

Large Canadian Bank Adopts Converged Infrastructure

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Converged Infrastructure (CI)¹ is the heart of HP's move to what it calls the Instant-On Enterprise.² HP partner products that support Converged Infrastructure are of paramount importance to achieving the Instant-On Enterprise. Vendors whose solutions qualify as "CI-Ready" are certified by HP.

A large Canadian bank's innovative use of a third-party replication solution provides an excellent example of the adoption of CI. By using a CI-certified product, the bank was able to move to an active/active configuration and

reduce its downtime from hours to minutes following a system failure of its BASE24™ ATM network, thereby achieving true continuous availability.

Gravic, Inc. received the 2011 HP AllianceONE Partner Award for Innovation in Converged Infrastructure Solutions for its contribution to the bank's endeavor. The award was announced in Las Vegas at HP Discover 2011.³

The Instant-On Enterprise

The world is becoming mobile and interactive. Users expect online services to be immediately available to them

anytime and anywhere, whether at work, at home, on the road, or at play. Furthermore, online services must be accessible to users through any of their devices connected to the Internet. It is expected that in the next decade, online devices will be used by five billion people.

In this age of instant expectations, an enterprise must be agile by responding quickly and effectively to changes in its business needs. It must accelerate its time to deployment of new procedures, new products, and new marketing initiatives, and it

must address these changes while continually reducing its IT costs.

This is the Instant-On Enterprise. It streamlines everything that is required to deliver a service. In a time of rapid – even hourly change in how goods and services are delivered, the enterprise must continually reinvent its business on-the-fly in order to survive and prosper.

The Converged Infrastructure

What is the HP Converged Infrastructure?

HP's Converged Infrastructure is fundamental to the Instant-On Enterprise. Information processing services must be easily reconfigurable and reassignable to meet rapidly changing functional and capacity demands as workloads vary and as new applications are added.

Converged Infrastructure is HP's blueprint for organizing IT assets to support the Instant-On Enterprise. It supports the on-demand provisioning of IT services by integrating servers, storage, networking, power, and cooling into shared pools of virtualized interoperable resources. Resource

management is automated through a common management platform. The result is the support of any workload, anywhere, anytime, in order to maximize business results.

CI Design Principles

Converged Infrastructure is built upon five design principles:

Virtualization – All services are virtualized, whether they are servers, storage, or networking. Virtualization separates a service from the underlying hardware, making it possible to reallocate services quickly to match the changing demands of the enterprise's data processing needs.

Resiliency – The Infrastructure is host to many mission-critical applications. It must provide high availability, requiring recovery from any fault within minutes, or even continuous availability, requiring recovery in seconds, while protecting the data that is the enterprise's most important asset.

Open – The infrastructure supports standard architectures and management facilities, which allows the enterprise to leverage its existing IT investments as it adopts new

technologies at its own pace to support and optimize its applications.

Orchestrated – Service levels are managed through automated workflows, provisioning, and change management. Applications can be scaled up or down based on the business' needs. Orchestration also provides central management of all resources, including functions ranging from monitoring to consumption billing.

Modular – The Infrastructure uses technologies engineered for convergence, which allows new technologies to be integrated with existing assets without having to re-engineer the data center. The CI approach gives the enterprise the ability to scale existing services and to add new capabilities to the data center, from x86 servers to NonStop systems.

What Is CI's Focus?

Converged Infrastructure is the ideal approach for enabling cloud computing, for protecting mission-critical applications and data, for consolidating diverse assets through virtualization, and for upgrading or integrating applications.

A Large Canadian Bank Achieves Continuous Availability with Shadowbase®

A large Canadian bank took a major step towards providing improved service to its customers. It modernized its active/backup data center architecture and reengineered it into an active/active network.⁴ The end result? Planned outages for system upgrades have been reduced from hours to minutes, and recovery from an unplanned outage resulting from a system failure or a data center disaster has been reduced by more than 95% from hours or even days to a few minutes. Most importantly, once an outage occurs, the bank's ATM/POS application services are restored to customers much faster, in many cases without the customer even realizing that an outage has occurred.

Project Overview

The Canadian bank operates the largest ATM/POS networks in Canada. Should this network go down, much of Canadian retail commerce comes to a halt. The bank uses the BASE24 product from ACI to manage its ATM/POS network. BASE24 running on HP NonStop

servers is a major application used globally by banks for this purpose.

To ensure continuity of service, the bank operates two geographically separated data centers to support its five ATM network regions. In the original active/backup configuration, one site was active, while the other was a passive standby (Figure 1). A copy of the production database was maintained on the backup system by data replication. Recovery of the application, regardless if for a planned or unplanned outage, was time-consuming and complex and typically took about four hours.

Recovery from an unplanned outage entailed many stages. First, the bank's management had to make the decision as to whether it would be faster to

fail over to the backup system or to attempt recovery of the production system. Making this decision required an understanding of the nature of the fault, which required analysis by the operations staff. When a failover decision was made, applications had to be loaded onto the backup system, its database brought into consistency, the network switched, and the system tested before it could be put into service.

