



OPTIMIZING CRITICAL BANKING WORKLOADS USING vSPHERE INTEGRATED CONTAINERS

A LEADING FINANCIAL GROUP IN ASIA THAT SERVES OVER FOUR MILLION CUSTOMERS, WITH OVER 280 BRANCHES IN 18 MARKETS

INDUSTRY

FINANCIAL SERVICES

LOCATION

ASIA

KEY CHALLENGES

- Optimize resource utilization in existing infrastructure
- Reduce infrastructure footprint for batch applications

SOLUTION

Re-platforming applications from legacy Unix to Linux, packaged in containers, and leveraging VMware vSphere® Integrated Containers™ to increase agility in scheduling batch jobs for business applications and improve resource utilization across clusters and data centers..

BUSINESS BENEFITS

- Accelerated application deployment from weeks to seconds.
- Reduced CapEx by eliminating legacy infrastructure necessary to run batch jobs.
- Reduced OpEx associated with Operating Systems maintenance and day-2 operations.

The Financial Services industry is constantly driven to innovate and introduce new ways to interact with their customers. At the same time, the IT environment must maintain a high level of economic efficiency, security and robustness. The need for increased agility poses a challenge to the banking industry because it is subject to strict regulatory compliance.

Building on the proven foundation in server virtualization, VMware is enabling new consumption models, building on open technology like containers, while allowing customers to maintain a common platform and consistent operational model.

The Challenge

Recognizing that change is required in order for this financial institution to maintain and expand their leadership in the industry, the company's CIO, gave the infrastructure team three goals:

1. Build a robust platform: Strengthen technology and infrastructure platform to build world-class infrastructure
2. Be nimble: Develop solutions to support strategic priorities
3. Go explore: Nurture technology innovation to enhance customer experience

The team started by modernizing their data centers. Building on the existing vSphere foundation and following VMware Validated Design™ for vSphere metro-stretched clusters, they built new robust infrastructure to host their 4000 legacy applications as well as applications being re-platformed from Solaris, AIX and mainframe.

By design, for disaster avoidance, these clusters require resources available at all times in both primary and secondary data centers. This results in clusters being 30-40% utilized. The challenge was how to optimize cluster resource utilization across both of their data centers.

As part of their daily operations, this financial institution runs a lot of batch processing for applications such as grid computing and risk calculations. These applications typically required dedicated infrastructure that was maintained continuously but used sporadically, creating further wasted resources.

“The experience of telcos, transport, and retailing shows that we’re changing the way we communicate, the way we commute, and the way we consume. So why would banking be immune or be safeguarded from any of this?”

CEO
FINANCIAL INSTITUTION IN ASIA

VMWARE FOOTPRINT

- Server virtualization technology
- vSphere Integrated Containers
- VMware Technical Account Manager Services

APPLICATIONS VIRTUALIZED

- Various business-critical batch applications required for risk calculations (hsVaR), and grid computing.
- Build Slaves for Jenkins software development process automation.

The Solution

They started by looking for small applications that could be distributed and scaled horizontally. Guided by their VMware Technical Account Manager (TAM), they participated in the vSphere Integrated Containers Early Access Program. vSphere Integrated Containers has an opinionated provisioning model promoting strong isolation by provisioning containers as virtual machines (called Container VMs). This financial institution found that, by containerizing the batch processing applications and running them via vSphere Integrated Containers, they were able to bring up capacity on-demand for any batch job, using the overhead capacity in their metro clusters. They used three criteria to identify candidates:

- Applications that do not readily support NAT’ing and require a unique routable IP address (with vSphere Integrated Containers, this can be achieved without the need for a network overlay because container images are instantiated as VMs, connected directly to vSphere Port Groups)
- Applications that need to be horizontally scaled up or down on demand (container VMs have access to vSphere cluster resources based on resource pool allocation allowing for dynamic resource allocation and resource balancing with vSphere Distributed Resource Scheduler™)
- Applications that require data persistence (vSphere Integrated Containers facilitates this by leveraging underlying vSphere storage.)

This allowed this financial institution to change the VMware consumption model in ground-breaking manner. The consumption is now based on dynamic quota assigned from the unused metro cluster capacity that can be provisioned directly via the Docker API. To quote the application team: “Get what you need when you need it. Then discard.”

Business Results & Benefits

This financial institution is now running two business-critical applications through vSphere Integrated Containers and planning to expand to other similar batch type workloads. The ability to spin up the necessary applications on-demand in a predictable way allows the IT team to rapidly respond to the needs of the internal lines of business. In fact, they measured that deployment time for these batch applications servers went down from weeks to around 60 seconds. By leveraging the existing vSphere infrastructure and the well-recognized isolation boundary provided by the vSphere Virtual Machine, they were able to increase agility while maintaining the required level of governance and compliance.

On top of business agility, they were also able to bring savings to their infrastructure costs. They can now distribute the applications and have them share the same compute resources though the use of their batch scheduler. Where batch jobs used to have dedicated pools of resources, the load is now spread across the same pool of resources and scheduled on demand.

- Batch workloads are now running in vSphere alongside legacy workloads, and using all of the available capacity (50% overhead from metro clustering).
- vSphere Distributed Resource Scheduler (DRS) provides elastic resource management allowing them to schedule the excess metro cluster capacity in an efficient manner.
- Since vSphere Integrated Containers included in their vSphere licensing, it allows them to deploy this solution to all of their clusters without incurring additional licensing costs.
- Batch applications no longer incur overhead when not in use (before re-platforming, they would require dedicated infrastructure)

The solution also had a positive impact on their operational costs. The immutable and ephemeral quality of the Container VMs means that they were able to drastically reduce the operating systems maintenance and other day-2 operations costs. Because the Container VMs are short-lived, it also allowed them to eliminate some of the security costs associated with agents licensing.

Looking Ahead

As the next step, this financial institution are planning to migrate the rest of the batch applications that are already targeted to move to this platform. More teams at the company are also experimenting with vSphere Integrated Containers. One application team is now using vSphere Integrated Containers to provision ephemeral Jenkins build slaves to optimize their Continuous Integration pipeline. Other applications being investigated include:

- Big Data Analytics: Spark compute with an object store as backend, spinning up Spark Container VMs.
- Security Scanning: Fortify port scanning requires resources on demand which would fit well in the current model.