

Cloud Solutions for Financial Services





Summary

A global banking organization approached us to get help on a customer banking services web application aimed at competing with local banks. They wanted to be able to quickly add features and iterate on this application, while still providing a stable, secure experience for their banking customers. To achieve the best ROI, we determined that for development/test environment, a public cloud environment was best because of the quick stand-up tear down capability, without capital investment. For production needs, a private cloud would be used due to specific data sensitivity requirements.

The bank had the development and operations expertise to execute this vision, however, the bank needed assistance outlining the steps to get there efficiently. The bank didn't want to wait a year or more to make this happen; rather, they realized they needed a solution in a matter of months. To do this, the bank approached us, because of the deep knowledge and experience we have building the *right* solution for our customers by matching the correct IT environment and technologies with the customer's requirements.

Recommendation

We worked with this banking organization to focus on creating the roadmap, selecting the right technologies, and providing training to the developers and operators on the technologies. For this customer, we recommended a technology solution based on deploying applications through a cloud native application platform that could support multi-cloud deployments, HPE Helion Stackato, a public cloud provider for the development/test, and a private cloud for production based on HPE Helion OpenStack.

What is driving the financial services industry to the cloud?

As cloud computing becomes more prevalent throughout the financial sector, a mixed strategy of leveraging private and public clouds emerge as the norm for most businesses. The top reasons for the move to a multi-cloud world for financial services organizations includes:

- Enabling usage-based billing & lowering cost
- Business agility and focus on the end user
- Business continuity through a policy-driven, software-defined cloud
- Enable the rollout of new services in the market for improved market share

Many of our customers look to consulting services to help with their multi-cloud approach because they have a specific business objective in mind and they would like to achieve it faster and with less risk. The objective could be enabling a key application to be highly-distributed or highly-scaled, such as the banking web app being discussed here. Other customers seek a move towards cloud-native or cloud-aware applications leveraging on demand capabilities particularly around compute as storage, such as grid or high-performance computing.

The HPE Helion Technical Services Consulting team leverages a broad set of technical expertise to advise, design and deliver solutions custom-tailored, and also provide guidance around the cultural changes in your organization that can deliver on those technology promises as fast as possible.

Deciding on the right cloud infrastructure

What factors influence selection of infrastructure application? Below are some of the most common factors, which are logically grouped into four categories:

- *Application and workload:* deployment architecture, including application topology and requirements for app components. These could include specific application runtimes, app dependencies, deployment requirements, automation, logical app tier isolation, app performance characteristics, flexibility (support of multiple infrastructure providers, runtimes, and databases), app-level scaling, app-level security, app-level high availability, and other application-level configuration properties
- *Infrastructure: specific characteristics and requirements for compute, storage and networking* These typically address resource requirements for specific application components, including performance (such as: IOPS, bandwidth, throughput), virtual or physical resource isolation (at the VM, server or firewall levels), infrastructure-level automation, scalability, high availability, security and compliance, and how infrastructure capabilities are exposed to the application or people/processes as APIs
- *People and Processes:* organizational factors that drive workflows and processes, and impact application and infrastructure configuration. These typically have to do with ability of developers to self-service, automate workflows between development and operations (such as requests, approvals, and notifications), adherence to security, governance and policy (for example, SOX, HIPAA, PCI)

- *Strategic:* alignment to the strategic priorities of the organization, including mapping of the above factors to the direction and investments across hardware and software infrastructure, capturing and improving skillsets and knowledgebase of the organization, macro factors (including: industry, government policies, competition pressures), financial value, risk, and adaptability/configurability of resources to changing requirements, and overarching organizational goals

Public, Private, Managed, and Hybrid Clouds

How do you decide between public or private cloud or using both? What is the selection criteria for a cloud? There are different drivers in this decision and it has to be made fulfilling the key requirements of key stake holders. Business demands agility with faster and more capabilities, developers demand choice and self-service, security demands protecting vital assets and meeting regulatory requirements, and finance demands cost effective and predictable pricing.

Public clouds

Public clouds offer an easy self-service consumption model without restrictions. Developers can spin up virtual machines quickly and develop new capabilities. For consumer web and mobile applications, this offers a fast and scalable environment to meet customer demand.

Private clouds – clouds in your datacenters

A private cloud offers the agility of public cloud but with the controls of an enterprise environment. With a private cloud you can preserve your ability to choose your vendors and technologies. This means, for example, you can choose to enjoy the benefits of your VMware expertise while using KVM for net new web applications. Because a private cloud resides within your security boundaries and implement key security best practices such as encryption of data at rest (block storage) and across cloud services, you can be confident that it meets your security standards. And because all applications are not created equally, your private cloud is built with your choice of servers, storage and networking to meet the demands of your enterprise workloads at an approved predictable cost structure.

