ANZ adopts new application architecture for customer-facing services

Australia and New Zealand Banking Group (ANZ), one of the world's 50 largest banks, decided to combine its update from Red Hat OpenShift 3 to 4 with a shift from a stretch cluster to split cluster container architecture. To minimize risk of downtime for customer-facing services, as well as potential security risks and additional costs from refactoring its applications, ANZ adopted Red Hat Service Interconnect. As the 1st company to deploy Service Interconnect in production, the bank worked closely with Red Hat to adapt open source technology into an enterprise solution for cross-environment application connectivity. With this new foundation, ANZ avoided the risk of migrating critical applications while improving management and scalability for ongoing operations.

Software

Red Hat® Service Interconnect

Red Hat OpenShift®

Headquarters

"Thanks to Red Hat Service Interconnect, our development teams have been able to focus on continuing to improve services, rather than reengineering applications for the new platform without any benefit to the business."

Lee Ross
Head of Technology, Payments, Australia and New Zealand Banking Group (ANZ)

Financial services

Operates in more than **30** markets around the world

Benefits

- Improved application mobility across environments
- Reduced architecture migration and IT operational costs
- Improved developer experience with scalable, modular foundation
- Established collaborative approach to inform technology development

Improving application and system resiliency with a new IT architecture

ANZ is one of Australia's 4 largest banks and one of the 50 largest globally, offering personal and commercial banking services to more than 9 million private and business customers worldwide. To increase operational resilience and improve service reliability, the bank has been focused on modernizing its IT infrastructure and systems.

Starting in 2018, ANZ's Wholesale Digital team adopted Red Hat OpenShift to build its applications. The OpenShift enterprise container platform was established as a stretch cluster, an approach that uses a single cluster spread across datacenters with cross-site storage and disaster recovery managed by the platform team. While this architecture was less complex and accounted for potential site failures, any cluster failure risked outages for hundreds of applications hosted there.

"Banking is a dynamic industry, so we must build systems and design architecture that can adapt," said Saurabh Suman, Principal Engineer, ANZ. "The days of fixed, monolithic, and inflexible platforms are behind us. Designing for the future means creating platforms that can be ready for anything."

When Red Hat OpenShift 4 was introduced, ANZ decided to simultaneously migrate to this new version and move to a split-cluster architecture—a model that would significantly reduce the impact of potential datacenter outages by more easily moving applications between datacenters. However, many of its existing applications—including some customer-facing—were not architected for this new multi-cluster deployment model.

"The move from Red Hat OpenShift 3 to Red Hat OpenShift 4 [split-cluster topology] was a critical change that required many architectural decisions," said Peter Tsatsaronis, Product Area Lead, Digital Channels, ANZ. "We needed a solution that could support this migration without significant application refactoring or changes, security compromises, or negative service performance for our customers."

> "The Red Hat team listened to our requirements and developed Red Hat Service Interconnect to meet the needs of businesses like ours for high reliability and performance with less risk."
>
> **Saurabh Suman**
> Principal Engineer,
> Australia and New Zealand
> Banking Group (ANZ)

Developing an enterprise open source solution for container platform migration

After evaluating potential solutions—including third-party technology and potentially creating a solution in-house—ANZ chose the open source project Skupper. This application-layer service interconnect technology supports secure communication across Kubernetes clusters in multiple datacenters or regions, without virtual private networks (VPNs) or special firewall rules.

An enterprise version of Skupper would let ANZ complete its Red Hat OpenShift upgrade and associated architectural change while also mitigating the additional risk of undertaking multiple large infrastructure changes at the same time. As Red Hat developed the Skupper project, they worked closely with select enterprise customers to incorporate capabilities addressing their needs into Red Hat Service Interconnect, an enterprise solution for creating interconnections without elevated system privileges, virtual private networks (VPNs), or networking reconfiguration. With a simple command line interface (CLI) and web console, enterprise IT teams can use Service Interconnect to establish and manage connections across environments, including Kubernetes clusters, virtual machines (VMs) or bare-metal hosts.

