Lifecycle management of a unified communications application in a NFV environment

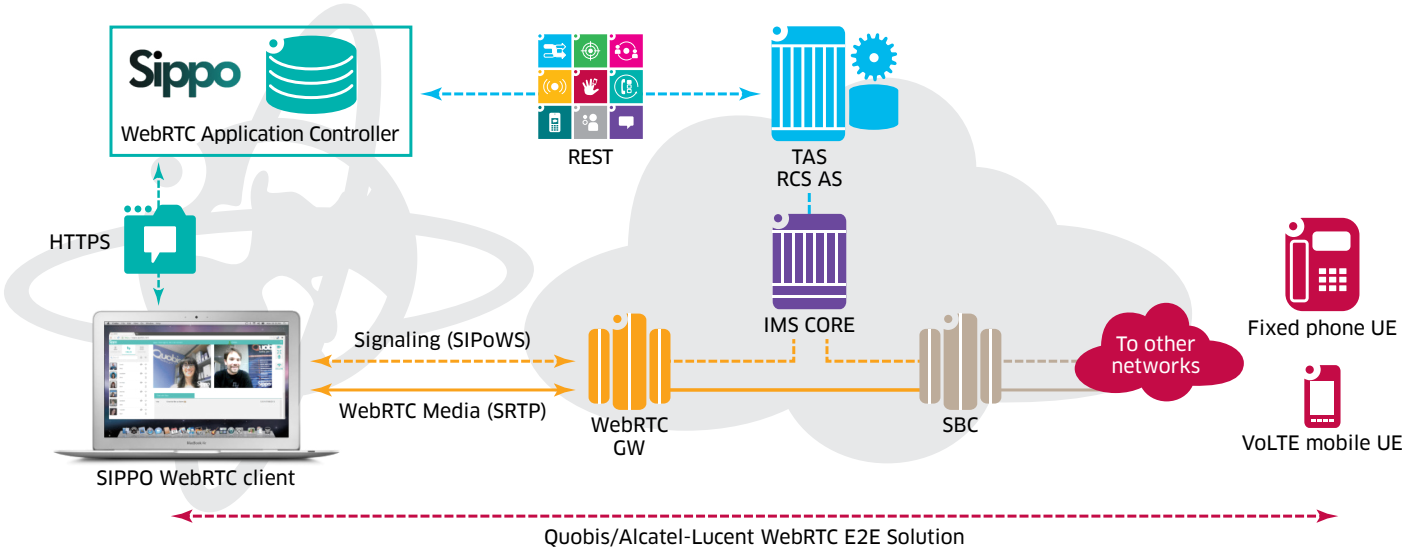
Alcatel-Lucent and CloudBand™ Ecosystem Program member **Quobis®** showcase **Sippo™** – a resilient cloud-based unified communications (UC) application. Using CloudBand, carriers can quickly introduce new IP-Comms services such as Sippo to their users, provide self-healing services, scale the application capacity in line with demand, and upgrade or replace services to quickly react in a competitive environment. The Sippo application links into the virtualized IP Multimedia Subsystem (vIMS) securely and automatically during the deployment process and works with vIMS to interconnect Consumer & Business VoIP, Enterprise UC, and Voice over LTE (VoLTE) endpoints. This use case demonstrates that service providers have the opportunity to leverage Network Functions Virtualization (NFV) to quickly launch and test new services with low risk.

Challenge

Tier 1 operators spend approximately 18 months performing market and technical analyses before introducing a new service to their customers. This is partially due to the nature of the physical network function cost and integration time frames.

However, startups have found that they can introduce services more quickly by simply introducing their product in the cloud and then rapidly scaling up if the service is successful – or terminating if the service is not.

Figure 1. Joint solution architecture



How does it work?

1. Alcatel-Lucent virtualized IMS Core and Telephony Applications Server are used to provide centralized IP communications services, such as Consumer & Business VoIP, Enterprise UC and VoLTE, and to interconnect respective endpoints.
2. Alcatel-Lucent WebRTC gateway, a virtualized Session Border Controller (SBC) enriched with WebRTC class of service, allows allows interconnecting of the IP communications services to the Web.
3. Quobis' Sippo WebRTC Application Controller (WAC) provides the WebRTC service to the end user: the WAC is onboarded onto an Alcatel-Lucent CloudBand/Nuage Networks Node.
4. Before the deployment process, the IMS-related and WebRTC Gateway-related parameters are entered to complete the recipe.
5. Nuage Networks Software Defined Networking (SDN) provides network resources and IP reachability to the WAC.
6. Once the WAC is deployed, end users can immediately access the Quobis Sippo capabilities via a web browser or iOS application.
7. Sippo WebRTC apps include Click-to-call-me, web speed dial, web collaborator or web phone. In this example the browser (SIPPO web client) becomes an extension of the subscriber's fixed or mobile phone.
8. Alcatel-Lucent CloudBand monitors and directs the state of the WebRTC service. CloudBand can terminate the WebRTC service at any time.
9. Sippo interconnects with the following networks: User Network and Service Network.
10. WAC uses the extended ORCA JavaScript library for developers and is exposed by the Alcatel-Lucent WebRTC Border Controller to provide access methods for managing incoming and outgoing WebRTC calls on the device such as first-party call control or third-party call control.
11. WAC also uses the network APIs exposed by the Alcatel-Lucent Application servers to configure call handling and assign the control of an active VoLTE call to the Sippo WebRTC client.

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Solution components

With NFV, operators can now introduce new services swiftly and at web scale, because they are no longer bound by physical platform requirements. Alcatel-Lucent CloudBand's lifecycle management and orchestration platform facilitates the onboarding, deployment, monitoring, scaling and healing of these new virtual applications. This time-saving step provides operators with the ability to test the application with their customers and dynamically adjust to user demand.

