Finastra Fusion Kondor on Red Hat OpenShift Container Platform

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Executive summary

Confronted with the need to broaden their mandate beyond the traditional role of funding and monitoring investment risk, bank treasuries are increasingly being called on to manage capital and need to rapidly adapt to new regulatory and market pressures. In this context, with treasurers still spending 65% of their time on manual activities[1], it becomes a priority to upgrade outmoded infrastructure and use new technologies for their treasury systems.

Such digital transformation requires scaling IT to support rapid delivery of new applications and services in a hybrid cloud environment, where applications and processes can take advantage of current technologies, such as containers and microservices. The portability and repeatability of containers can create cost and resource savings, coupled with faster time to market and rapid innovation. Containers have little overhead, helping to lower hardware, maintenance, and licensing costs. They can be implemented quickly and components can be shared among containers. However, researching and deploying a container solution can be time-consuming.

To help financial institutions modernize their treasury platform and quickly start taking advantage of containers, Finastra, Red Hat, and Intel have collaborated on an end-to-end platform architecture for Kondor Treasury System running on Red Hat® OpenShift® Container Platform and infrastructure powered by the latest Intel® technologies.

1 *"Leveraging technology to address modernisation challenges faced by bank treasuries."* Risk.Net, 08/21/2020.

Available in several cluster sizes, this solution is designed for a hybrid cloud environment, customizable, and fully interoperable with existing infrastructure. Enterprises can use this solution to start digital transformation through agile DevOps methodologies and quickly release new services with efficiency and scalability.

The reference architecture detailed in this document can guide you through the often-complex hardware and software selection process when setting up the container platform and planning for the deployment of relevant software components for Fusion Kondor. We provide details for three baseline configurations based on business volume drivers:

Table 1. Baseline configurations for Finastra Fusion Kondor application sizing

Configuration	Users	Live transactions	Daily transactions
Small	10	5,000	100
Medium	50	50,000	5,000
Large	>100	1,000,000	>5,000

Finastra Fusion Kondor

Fusion Kondor is an advanced treasury platform that helps banks trade high volumes of treasury while offering the flexibility to support more complex derivatives, options, and structured trades. With Fusion Kondor, financial institutions can standardize and integrate their trading and risk platform without losing sight of the demands of customers, regulators, and markets. They can reduce cost per trade with true straight-through processing (STP), creating complete integration from front to back office across the full range of treasury trading instruments. The solution comes with functionality that can be easily integrated with existing systems and applications, but Fusion Kondor is also designed as an open platform that is easily customizable; for example, providing flexible trade capture and deal screens, and versatile workspaces and workflows that can all be set up for intuitive and efficient usability.

With more than 400 clients in 70 countries, Fusion Kondor is a proven and robust global system with the local expertise to meet financial institutions' specific country needs, but can also support banks seeking international growth, including the requirement for cross-border global trading with global book, multientity end-of-day management, and 24x7 availability to allow for continuous trading.

Red Hat OpenShift Container Platform

OpenShift Container Platform provides a consistent, security-enabled, and managed enterprise container orchestration platform based on Kubernetes for on-premise and cloud-based deployments. It empowers enterprises to accelerate and automate the development, deployment, and management of innovative applications. By taking full advantage of containers without having to completely rearchitect enterprise applications, application-development and IT operations teams gain the agility needed to develop and deploy applications features more frequently. They can also create and deploy apps with the speed and consistency that the business needs to stay ahead of the competition and create new and increased revenue streams.

Running OpenShift Container Platform on the latest Intel® technology

The solution developed by Red Hat and Intel combines 2nd Gen Intel® Xeon® Scalable processors, Intel® Optane DC persistent memory, Intel® SSD technology, and Intel® Ethernet Network Adapters with Red Hat Enterprise Linux®—including enhanced capabilities around OpenShift Container Platform to help enterprises quickly harness a reliable, comprehensive solution that delivers:

- Simple scalability from on-premise to hybrid cloud that helps enterprises easily accommodate additional changes in workload demands.
- Advanced security features with technologies designed to keep data more secure and help businesses protect data without compromising speed.
- High uptime with advanced reliability, availability, and serviceability (RAS) features to help facilitate recovery, which can reduce the frequency and cost of server downtime while protecting the integrity of critical workloads.
- Fewer service disruptions that can help lower total cost of ownership (TCO) by reducing disruptions during drive swaps and providing LED management for faster status identification.

Application deployment model

This section provides a baseline deployment architecture on a highly available OpenShift cluster based on the deployment model for medium size configuration. For easy reference, the detailed cluster deployment models and configuration are summarized in the Appendix.

