Empowered by Innovation **NEC**

Online Resources Case Study

IT PLATFORM GROUP

NEC Express5800/1000 Series servers provide Online Resources the bandwidth for performance, availability and scalability

Challenges

- A powerful system to support huge transaction volumes (over 200 million transactions representing $100 billion in bill payments annually)

- System performance and availability to meet the service level agreements (SLAs)

- Scalability and flexibility to meet growing business needs

Solutions

- NEC Express5800/1000 Series servers

- Dual-Core Intel® Itanium® processors

- Microsoft® Windows® Server 2003 Datacenter Edition

- Microsoft® SQL Server 2005 Enterprise Edition

- NEC GlobalMaster system management software

Benefits

- Optimal performance allowing Online Resources to meet the transaction workload demands for clients

- Mainframe-class availability and functionality in an open system for a fraction of the price

- Great scalability to support rapid business growth

- Improved end-user online banking and bill payment experience

Online Resources Profile

Recognized as one of the nation's fastest growing technology companies by Deloitte & Touche, the *Washington Post*, *Forbes*, and *Bank Technology News*, Online Resources (NASDAQ: ORCC) is a leading provider of B2B2C Web-based financial services. Online Resources powers financial technology services for thousands of financial institutions, billers and credit service providers. Founded in 1989, Online Resources serves more than 12 million billable end-users and processes more than $100 billion in payments annually.

Online Resources at a Glance

- **Industry:** Technology provider for the financial industry

- **Headquarters:** Chantilly, VA

- **Founded:** 1989

- **Employees:** 625

- **Stock Symbol:** ORCC (NASDAQ)

- **Revenue in 2006:** US $91.7 million

- **Clients:** 2,000+ banks, credit unions, billers and credit service providers

- **Billable End-Users:** 12 million

- **Payments Processed Annually:** $100 billion

- **Transactions Processed Annually:** 200 million

- **URL:** www.orcc.com

The Challenges – System Performance, Availability & Scalability

Online Resources' core competency is its ability to successfully power financial technology services for thousands of financial institutions, billers and credit service providers. The company offers a wide range of products and services, including online banking and bill payment services, card and credit services, and e-commerce biller-direct account presentment and payment gateways. With a dedicated in-house payment operations staff, consumer marketing division and call center, Online Resources processes a very high, and growing, volume of transactions – more than 200 million transactions representing $100 billion in bill payments annually. The company needed an infrastructure that is powerful, reliable and scalable in order to support these transactions in a continuous processing manner.

"We have stringent service level agreements (SLAs) with our financial service clients that guarantee service uptime and performance, and material financial penalties apply when we are not able to meet the minimum service standards," remarked Bill Michael, vice president of Information Technology for Online Resources. "But the most costly effect of an outage is that we could lose our credibility in the marketplace, which is very difficult to re-establish."

Prior to using NEC's platform solution, the company was looking to scale its technology infrastructure to meet the fast growing transaction volume and ever increasing client demands for higher service uptime. With more than 12 million consumers accessing their online banking systems around the clock to process

financial transactions, Online Resources is continually looking for ways to deliver performance, and minimize maintenance-related downtime and hardware/software defects in order to enhance consumers' online experience and maximize user satisfaction.

Another big challenge for Online Resources was managing growth. "We are one of the nation's fastest growing technology companies, and we see our business growing at an incredible rate year after year," said Mr. Michael. "When we looked for a platform product, we wanted to find a solution that would meet our needs now and can be scaled easily to support our future growth."

The Solution

To improve the performance, availability and scalability of its services, Online Resources turned to NEC Corporation of America. Online Resources conducted an extensive evaluation process that included major platform providers in the market. Leveraging NEC's vector supercomputer innovation and mainframe technology, NEC's Express5800/1000 Series server proved to offer 3x more performance over the competition in the benchmarking (3x transaction increase and a 70% reduction in utilization). It was no surprise that Online Resources selected NEC's Express5800/1000 Series servers for its most demanding business environments.

The platform solution Online Resources deployed included NEC's Express5800/1000 Series servers, Dual-Core Intel® Itanium® processors, and Microsoft® SQL Server 2005 Enterprise Edition database running on Microsoft® Windows® Server 2003 Datacenter Edition. With excellent performance reported,

Powered by the Dual-Core Intel Itanium processor with the NEC designed third-generation chipset "A3" (A-cube) and NEC's innovative Very Large Cache architecture, the Express5800/1000 Series server is designed to meet the scalability and flexibility requirements of today's mission critical enterprises.

Online Resources decided to deploy NEC's Express5800/1000 Series servers throughout the enterprise.