Virtual Network Function and Platform Vendor solution components

Quobis

The Sippo WebRTC Application Controller (WAC) is the application that allows enterprises and service providers to deliver IP communications as a web experience. WebRTC applications are fully interconnected operators' IP networks, operations support systems (OSS) and business support systems (BSS). Sippo WebRTC applications can be accessed by the user from any PC or Android web browser or iOS application and support Rich Communication Suite (RCS) capabilities including voice calling, video calling, presence, chat, file transfer and cloud contacts.

Alcatel-Lucent CloudBand

The CloudBand Management System orchestrates, automates, and optimizes virtual network functions (VNFs) across the service provider's distributed network and datacenters. The system aggregates distributed cloud resources – cloud nodes – providing a coherent view of the entire NFV infrastructure as a single carrier-grade pool and ensuring service level agreements are met.

The CloudBand Node is a unique, turnkey, all-in-one compute, storage and network node system ("cloud in a box") including hardware and software designed for efficient remote operation of distributed clouds. Legacy datacenter processes are characterized by manual mounting, cabling, installation and repair procedures. The CloudBand Node adopts efficient operational models pioneered by web-scale companies to achieve fast deployment and low total cost of ownership.

Alcatel-Lucent IMS Core

IMS is a SIP-based carrier-grade and virtualized network infrastructure designed for high-quality, high-performance and large-scale IP communications such as VoLTE deployments or PSTN modernization to IP.

Alcatel-Lucent WebRTC Gateway

The WebRTC Gateway, provided by the Alcatel-Lucent virtualized Session Border Controller (vSBC), bridges the web and telecommunications and allows for secure, simple and scalable web connections to the operator's IP network.

The WebRTC Gateway provides a WebRTC SDK, allowing developers to include those libraries in their WebRTC application and easily connect the WebRTC client through SIP-based web socket signaling and secure RTP media.

The WebRTC Gateway also performs the required adaptation (for example, voice and video CODEC adaptation) to enable multimedia conversation experiences between browser-based clients and legacy fixed and/or mobile devices.

Alcatel-Lucent CTS New Conversation APIs

The Converged Telephony Server (CTS) is a virtualized Telephony Application Server (vTAS) that provides the voice and video advanced calling services such as VoLTE mobile users.

The CTS exposes network-based REST APIs (called New Conversation APIs) to external developers to enrich the IP-Communications call control with features embedded in third-party applications. For example, the Sippo WAC uses this interface to allow Sippo's users WebRTC to benefit from features such as Do Not Disturb, Call Forwarding on Busy, No Answer, Logout and Simultaneous Ringing.

Nuage Networks

Nuage Networks Virtualized Services Platform (VSP) is an SDN solution that enhances datacenter (DC) network virtualization by automatically establishing connectivity between compute resources upon their creation. Leveraging programmable business logic and a powerful policy engine, Nuage Networks VSP provides an open and highly responsive solution that scales to meet the stringent needs of massive multi-tenant DCs. Nuage Networks VSP is a software solution that can be deployed over an existing DC IP network fabric.

Table 1. Key benefits of each solution

PARTNER SOLUTION	KEY BENEFITS
Quobis Sippo WAC	• Brings enterprise devices and applications to the consumer to offer IT-centric communications, freeing enterprises from proprietary UC silos • Delivers greater cost savings and increases productivity by streamlining IT and communications platforms • Rapidly designs and deploys apps and services for specific enterprise needs
Alcatel-Lucent CloudBand and CloudBand Nodes	• Orchestrates and automates across distributed data centers. • Leverages the service provider network • Automates the cloud node • Provides application lifecycle management • Open and multi-vendor • Provides resiliency • Provides multi-tenancy • Delivers scale-out/scale-in logic • Self-heals in case of failure • Reduces downtime/maintenance windows
Alcatel-Lucent IMS	• Simple, scalable and cost-effective cloud deployment of a converged, standard IP communications infrastructure for PSTN renovation, residential and business VoIP, and VoLTE
Alcatel-Lucent WebRTC Gateway	• Increases revenues: Maximizes the network value, for example, by extending the reach of retailed IP communications to the web • Protects investments: Large-scale SBC VoLTE roll-out • Simplifies operations and reduces OPEX: deploy and scale on virtual machine
Alcatel-Lucent CTS New Conversation APIs	• Turn IMS into a platform for rapid innovation and reduced time to market • Differentiate offering from web-only providers • Expand into new markets: Expose APIs for web developers to embed IP communications into any vertical apps, enterprise business processes and web sites verticals.
Nuage Networks SDN	• Provides automatic connectivity between the compute resources and the datacenter

Summary

NFV and SDN are game-changes for service providers, giving them the opportunity to quickly and dynamically manage their network resources based on real-time factors.

This use case demonstrates how legacy services can be transformed to deliver new user experiences in a more automated process.

As legacy telephony infrastructure is migrated to IP leveraging IMS network, a New Conversation Experience can be created that provides end users with RCS supported over IP and the Web. Sippo is an example of an innovative third-party application that easily interworks with IP and legacy infrastructures to extend that reach to the end users.

To learn more about the CloudBand Ecosystem Program or to become a member, visit: **http://ecosystem.cloud-band.com**

For more information about the participants in this use case, visit:

- **Quobis**
- **Alcatel-Lucent CloudBand**
- **Alcatel-Lucent New Conversation Experience**
- **Alcatel-Lucent New Conversation APIs Web Developer Portal**
- **Nuage Networks**

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