Deploying Ribbon's Session Border Controller Software Edition (SBC SWe) on Amazon Web Services

Delivering cloud-hosted, real-time communication services should include a session border controller (SBC) to ensure security, performance, and service quality. Enterprises using cloud-hosted, unified communications, conferencing and collaboration, or contact center applications will benefit from the deployment of Ribbon's cloud-native Session Border Controller Software Edition (SBC SWe). Today, Amazon Web Services (AWS) is the leader in public cloud market and Amazon's Elastic Compute Cloud (EC2) provides scalable computing capacity in AWS, with a mature offering to run telecommunication application workloads.

Bring these two facts together and an enterprise can easily make the decision to deploy Ribbon's SBC SWe in Amazon EC2. Doing so enables greater flexibility, better geographic reach, and much faster time-to-market than having to procure, install, and implement their own compute, networking and storage infrastructure for a virtual SBC. In addition, because AWS handles ongoing maintenance of the cloud infrastructure, it will be possible to reduce operating costs. And since AWS makes their resources available on a subscription basis, an enterprise will gain delivery flexibility and cost control when scaling SBC capacity up or down.

In Amazon EC2, Ribbon's SBC application is supported via an Amazon Machine Image (AMI) with support for orchestration using AWS Cloud Formation Templates. Two licensing models are available - Bring Your Own License (BYOL) or Pay as You Go (PaYG). For BYOL, a customer needs to come to Ribbon for their licensing. PaYG is a consumption based model with a set license structure and it is available through Ribbon's channel partners. Both High Availability (HA) and non-HA configurations are supported.

Ribbon's SBC SWe was first deployed in Amazon EC2 in 2016, but with our ongoing collaboration with AWS, we continue to innovate to enhance our SBC application in AWS, improving on performance, high availability, and integrated monitoring. The following are key enhancements:

Performance improvements with ENA

Ribbon supports enhanced networking using AWS' Elastic Network Adaptor (ENA) networking driver to provide high-performance networking capabilities. ENA features checksum generation, multi-queue device interface, and receive-side steering to improve performance. Enhanced networking delivers higher bandwidth, higher packet per second (PPS) performance, and consistently lower inter-instance latencies. All new instance types support the ENA networking driver, which provide performance at lower costs compared to earlier instance types.

The SBC SWe leverages the C5 flavor type with the ENA networking driver in Fast path using DPDK, so it is optimized to take advantage of ENA for media passthrough sessions, where we have seen 2 – 3x performance improvement over C3/C4 flavors for G.711 UDP passthrough sessions with 20 ms packets. As a reference, it will be possible to get up to ~7500 media sessions on a C5.4xlarge configuration.

High Availability (HA)

In Amazon EC2, HA is provided via a solution called Elastic IP (EIP). With EIP, when a switchover is required from an active instance to a standby instance, the IP address for the active server is moved to the standby instance through a REST API, which can result in a 15 – 20 second switchover time. In addition, the active and standby instances must be in the same availability zone (AZ). While this solution may be acceptable for many web-based applications it does not meet the stringent requirements needed for an SBC for real-time communications.

Real-time communication applications require a solution where an SBC can achieve switchover times in 2 seconds or less to minimize impacts on active calls. To accomplish this, Ribbon has added an HA Front-End (HFE) to our AWS solution to host the Elastic IP. The HFE is a lightweight server with minimal processing whose sole purpose is to forward packets, thus improving availability with no impact on performance. With the HFE, the public IP and secondary IP address of the active and standby SBC instances are separated, with the public IP address anchored on the HFE. During a switchover from active to standby only the secondary IP address is re-anchored from the active to the standby node.

Monitoring

Real-time, centralized analysis and debugging of traffic is difficult and challenging with DPDK and ENA networking. First, there needs to be a method to get a copy of the packets to a monitoring application without causing a VM performance hit and second, there needs to be the right information available for analysis. To address this, Ribbon has developed specific capabilities to forward packets to an open-source monitoring application that runs in parallel to the SBC application. For now, Ribbon has chosen to integrate with VoIPMonitor which provides the ability to monitor and troubleshoot the quality of SIP-based VoIP calls, archive call data, and enable the decode and playback of calls.

Ribbon's SBC SWe is the answer if you need industry-leading performance, high availability and monitoring visibility to provide security and interworking for real-time communication applications in AWS. For more information visit Ribbon at SBC on AWS.

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