifecycle management requires automated testing. Oracle Communications Cloud Native SBC offers an automated test suite with prepackaged test cases. The automated test suite can be invoked via REST from CD pipeline tools for pre- and post-operations checks.

Flexible observability, management & troubleshooting

An important element to the success of cloud native infrastructure is interoperability through the support for well-established open source third party common services.

In Oracle Communications Cloud Native SBC, metrics and alarms are handled by the observability layer within the customers cloud native environment. Oracle Communications Cloud Native SBC exposes its metrics and alarms in real time to an observability layer that the customer can easily customize or feed into a data lake for integration with AI and ML tools.

Metrics, alarms, logging, and tracing

Oracle Communications Cloud Native SBC is compatible with Prometheus and Alert Manager for metrics and alarms, and Grafana for customized KPI visualizations; it also provides default files that can be easily loaded into these toolsets. Real-time logging is supported with standard protocols for visibility using time series databases such as OpenSearch and Elasticsearch. Oracle Communications Cloud Native SBC supports OpenTelemetry protocols for tracing using tools such as Jaeger and Grafana Tempo.

Cloud Native SBC Console

For better security in distributed cloud environments, Oracle Communications Cloud Native SBC includes a console that provide centralized identity access management (IAM) and control. It also includes a graphical user interface (GUI) for Oracle Communications Cloud Native SBC configuration that allows users to manage settings and validate configurations.

Operations Monitor interoperability

Oracle Communications Cloud Native SBC supports integration with Oracle Communications Operations Monitor to help operations teams monitor call activity and troubleshoot signaling and media-quality issues. Separate signaling and media entities send signaling data and media-quality information to the Mediation Engine for per-call correlation. Operations teams can investigate calls using call details, ladder diagrams, KPIs, voice-quality statistics, search, and alerts, and export media detail records for further analysis.

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Key functions and features

Oracle Communications Cloud Native SBC leverages the cloud native core concepts to directly address the evolving needs of service providers.

Table 1. Oracle Communications Cloud Native SBC key functions and features.

Functional Area	Functions/Features
General	• Container orchestrated platform with HELM • Microservices architecture: signaling, media, transcoding, configuration, Identity Access Management (IAM), file service, X1, etc. • Interconnect SBC functionality • Fixed access registration functionality
High Availability	• Configurable N:M redundancy for media and transcoding • Call state retention in a in-memory datagrid (key-value store) • Stateless common services
Observability & Management	• Prometheus exposition format for real-time metrics and alarms • OpenTelemetry for tracing • Logging support with standard logging tools (OpenSearch, Logstash, FluentD, etc.) • REST API for configuration • GUI for configuration
CI/CD	• Jenkins
Platform	• Support for OpenShift
Security	• 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 • Media and signaling validation to prevent service theft and fraud • Transport Layer Security (TLS) including TLS 1.3 and Secure Real-time Transport Protocol (SRTP) encryption • STIR/SHAKEN • Lawful Intercept X1/X2/X3 support • Certificate management automation for CMPv2
Feature set	• SIP signaling protocol interworking and mediation • SIP IPv6-IPv4 interworking • NAT traversal and IP address mediation • Signaling and dial plan normalization • Transcoding/transrating with flexible, dynamic codec management • Flexible routing • Number matching and translation rules • Dynamic bandwidth monitoring and control • File based accounting • Check-pointing of signaling, media, and configuration for nonstop availability • Define and enforce QoS marking/mapping • QoS monitoring, accounting, and reporting • Admission controls to optimize service infrastructure availability • Policy enforcement to help support bandwidth availability • Session reroute around upstream outages • SIPREC Session Recording • Microsoft Teams • Zoom Phone • Cisco Webex Calling • Google Voice

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Summary

Oracle Communications Cloud Native SBC enables automation, security, interoperability, and reliability for end-to-end IP real-time communications in containerized cloud environments. It is Oracle's cutting-edge solution for real-time communications networks, designed to revolutionize session delivery and edge protection. With expanded scalability and availability, automated lifecycle management, and enhanced observability, Oracle Communications Cloud Native SBC enables service providers to streamline operations and speed up time to market for their products and services. By focusing on automation and flexibility enabled by cloud native architectures and data insights using ML and cloud compute capabilities, Oracle Communications Cloud Native SBC intends to future-proof the SBC to support evolving communications technology.

Related services

- Oracle Communications Session Border Controller
- Oracle Communications Operations Monitor

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