# **Optimize the Cloud for Real-Time Communications**

Leverage NFV and Virtual SBCs to Assure Success



Secure Real-Time Communications



When it comes to the evolution of real-time communications, service providers are striving to achieve a more flexible, software-defined, highly elastic way of building networks. Knowing that service providers may begin this evolution at differing starting points, Ribbon has developed its solutions to support multiple migration paths to private and public clouds which work in concert with a service provider's adoption plans for NFV, SDN, and the overall cloud infrastructure.

As service providers harness the power of NFV and move forward with their implementation strategies for virtualization, Session Border Controllers (SBCs) remain a mandatory component of critical network functionality for real-time communications. A virtual SBC running in a cloud deployment can deliver the same functions as a hardware-based SBC, and also support a new generation of advanced IP communications services.

Ribbon has undertaken many initiatives to ensure its SBC software architecture can integrate smoothly into virtualized, cloud environments. The Ribbon SBC SWe is the industry's only virtual SBC that delivers unmatched scalability using the same code base, resiliency, session management, media processing, transcoding, and security technology of a hardware-based SBC.

# Benefits of NFV and Ribbon SBC SWe in the Cloud

- Simplified hardware requirements by eliminating need for proprietary SBC hardware
- Turn up new services in minutes rather than weeks/months
- Optimize total cost of ownership with virtualized SBCs in small points of presence, large central offices, or data centers
- Elasticity to match virtual resources with dynamic traffic profiles, such as required with interconnect SBCs
- Faster market and/or geographic expansion with software-only implementation
- Single management view of network with increased automation of installation, configuration, and provisioning
- Better economies of scale with centralized management and orchestration
- Reduced management costs, leveraging orchestration to automate turn up (and down) of virtual resources

With the Ribbon SBC SWe, service providers can deploy virtual SBCs, yet retain a single management view. When providing SBC microservices as virtual network functions (VNFs), the Ribbon SBC SWe supports standard OpenStack and ETSI-based interfaces. Ribbon has partnered with market-leading orchestration vendors to facilitate VNF implementations.



Successful migration to a virtualized cloud-based SBC demands a solution that addresses three critical architectural constructs: elasticity (scaling on-demand), load balancing (managing scalable resources), and high availability (automated switchover).



### Elasticity

One significant advantage of the cloud environment is the ease and speed with which a new "logical" server, i.e., a Virtual Machine (VM), can be deployed. With the ability to perform scaling on demand, it becomes possible to very closely match service sizing with current traffic demand, scaling up when load increases and scaling down when load subsides. Service providers can allocate specific SBC VMs on demand to support new services or enhance existing ones, and temporarily allocate VMs to support hightraffic-volume events.

Service providers can now reinvent how they deliver realtime communications services by capitalizing on the flexibility of virtualized SBCs. To derive the most benefit from this elasticity, the turn-up and turn-down of SBC VNF instances needs to be automated and touchless using NFV orchestration.



### Load Balancing

Ribbon ensures a well-designed load balancing strategy of resources, which is critical to leveraging and maintaining availability in cloud environments.

Service providers will be able to scale virtual SBC resources more effectively, so that resource utilization (processor, memory, etc.) is evenly distributed to avoid overloaded instances that can cause failures.

As an ultimate goal, the load balancing strategy would enable the components executing the work to reallocate work to less busy ones in order to finetune the overall status of the application processing. Service providers can add or delete virtual SBC capacity gradually, without committing large upfront capacity or reconfiguring other network elements.



## **High Availability**

Real-time applications in a virtual cloud environment have the same high availability requirements for service, subscriber, and call resiliency as they do in traditional, proprietary hardware network environments.

These requirements warrant an architecture where critical state information in an SBC is backed up using a redundancy framework on both the active and standby systems to continuously monitor the active for any possible fault conditions which would trigger a switchover to the standby system.

Ribbon replicates the same effective techniques used in its hardware-based SBCs to ensure high availability for real-time applications in cloud environments.



# Virtual SBC Use Cases

Ribbon's legacy is in building carrier-class SBC solutions that are robust enough to handle transcoding, security (including encryption), and DoS attack prevention, alongside high-performance sessions. Ribbon has leveraged a decade of investment in SBC code and optimized it for a virtual SBC. Ribbon has ensured that its virtual SBC has the scalability required in a service provider environment. Service providers don't have to settle for any less performance or capability when they choose the Ribbon SBC SWe.

Virtual SBCs have many innovative use cases that drive new business models for service providers and at the same time improve the end-customer experience:

### **Cloud-based Service Provider Offers SBC-as-a-Service**

With NFV, service providers can deliver 'SBC as a Service' to enterprise customers by moving to a more efficient business model leveraging their virtualization and cloud infrastructure:

- Eliminating need to install, deploy, and maintain SBCs at the enterprise customer premise
- Serving enterprises more easily that have seasonal business or high variability in traffic levels
- Providing end customers with the ability to add/reduce capacity with a pay-as-you-go model

### Virtual SBCs Deployed as Service Provider-owned Managed CPE

Service providers can choose to include a virtual SBC as part of a "Managed CPE" service, where low-cost COTS servers on the customer premises host VNFs, and the management and orchestration of the virtualized SBC is conducted from their cloud environment. Benefits include:

- Eliminating costly and manual turn-up/turn-down processes by conducting all service orchestration and automation in the cloud
- Seamlessly and dynamically scaling resources
- Quickly and easily deploying new services
- Reducing operations and maintenance costs by using COTS servers

### Deploying SBC SWe as a Virtual Interconnect SBC

With NFV and orchestration, service providers can take advantage of cloud elasticity with automated, on-demand instantiation and configuration of virtual SBC resources. Benefits include:

- Dynamically matching SBC capacity to traffic demand at service provider interconnection points
- Ability to scale on demand to support variable spikes in traffic volumes
- Allocating work load across resource pools for efficient scaling with load balancing
- Transparently backing up critical state information in the network with no service loss



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## **About Ribbon**

Ribbon Communications (Nasdaq: RBBN) delivers communications software, IP and optical networking solutions to service providers, enterprises and critical infrastructure sectors globally. We engage deeply with our customers, helping them modernize their networks for improved competitive positioning and business outcomes in today's smart, always-on and data-hungry world. Our innovative, end-to-end solutions portfolio delivers unparalleled scale, performance, and agility, including core to edge software-centric solutions, cloud-native offers, leading-edge security and analytics tools, along with IP and optical networking solutions for 5G. We maintain a keen focus on our commitments to Environmental, Social and Governance (ESG) matters, offering an annual Sustainability Report to our stakeholders. To learn more about Ribbon visit rbbn.com.