Additionally, when you choose a private cloud powered Helion OpenStack you also get enhanced lifecycle management tools, the HPE Helion Lifecycle Manager, which is a combination of open source tools (Cobbler and Ansible), HPE value-added tools (configuration processor) and HPE value-added content (input models and playbooks) architected together into a system for end-to-end seamless deployment. The Helion Lifecycle Manager makes updates and patches easy to deploy, while maintaining any current state or special customizations previously applied to your private cloud.

Hybrid clouds – a multiple cloud approach

Banking applications often have the additional requirement of having to connect traditional services with new technology. Development teams are using current generation application platforms and agile best practices to develop these as cloud ready or cloud native applications. These cloud native applications consume core banking service interfaces and scale out based on demand. Cloud native platforms enable a smooth transition to hybrid cloud. The private cloud infrastructure can fulfill steady state traffic, while the public cloud infrastructure handles occasional spikes in traffic. The wider geographic reach of public cloud infrastructure can also

decrease application latency by deploying in multiple regions closer to customers, while the private cloud meets the data security requirements.

Managed Clouds

In some cases, where enterprises want to choose technology for which they do not have headcount in-house, a managed cloud or managed services option makes the best sense. Through the HPE Managed Cloud Services, HPE teams manage cloud technology for you. HPE experts monitor and manage day-to-day operations to ensure secure, consistent delivery and responsive, reliable service. Using a collaborative approach, we continually adjust our services to meet your changing business requirements.

Architecture & Approach

There are several architectural considerations for banking consumer web applications and native Helion OpenStack capabilities address most of these:

Scale - Traditional web applications with static deployment models do not scale well. These applications can be re-fit to leverage elastic cloud capabilities by updating platform runtimes to support clustering and load balancing. Monitoring application response times and other metrics to dynamically scale the clusters up or down can be easily automated with Monasca.

High Availability – Our HPE Technical Services consulting work with you to design and implement high-availability as part of your HPE Helion OpenStack deployments. Web and database tier clusters run multiple instances and are load balanced. If any instance in any tier goes down, others in the tier continue to serve requests while the monitoring automation triggers a new instance to be added to the pool.

Security – Leveraging Keystone, Multi-tenancy and role based access controls to tenant resources provides a level of isolation. Well-tested guest operating images ensure that web workloads are in a stable, patched environment.

Storage – Based on OpenStack Swift, the HPE Helion OpenStack object storage service provides a highly available, resilient, and scalable storage pool for unstructured data. The HPE Helion OpenStack cloud deployment includes automatic creation of a Swift cluster and starter nodes. It also enables SSL automatically to secure the data transmission.

Cloud native applications (new or extended) can utilize HPE Helion Stackato cloud native application platform based on Cloud Foundry technology. HPE Helion OpenStack supports multi-generational applications on a single IaaS platform.

Service management – Creating service designs for web application deployments and publishing them to an organization's catalog for consumption by approved users is performed in a cloud management platform, like HPE Cloud Service Automation. The service design can target multi-cloud deployments as application needs evolve over time. [CJ1]

The application-centric requirements

Once you have chosen HPE Helion OpenStack, this is a powerful engine for solving a lot of complex problem inside your organization. Open standards make it possible for your infrastructure to benefit from integrations with just about any vendor and technology out there in

order to help your business move even faster. And the control you exert over your private cloud does not sacrifice its ability to be agile and flexible around working with new technologies.

- *Containers*

Developers are choosing containers for their next generation applications. By deploying applications with HPE Helion Stackato, running on HPE Helion OpenStack or popular public clouds, HPE offers the ability to run Docker and container orchestration technologies like Kubernetes/Swarm for deployment, scale and high availability of applications. The multi-tenancy model of HOS also offers a level of isolation for container security.

- *Connect to your existing datacenter services -*

HOS integrates with LDAP or Microsoft Active Directory for identity and access management to cloud resources. The Neutron plugin architecture supports integration of your existing Cisco networking gear as well as SDN solutions like Nuage, OpenDaylight etc. Provider networks enable your cloud resources to be on the same network as your non-cloud infrastructure. Load balancer as a service and firewall as a service are advanced software defined networking services augmenting existing physical devices. OpenStack Cinder drivers also exist for integrating block storage like 3PAR into the cloud.

- *Virtual Machines*

HOS enables a self-service model for provisioning virtual machines on the desired subnet and the required security policies. This eliminates a lot of manual effort across multiple IT teams leading to faster delivery of new applications.

- *Cloud native application platforms/Platform as a Service*

HOS supports the deployment of Cloud Foundry based HPE Helion Stackato. The managed services offered by HPE Helion Stackato along with their portability across clouds enable hybrid, multi-cloud deployment scenarios.

Next steps

We would love to work with you and make your cloud transformation a success story! Please contact professional services to schedule a transformation workshop today! transformation-workshop@hpe.com

