RENEW AND CLOUDIFY YOUR SESSION BORDER CONTROLLER WITH THE NOKIA SBC ON VMWARE vCLOUD NFV

Network and Technology Evolutions Demand Adaptation

Session border controllers (SBCs) can provide economical and reliable means to secure and control media and signaling streams that cross the edges of the IMS network. SBCs sit at the edges of access networks to secure all types of IP access and deliver all IMS services. They also sit on the edges of peering networks to support roaming, IMS interconnection, or corporate SIP trunking scenarios.

SBCs help enable new services such as video calling, voice over Wi-Fi (VoWi-Fi), and enriched communications on multiple devices. The bandwidth afforded by the next generation of 5G radio systems will further expand the types of services that SBCs are expected to address.

As telco networks transition to all-IP, the number of connected IP devices increases every single day. It's estimated that more than 20% of mobile subscribers—that's over 1.6 billion people—will use Voice over LTE (VoLTE) by 2020[1] And with each new connection, the threat of potential cyberattacks grows—putting tremendous pressure on today's SBCs.

As the demand for more SBCs and more functionality increases, organizations— including communications service providers (CSPs), enterprises, and governments—are realizing that continuing to invest in expensive, proprietary SBC hardware and inflexible software is not sustainable over the long term.

Many are wanting to migrate their SBCs to the cloud—to gain flexibility, scalability, and operational efficiencies. They recognize that as VNF technology further matures, the cloud is a critical option for SBC expansion and renewal. And they're looking for guidance to enable that transition. With Nokia's long history of top-tier SBC deployments and VMware's industry-proven platform, running Nokia's SBC solution on VMware® vCloud® NFV™—for performance, stability, and ease—is a logical next step.

Nokia SBC on VMware vCloud NFV Solution Overview

The Nokia SBC for Cloud enables customers to secure and control media and signaling streams that cross the edges of fixed, mobile, enterprise, Internet access and peering networks. The solution adds a variety of advanced technologies to maximize media plane performance and resilience from cyberattacks. Interfaces to Network Functions Virtualization Management and Orchestration (NFV MANO) help launch services faster and more efficiently by scaling services up and down and applying processing only where and when needed.

Nokia SBC for Cloud supports Web Real-Time Communication (WebRTC) sessions and provides market-leading WebRTC APIs, which allow web developers to design mobile communications that seamlessly integrate into web applications or business processes. Combined, these features make Nokia SBC for Cloud the first SBC VNF that secures the complete range of IMS services in a single software package with high performance and improved operational efficiency.

JOINT NOKIA AND VMWARE OFFERING DELIVERS DISTINCT ADVANTAGES

- Feature and service consistency between SBC physical network function (PNF) and SBC VNF implementations
- Centralized or distributed deployment options to optimize best network fit and proximity to end users
- Optimized, carrier-grade performance of the virtualized media plane with high resiliency against DDoS attacks
- Lower CapEx by eliminating the need for separate access and peering solutions with one single software load
- Lower OpEx by managing all services with automated lifecycle management of SBC VNFs
- Greater agility with independently scalable VNFCs, dynamic resource scheduling, and improved host utilization with minimal hypervisor overhead
- Superior management flexibility on three levels: SBC (WebUI), SBC cluster (NetAct EMS), and cloud (CloudBand)
- Multi-tenant VIM preserving the isolation of SBC VNFs and the security of SBC-connected end-users
- Policy-based provisioning simplifying the resource allocation for VNFs