"While Skupper gave us a starting point, the Red Hat team listened to our requirements and developed Red Hat Service Interconnect to meet the needs of businesses like ours for high reliability and performance with less risk," said Suman.

After a proof of concept starting in March 2022, ANZ became the first enterprise globally to adopt Service Interconnect in production, and subsequently successfully migrate to Red Hat OpenShift 4 and their split-cluster architecture.

Delivering reliable services at lower cost with cross-environment consistency

Improved application mobility across on-premise, cloud, and hybrid environments

With a split-cluster architecture supported by Service Interconnect, ANZ's applications are now locationless, unaware of where they are running—and therefore feel like they are running on a single cluster, even if they are distributed over multiple clusters.

With this new location-agnostic approach, the bank can more easily move workloads and applications between datacenters and secure public, private, or hybrid cloud services when needed—without code changes. This choice of environments gives the bank more flexibility in how to execute its cloud-migration strategy.

Reduced IT operational costs

Continuing to use stretch-cluster architecture solutions would have increased ANZ's IT infrastructure and development costs—for example, the expense of new load balancers and staff time to modify its existing applications, especially as requirements evolved. With Service Interconnect, the bank more easily completed its migration to Red Hat OpenShift 4 and also reduced ongoing change management effort, resulting in lower administrative overhead and operational costs.

"Red Hat Service Interconnect helped us establish a more reliable architecture at a significantly reduced project cost compared to other approaches," said Tsatsaronis. "For instance, we avoided costly downtime to our customer services and systems during our Red Hat OpenShift migration."

Improved developer experience

With a reliable, cross-environment technology foundation, the bank's Wholesale Digital team can continue to progressively update and scale the customer-facing applications hosted on the container platform. The user-friendly command line interface in Red Hat Service Interconnect, combined with the modular adaptability of Red Hat OpenShift, has simplified the processes for deploying new clusters or the applications hosted by them.

"Thanks to Red Hat Service Interconnect, our development teams have been able to focus on continuing to improve services, rather than reengineering applications for the new platform without any benefit to the business," said Lee Ross, Head of Technology, Payments, ANZ.

Established collaborative approach to solving IT challenges

Working with an enterprise open source vendor gives ANZ a way to balance accessing the latest features and improvements to the Skupper open source project with protecting sensitive data, ensuring system performance, and other essential considerations for leading businesses.

Collaboration between the bank's Wholesale Digital team and Red Hat's experts has led to the development of several new features and enhancements for Red Hat Service Interconnect. For example, rather than requiring Kubernetes secrets, the technology now supports using an external security vault.

"Starting with the open source Skupper project, developing the software in cooperation, and arriving at the enterprise Red Hat Service Interconnect has been a model of how collaboration can deliver vast benefits," said Tsatsaronis. "The collaboration with Red Hat has helped build a solution to a number of technical problems that would otherwise have required compromising on performance and reliability."

Expanding resiliency and integration to more applications

As the first company to deploy Service Interconnect in production, ANZ has pioneered the way to address the challenges of multi-cluster Kubernetes through its work with Red Hat. Within the bank, other departments and teams are now building on the Wholesale Digital team's success with their own deployments to deliver more resilient services.

"We've built a more reliable architecture without burdening performance. The efficiency of Red Hat Service Interconnect has helped us create a more robust application environment than would have otherwise been possible," said Tsatsaronis.

About ANZ

Australia and New Zealand Banking Group (ANZ) is an Australian multinational banking and financial services company headquartered in Melbourne, Victoria. It is Australia's second-largest bank by assets and fourth-largest bank by market capitalization. Australian operations make up the largest part of ANZ's business, with commercial and retail banking dominating. ANZ is also the largest bank in New Zealand. In addition to operations throughout Australia and New Zealand, ANZ also operates in 34 other countries.

Red Hat Innovators in the Open

About Red Hat Innovators in the Open

Innovation is the core of open source. Red Hat customers use open source technologies to change not only their own organizations, but also entire industries and markets. Red Hat Innovators in the Open proudly showcases how our customers use enterprise open source solutions to solve their toughest business challenges. Want to share your story? Learn more.

About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. A trusted adviser to the Fortune 500, Red Hat provides award-winning support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.

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