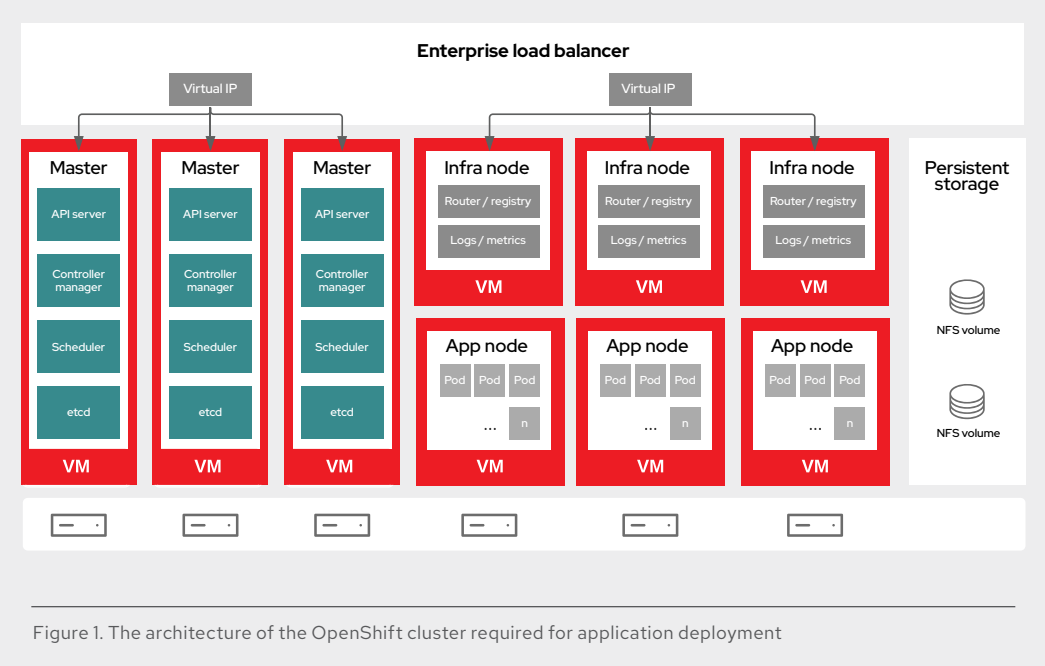

Figure 1. The architecture of the OpenShift cluster required for application deployment

This architecture consists of 3 control plane nodes and 6 worker nodes. We further subdivide the worker nodes into two groups. Three of them, referred to as infrastructure nodes, get designated to run OpenShift's router, image registry, and other infrastructure services. The other three run the actual application workloads and are named application nodes or compute nodes.

For more information on the cluster architecture, refer to the official OpenShift product documentation: The OpenShift Container Platform control plane.

Application deployment architecture

The deployment architecture and its main application components are summarized in this section.

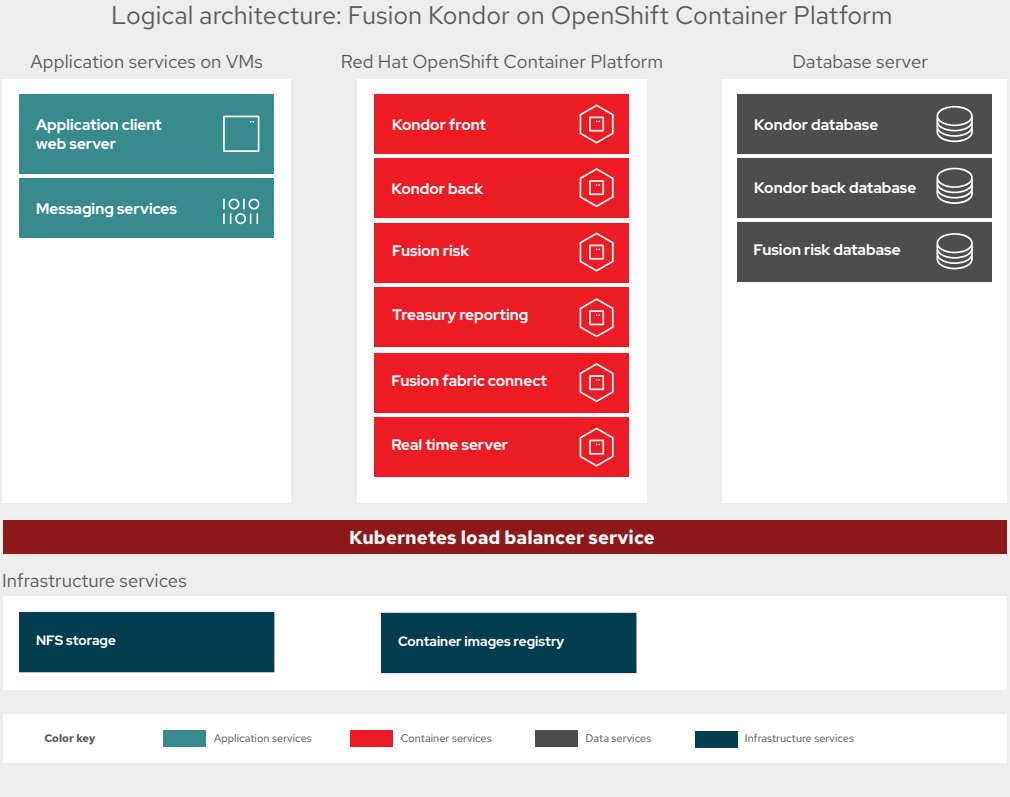

Figure 2. High-level logical deployment architecture summary

Main application components summary:

Kondor front: Trade management system that helps banks support their trading and sales activities around high-volume treasury products while offering the flexibility to support more complex derivatives, options, and structured trades.