For years, the Nokia SBC has been relied on to provide service and security to hundreds of millions of subscribers, in 11 of the top 25 MNO networks. This same performance is now available in the Nokia SBC for Cloud. VMware vCloud NFV, in turn, provides an ideal telco-cloud platform on which to run the Nokia SBC. It is the most widely commercially deployed platform, providing the reliability, scalability, and operational efficiency needed to support demanding user plane-based telco applications like Nokia SBC. This joint solution provides the performance, agility, and resiliency needed to protect your cloud-based IP communications from cyberattacks, while also enabling a seamless transition to NFV and software-defined networking (SDN).
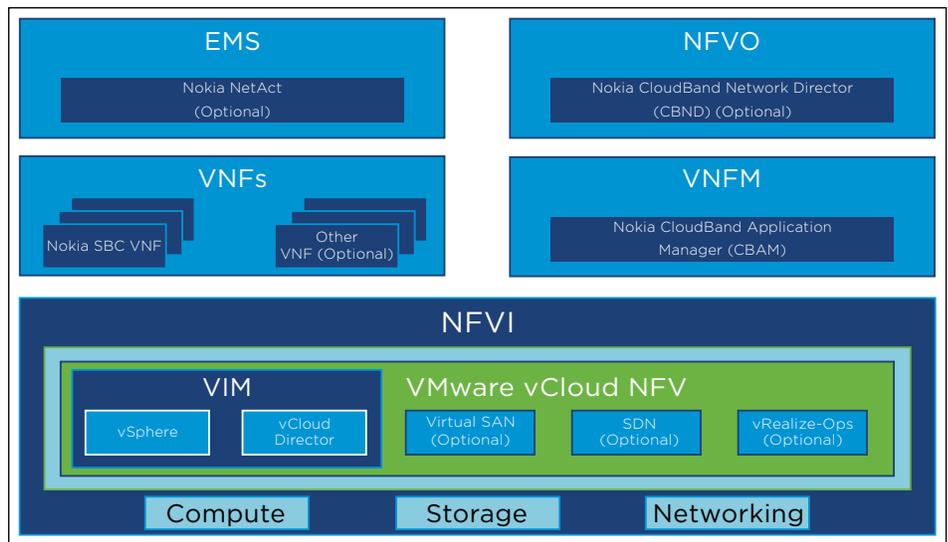

Figure 1. Nokia SBC on VMware vCloud NFV software components

VMware vCloud NFV Infrastructure (NFVI)

VMware vCloud NFV is a modular, horizontal, common NFV infrastructure platform built on proven virtualization technologies for compute, storage, and networking, along with integrated, dual, multi-tenant virtual infrastructure managers (VIMs). This solution enables cloud-centralized operations and management across the deployed topologies, and delivers an integrated set of NFV service delivery, operations, and management capabilities. It augments the Nokia SBC through:

COMPONENTS OF THE VMWARE vCLOUD NFV PLATFORM
• VMware vSphere
• VMware vSphere® with Operations Management™ and VMware vRealize® Operations Insight™
• VMware Virtual SAN™
• VMWare vCloud Director for Service Providers
• VMware Integrated OpenStack
• VMware NSX®
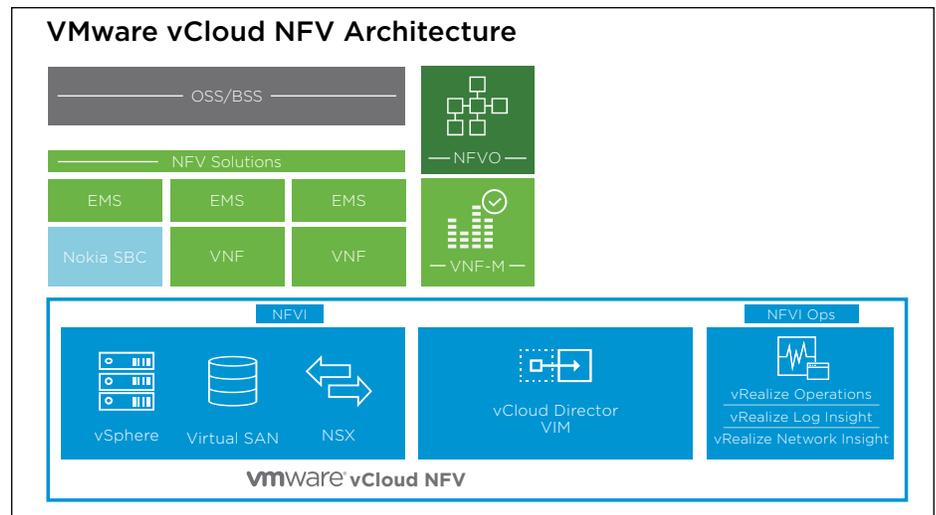• VMware Site Recovery Manager™

