Largest options exchange selects Calico to ensure low-latency networking and security for multi-cluster Kubernetes deployment

Background

The financial organization, as a part of its application modernization initiative, was migrating from an old monolithic application to a new distributed application. The team is responsible for an online mission-critical real-time system that clears millions of financial contracts daily.

This application is based on a proprietary distributed database running on containers and Kubernetes but still needs to maintain the SWIFT-mandated clearance time for compliance purposes and to avoid penalties. They also had to meet requirements from the security team for secure pod-to-pod communication and have failover capability at the service level to prevent service outages.

Challenges

Maintaining compliance and security requirements, as well as low-latency network connectivity

The above-mentioned mission-critical application connects to stock exchanges for clearing data and banks for transaction settlements in real-time, 24/7. The largest stock exchange worldwide is required to adhere to compliance, system performance and security requirements based on industry standards such as Swift. This required their system, which is running in two different availability zones in east and west, to maintain low-latency connectivity, high availability, and a failover capability at the service level to prevent service outages.

Service mesh is complex

Service mesh implementation had lot of manual steps to configure and complex to scale, maintain, and operate. The team’s mandated SWIFT requirement was not met due to network overhead and high latency. If the hosted cloud went down, all services needed to be redirected to on-premises in real time without data loss. Service mesh didn’t provide this seamless experience.

Solution

The clearinghouse implemented Calico cluster mesh to create a fail-safe multi-cluster Kubernetes environment, which enabled security and observability across multiple clusters using a single Calico management plane. The platform team could enforce Calico Network policy through a centralized management plane. The platform team also achieved low latency pod-to-pod connectivity across multiple clusters as service federation is done at the network layer with a daemonset approach instead of a sidecar implementation.

The team has set up a federation between the two clusters across different regions, and the services are now discoverable between the regions to provide a seamless experience for redundancy. Further, the stateful sets of data are synchronized between the regions, thus enabling the team to meet high availability requirements in the event of failover.
Largest options exchange selects Calico to ensure low-latency networking and security for multi-cluster Kubernetes deployment

Results

The team evaluated other eBPF-based solutions but could not meet SWIFT requirements from a low-latency and high-availability perspective. Calico Enterprise delivered low-latency connectivity and secured their workload connectivity across a multi-cluster federated deployment for the trading house to meet SWIFT requirements for containers and Kubernetes-based distributed applications.

The application, with a new foundation of containers and Kubernetes, is now used for clearing options trades on stock exchanges and providing real-time monetary settlements while meeting SWIFT clearance requirements.

Summary

As the financial industry continuously innovates and uses cutting-edge technology to make their financial services faster, more efficient, and consumer-friendly, they are adopting Calico. Calico is the container and Kubernetes security solution that protects their workloads from network-based attacks at scale, more efficiently, and with comprehensive coverage from deploy to runtime.

Getting started

Get a 60-minute hands-on scenario-based experience with one or more self-paced workshops on container networking, security, observability, troubleshooting, eBPF, windows hostprocess, and encryption tailored to your organization’s needs.