Kondor back: Back-office module (e.g., trade processing system), which covers deal validation, margin-call process, confirmation, payment, settlement, and accounting.

Fusion risk: Comprises several risk modules that can be combined to suit each financial organization's specific needs, to address short-term regulatory demands while providing powerful analytics for necessary insights to optimize the business performance—from day-to-day operational oversight to long-term strategic business planning.

Treasury reporting: Standalone component offering fast, in-memory report aggregation and organization capabilities to other components and external parties.

Fusion fabric connect (FFC): Integration component connecting multiple application interfaces and providing real-time monitoring capabilities.

Distribution real-time server: Server that provides real-time market data to front-end applications.

These application components are groups of containers logically deployed as pods on the OpenShift cluster. Other components, including the application server for the web client, application messaging services, and the database server need to be installed on traditional virtual machines. Sizing guidelines apply for these components:

Database server

Configuration	vCPUs	RAM (GB)	SDD (GB)
Small	4	16	20
Medium	8	32	40
Large	8	48	80

Third-party VMs

Configuration	vCPUs	RAM (GB)	SDD (GB)
Small	4	8	32
Medium	4	8	32
Large	4	8	32

Appendix: Configurations

Small cluster deployment

Components (per node)	Configuration
3x control / control plane node	
Processor	4vCPU on Intel Xeon 6252 24 Core 2.1 Ghz
Memory	16GB Intel Optane Persistent Memory
Network interface controller	XXV 710 25G dual-port
Storage	120GB on S4500 SATA disks
3x application nodes	
Processor	16vCPU on Intel Xeon 6248 20 Core 2.5 Ghz
Memory	32GB Intel Optane Persistent Memory
Network interface controller	XXV 710 25G dual-port
Storage	128GB on S4500 SATA disks, 3D NAND TLC disks

Medium cluster deployment

Components (per node)	Configuration
3x control / control plane node	
Processor	4vCPU on Intel Xeon 6252 24 Core 2.1 Ghz
Memory	16GB Intel Optane Persistent Memory
Network interface controller	XXV 710 25G dual-port
Storage	120GB on S4500 SATA disks
3x infrastructure nodes	
Processor	4vCPU on Intel Xeon 6252 24 Core 2.1 Ghz
Memory	16GB Intel Optane Persistent Memory
Network interface controller	XXV 710 25G dual-port
Storage	120GB on S4500 SATA disks, 3D NAND TLC disks

Components (per node)	Configuration
3x application nodes	
Processor	32vCPU on Intel Xeon 6248 20 Core 2.5 Ghz
Memory	54GB Intel Optane Persistent Memory
Network interface controller	XXV 710 25G dual-port
Storage	128GB on S4500 SATA disks, 3D NAND TLC disks

Large cluster deployment

Components (per node)	Configuration
3x control / control plane node	
Processor	8vCPU on Intel Xeon 6252 24 Core 2.1 Ghz
Memory	16GB Intel Optane Persistent Memory
Network interface controller	XXV 710 25G dual-port
Storage	120GB on S4500 SATA disks
3x infrastructure nodes	
Processor	8vCPU on Intel Xeon 6252 24 Core 2.1 Ghz
Memory	16GB Intel Optane Persistent Memory
Network interface controller	XXV 710 25G dual-port
Storage	120GB on S4500 SATA disks, 3D NAND TLC disks
6x application nodes	
Processor	16vCPU on Intel Xeon 6248 20 Core 2.5 Ghz
Memory	40GB Intel Optane Persistent Memory
Network interface controller	XXV 710 25G dual-port
Storage	250GB on S4500 SATA disks, 3D NAND TLC disks

Software and other configurations

Software configuration	
Third party VMs OS	Red Hat Enterprise Linux 7.6
Container environment	Red Hat OpenShift Container Platform 4.6
Control plane nodes OS	Red Hat Enterprise Linux CoreOS
Worker nodes OS	Red Hat Enterprise Linux 7.6
Application software	Finastra Fusion Kondor
SQL database	Microsoft SQL Server 2019-GA
SQL database server OS	Red Hat Enterprise Linux 8
Firmware / software configuration	
Trusted platform module (TPM)	TPM 2.0 discrete or firmware TPM – Intel® Platform Trust Technology (Intel® PTT)
Intel® technologies	Intel® Hyper-Threading Technology (Intel® HT Technology) enabled Intel® Turbo Boost Technology enabled Intel® Speed Shift technology, Hardware P-states (HWP) native Intel® Turbo Boost Technology/HWP energy performance preference (EEP)/energy performance bias (EPB) setting balanced Three-way mirroring, with the least overhead on processing power Updated to all available patches

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