Powered by the Dual-Core Intel Itanium processor with the NEC designed third-generation chipset "A3" (A-cube) and NEC's innovative Very Large Cache architecture, the Express5800/1000 Series servers deliver the exceptional performance, availability and scalability that Online Resources demands. With options from eight to 32 CPUs and up to 1 TB memory capacity, NEC's Express5800/1000 Series server is designed to meet the scalability and flexibility requirements of today's mission critical enterprises.

Online Resources also chose to deploy NEC's GlobalMaster management software, a system management solution designed to manage the innovative server hardware partitions and software resources from a Web-based, easy-to-use user interface. GlobalMaster provides autonomic reconfiguration of the server in the event of a part failure. The application also enables automatic system optimization through processing and I/O reconfiguration. Using GlobalMaster, Online Resources is able to reduce its overall IT management and operating costs while maintaining high availability and scalability.

The Results

The combination of NEC's Express5800/1000 Series servers, Dual-Core Intel Itanium processors, and Microsoft SQL Server 2005 running on Windows Server 2003 provides Online Resources the performance and scalability of mainframe-class systems for a fraction of the price. The solution automatically detects and isolates faulting hardware before an outage occurs. This means that Online Resources' critical applications will keep running, when they previously would have failed, minimizing

downtime and avoiding the high costs of critical application outages. In implementing the NEC solution, Online Resources has now achieved a key element of its growth strategy with the ability to provide continuous services and better system performance to its end-user customers.

With NEC's GlobalMaster system management software, Online Resources can now centrally and proactively manage servers and monitor storage usage, further enhancing system availability. The company is able to increase automation through the use of GlobalMaster, resulting not only in increased productivity, but also higher employee satisfaction.

The results delivered by the NEC's platform solution were impressive. Overall benefits to Online Resources include:

- **Faster transaction response and improved system performance** enabling continuous delivery of services to stringent SLAs

- **Enhanced system scalability and flexibility** supporting rapid business growth

- **Improved manageability and savings in total cost of ownership (TCO)** by scaling up Microsoft SQL Server 2005 (over typical scale-out solutions)

- **Automated fault detection** preventing downtime before they happen, drastically improving service availability

- **Improved services and performance** translates into optimal online banking experience for end-users

Next Step

NEC's leadership in Dynamic Partitioning was also a key factor for Online Resources in selecting NEC Express5800 Enterprise Servers. Designed as NEC's mainframe modernization platform, NEC's Express5800

■■■ "NEC's Express5800/1000 Series servers deliver the exceptional performance, availability and scalability that Online Resources demands to better serve our online banking customers."

Bill Michael,
VP of Information Technology
Online Resources

NEC

■ ■ ■ "If we add a client tomorrow with 500,000 online accounts, we have to be able to get them all live immediately. NEC's Express5800 Enterprise Server with Intel's Itanium processors and Windows Server 2008 will allow us to achieve this without any impact to system performance and availability."

Bill Michael,
VP of Information Technology
Online Resources

Enterprise Servers were utilized by Microsoft® as the reference platform to develop Windows® Server 2008 Dynamic Hardware Partitioning. This advanced functionality, implemented first in the NEC Express5800/1000 Series server, delivers new levels of high availability and flexible resource management only previously available in proprietary mainframe technology.

Combined with the innovative availability technology of the NEC Express5800 server, sub-systems working outside of the stated specifications can be isolated and replaced before a system-wide failure, with no interruption to system performance and application operations (hot replace).

In addition, when a business critical application (such as Microsoft SQL Server) requires additional resources (processor, memory or I/O performance), Dynamic Partitioning enables the addition of these resources to an existing hardware partition without interrupting system operations (hot add). Windows Server 2008 recognizes the new hardware and dynamically expands its operating environment to take advantage of the new resources without interrupting system operations.

The combination of the NEC Express5800 Enterprise Server and Dynamic Partitioning allows administrators to boost performance "on demand" to meet peak processing requirements. "We are looking into this emerging technology," said Mr. Michael. "Dynamic Partitioning will allow Online Resources to be more responsive to the dynamic nature of our business, and deliver better performance to our clients' end-users, regardless of the demands on the system."

Moving forward, Online Resources will continue to rely on NEC's innovative technology to support its business continuity objectives. The company plans to upgrade to Windows Server 2008 and SQL Server 2008 in the near future to take full advantage of the Dynamic Partitioning functionality.

"Being able to scale and service our Windows environment on the fly is a break-through value, and we are eager to work with NEC to deploy the Dynamic Partitioning feature," stated Mr. Michael. "If we add a client tomorrow with 500,000 online accounts, we have to be able to get them all live immediately. NEC's Express5800 Enterprise Server with Intel's Itanium® processors and Windows Server 2008 will allow us to achieve this without any impact to system performance and availability."

NEC CORPORATION OF AMERICA
IT PLATFORM GROUP

2880 Scott Boulevard
Santa Clara, CA 95050

www.necam.com
Enterprise@necam.com
1 866-632-3226

NEC Corporation of America