Figure 2. VMware vCloud NFV Architecture

Services Management Automation—vCloud NFV provides flexible, automated VNF onboarding and full-service lifecycle management through multi-VIM capabilities, greatly accelerating new service onboarding and expanding customers with faster time to market (TTM). Part of the VIM layer, VMware vCloud Director® enables organizations to automate the process of deploying VNFs and NFVI resources, including the configuration and provisioning of compute, storage, and networking resources. vCloud Director is a robust, multi-tenant, infrastructure-as-a-service platform, designed to consume or accumulate compute, network, and storage resources from the data center and, in turn, convert these resources into individual elastic units that can be provided as a service to—and consumed by—multiple tenants. As part of the onboarding process, the solution supports Mistral workflow and Ansible playbooks, offering a simplified approach to lifecycle management that makes it easy to deploy, grow, and update SBC VNFs.

Carrier-Grade Performance and Availability—vCloud NFV provides proven carrier-class performance, extending control and data plane separated cluster design. Workloads can take advantage of the high-performance fabric with built-in dynamic high availability and scalability to meet application demands. Service level agreement (SLA) guarantees are met through resource isolation, reservations, and dynamic workload placements with DRS and VMware vSphere® vMotion® technologies. The platform can be scaled from a branch office virtual PoP to a large centralized data center to achieve micro-data center and multi-tenant network sliced designs.

Integrated Operations Management—vCloud NFV is a fully integrated, single-pane-of-glass cloud solution that ensures and restores service levels using near real-time operation monitoring, analytics, automation, and remediation. The solution provides an overall integrated and correlated view across service, access, network, and virtual and physical tiers, with issue isolation and recommendations for RightScale Cloud Appliance (RCA). Northbound triggering closes the loop with service and resource orchestration remediation and network management systems/operations support systems (NMS/OSS) notifications. The solution can be extended with custom data feeds and third-party domain and technology expert analytics systems.
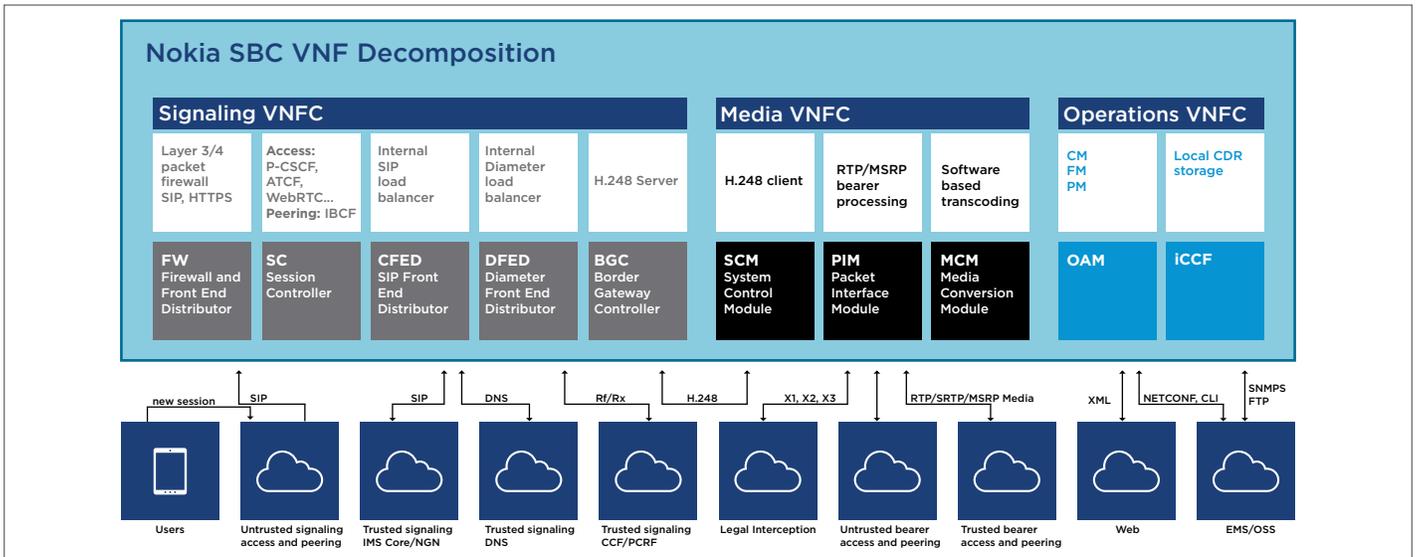
Figure 3. Nokia SBC VNF Decomposition