The bank's Project Manager stated, "We needed to improve our application service availability and to provide a better return on our IT investment with a cost-effective and flexible solution." Consequently, the bank decided to dramatically improve its architecture and recovery time

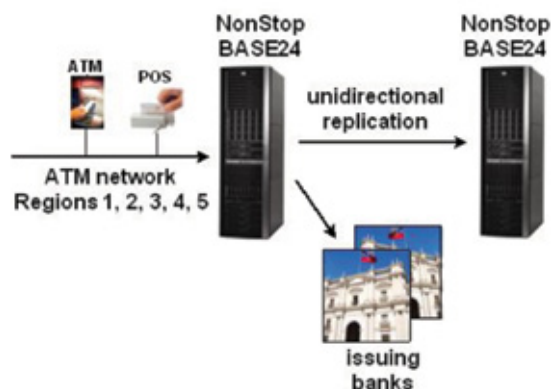
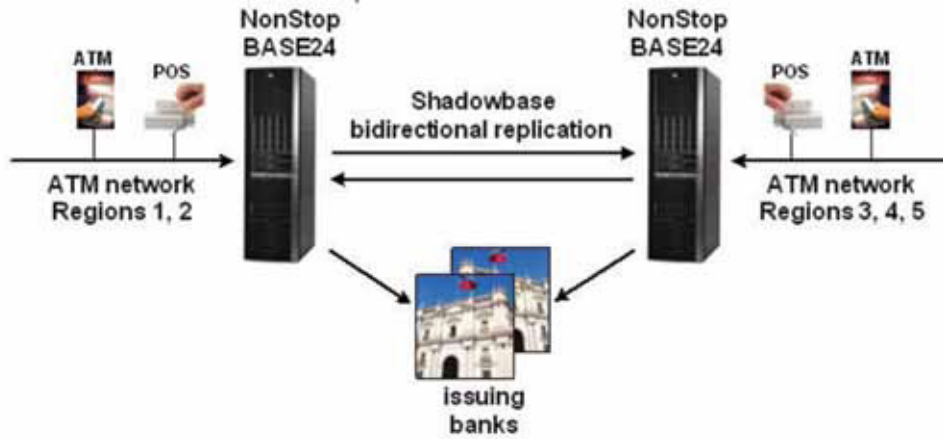


Figure 1: The Bank's Original Active/Passive ATM Network

Figure 2



by upgrading its network capabilities to handle an active/active architecture.

An active/active architecture is a network of independent processing nodes all cooperating in a common application. Each node has its own copy of the application database. Therefore, a transaction can be routed to any node in the processing network and processed properly. The database copies are kept synchronized via data replication. Whenever a change is made to one database, that change is immediately replicated to all other database copies in the network.

As a consequence, if a processing node should fail, all that needs to be done is to route further transactions to surviving nodes. There is no management failover decision time required, as it is known that the other nodes

are operating properly. After all, they are currently processing their own transactions. Recovery for those users affected by a processing node failure can be accomplished in minutes or less. Furthermore, planned downtime can be virtually eliminated by rolling upgrades through the nodes one node at a time.

By using an active/active architecture, the bank can actively run its BASE24 ATM network application across both of its nodes (Figure 2). The bank performed an extensive evaluation of available NonStop replication solutions to find one that fit its active/active needs. Gravic's Shadowbase product suite was selected to meet the bank's data replication and integration requirements. The Shadowbase line of data replication products provides bidirectional data replication capability with the collision detection and

resolution needed to implement active/active systems.

With its new active/active ATM network, the bank uses one NonStop system to control some of the bank's ATM regions. The second NonStop system controls the others. Should one system fail, all transactions are routed to the surviving system. Failover is so fast that users are usually unaware that there has been a fault.

Project Results

Previously, when an outage of the primary site occurred, all of the bank's users were affected and were down for several hours. Now when an outage occurs at one of the data center sites, fewer users are affected (only those connected to that site), and the recovery takes only minutes, a significantly shorter amount of time. More importantly, failover is always to a known working system and environment, as that site

is already actively running the application. The bank no longer has to worry about whether the disaster recovery target environment will come up.

The new architecture also avoids the bank having to pay for idled system capacity. There is no idle standby node. All nodes are performing productive work, and all databases are available for application processing:

Summary

Converged Infrastructure is HP's roadmap to the Instant-On Enterprise. Critical to the success of this initiative is the participation of third-party solution providers to create

products that interoperate to offer virtualized assignment of resources, superior availability for mission-critical services, modernization of applications via application integration, and common management.

A large Canadian bank rapidly implemented an active/active system using Gravic's CI-certified Shadowbase bidirectional replication engine. It was for this success that HP awarded Gravic the 2011 HP AllianceONE Partner Award for Innovation in Converged Infrastructure Solutions.

The Shadowbase suite of products brings to the

Converged Infrastructure the ability for mission-critical applications to provide high and continuous availability by recovering from faults in minutes and even in seconds. Shadowbase replication also supplies the mechanisms that effectively and efficiently integrate applications to rapidly build new capabilities for the enterprise. Companies use the Shadowbase replication products to build active/passive systems for disaster recovery (recovery typically in minutes) and active/active systems or "sizzling-hot" standby systems for disaster tolerance (recovery typically in seconds).

¹HP Converged Infrastructure, HP White Paper 4AA3-3333EN

²The Instant-On Enterprise, HP Business and Government White Paper 4AA2-4205ENW

³2011 AllianceONE Partner Awards (<http://h71028.www7.hp.com/enterprise/us/en/partners/allianceone-2011awards>).

⁴What is Active/Active? Availability Digest; October 2006.



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