Royal Bank of Canada Goes Active/Active for ATM/POS
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The Royal Bank of Canada (RBC) (www.rbc.com) has taken a major step towards providing improved service to its customers by modernizing its active/backup data-center architecture and reengineering it into an active/active network.[1] 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 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.
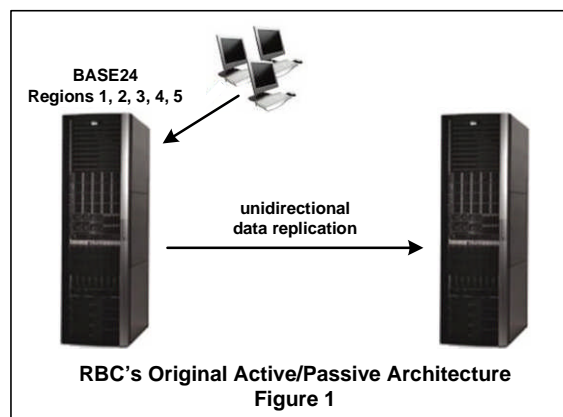
This move was made possible by a dedicated team of IT professionals from RBC and included significant operational and infrastructure changes to support the new environment.

Project Overview

RBC operates the largest ATM/POS network in Canada. Should this network go down, much of Canadian retail commerce comes to a halt. RBC uses the BASE24™ product from ACI (www.aciworldwide.com) to manage its ATM/POS network. BASE24 running on HP NonStop servers is a major application used globally by banks for this purpose.
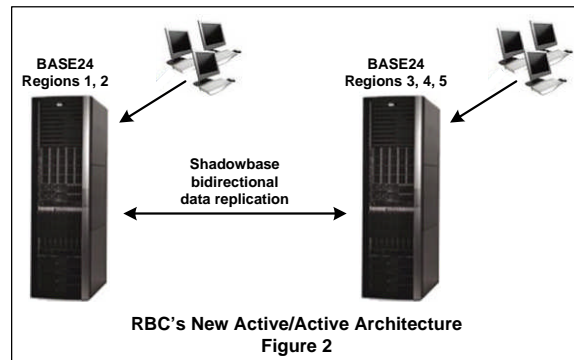
To ensure continuity of service, RBC operates two geographically distributed data centers. In the original active/backup configuration, one site was active while the other was a passive standby (Figure 1). Recovery of the application, regardless if for a planned or unplanned outage, was time-consuming and complex and typically took about four hours.

RBC's Original Active/Passive Architecture
Figure 1

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[1] What is Active/Active? *Availability Digest*, October 2006.

Robert Black, RBC's Project Manager, stated that "We needed to improve our application service availability and provide a better return on our IT investment with a cost effective and flexible solution." Consequently, RBC decided to dramatically improve its architecture and recovery time by upgrading its network capabilities to handle an active/active architecture and then to actively run its application across both sites (Figure 2).

Unfortunately, the bank's original active/backup replication product had neither the necessary features nor the flexibility that the bank needed to implement an active/active architecture. RBC thus performed an extensive evaluation of available solutions.

RBC's New Active/Active Architecture
Figure 2

The Shadowbase product suite, from Gravic, Inc., was selected to provide the data-replication and integration solutions. The Shadowbase line of data-replication products provides the bidirectional data-replication capability with collision detection and resolution needed to implement active/active systems (www.gravic.com/shadowbase).

Project Results

Previously, when an outage of the primary site occurred, all users were affected and were down for several hours. Now when an outage occurs at one of the sites, fewer users are affected (only those connected to that site); and the recovery takes 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 paying for idled system capacity because there is no "standby" node. All nodes are performing productive work, and all databases are available for application processing.

Shadowbase achieved the 2011 HP AllianceOne Solution Partner of the Year award for its contributions to this project.