Nokia SBC VNFs

This solution migrates standard access and peering IMS functions to the cloud, including:

• Proxy-Call Session Control Function (P-CSCF) and Access Gateway (IMS-AGW) functions, which provide end-user signaling and media connectivity to IMS, as well as capabilities such as access control, firewall, NAT traversal, and media encryption.

• Access Transfer Control Function (ATCF) and Access Transfer Gateway (ATGW) functions that enable enhanced Single Radio Voice Call Continuity (eSRVCC) for seamless VoLTE call handover to the circuit-switched network.

• Enhanced P-CSCF (eP-CSCF) function that provides a WebRTC gateway, enabling in-browser communications and control of web traffic from Internet-connected devices.

• Interconnect Border Control Function and Gateway Function (I-BCF/I-BGF), which bridge two carrier VoIP networks with IP-to-IP switching and connect the corporate SIP private branch exchange (PBX) to the organization's network.

These network functions can be deployed as separate VNF instances or in combination, providing maximum configuration flexibility and faster time to market for new services.

Each VNF instance is decomposed into VNF components (VNFCs) that can scale independently to meet the growing control plane demands of VoLTE, VoWi-Fi, the future IoT/MTC, and, ultimately, the transition to 5G.

Nokia CloudBand

Nokia CloudBand Application Manager (CBAM) is the VNF manager (VNFM) of the solution that automates lifecycle management actions by managing resources and applying associated workflows. It is a generic VNFM (VNFM-g), with the same software serving both Nokia's and other suppliers' VNFs.

Nokia CloudBand Network Director (CBND) is an optional NFV orchestrator (NFVO) that manages virtual resources across geo-distributed NFV infrastructure nodes. It provides automation of network services' lifecycles, such as for VoLTE, WebRTC, and SD-WAN.

Nokia NetAct EMS

The Nokia NetAct is an optional element management system (EMS) that enables a single, consolidated view of the network and centralized operations across all SBC VNFs and other VNFs such as Cloud Packet Core.

Nokia SBC and VMware vCloud NFV—A Winning Combination

Nokia and VMware are helping to accelerate and address the demands placed on SBCs today by offering a smooth and effective pathway to the cloud that will ultimately be more sustainable moving forward.

Nokia SBC for Cloud was purpose-built to help companies around the world adapt to new network and technology shifts, while also enabling them to take advantage of the speed, flexibility, and efficiency of the cloud.

VMware, likewise, is working closely with the telecommunications industry, delivering NFV-based service platforms that transform operator businesses through significant reductions in cost and increases in service agility. The maturity of our integrated virtualization platform enables organizations to rapidly adopt new ways of deploying service infrastructure.

Nokia's SBC VNFs have achieved VMware Ready for NFV certification, which means you're getting a tested and proven solution that combines a strong application from a company that's been in business for over a hundred years with one of the most widely deployed and proven virtualization platforms in the industry. Through this joint effort, we're helping organizations manage today's rapid technology shifts and embrace a new era of telecommunications where you are ultimately empowered to succeed.

[1]IHS Markit prediction.