elcom, inc. pioneers an exceptionally highly-available IT infrastructure aided by HP

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It’s never an easy life being a pioneer, one is constantly having to look for new ways to achieve one’s goals and that’s certainly been true for elcom, inc. The company was an early pioneer in business-to-business (B2B) e-commerce with the 1993 introduction of its Personal Electronic Catalog Ordering System (PECOS): enabling enterprises of all sizes to rapidly deploy systems and realize the many benefits of B2B e-commerce. elcom then took the next step and offered its customers a remotely-hosted solution thereby removing the burden of infrastructure investment and ongoing content and system management.

Today, elcom is the global leader of rapidly deployable, remotely-hosted eProcurement and eMarketplace solutions. elcom recognized very early on that the Internet was rapidly changing markets and accelerating the trend away from high maintenance and costly enterprise-based infrastructures. By developing rapidly deployable, remotely-hosted B2B e-commerce solutions elcom has provided the most cost effective way for companies to take advantage of the constantly evolving Internet economy.

**continuing to trail blaze**

“As a pioneer in this marketplace we continue to look for innovative and progressive solutions. Since 1999 we have re-evaluated our entire application service provider (ASP) infrastructure, and have performed a complete redesign of the applications and the environment in order to support the ASP business well into the future,” explained Jim Hanrahan, vice president of Information technology for elcom, inc.

elcom based its strategy on a highly available infrastructure, offering its customers an outsourcing capability that inspires complete trust. In moving forward as an ASP, elcom plans to perform even more application outsourcing for customers and wanted them to be completely comfortable that the right infrastructure was in place. Hanrahan noted, “What we did was to look at getting the architecture right, here in our Norwood facility – we wanted a one hundred percent redundant architecture.”

**creating a new culture**

He elaborated, “We led off by centrally pooling our resources and building an environment that is extremely highly available without full data facilities duplication. We have created two data centers at our Norwood location. The data centers are supported by two un-interruptable power supplies from different manufacturers, backed by two different generators with diverse fuel sources – one natural gas and one diesel.”

The data centers are fed with two different T3 lines having diverse routing from different Internet Service Providers. The T3 lines enter into the network architecture through redundant routers, interconnected firewalls and high-end Cisco switches. The routers are running Hot-Standby Routing Protocol (HSRP) to perform conversation fail-over, should the need arise.

“A user can log into the application servers from either T3 line,” said Hanrahan. “If a fail-over does occur, the architecture of both data centers is actively leveraging the flexibility of the Internet. For example, in the event of a T3 failure a user’s interaction with an application is preserved and continued by re-routing that interaction to the second T3 line. In addition, we have some redundant networking connections to our West Coast facility in San Diego, California and to our United Kingdom office.”

**establishing an effective hierarchy**

The first tier of elcom’s three-tier application architecture presents customers with a web-based browser interface to access the application middle tier load balanced behind the Cisco local directors. This middle tier consists of a pool of Microsoft Windows® NT servers utilizing HP Netservers to host the business applications. The third tier comprises of two HP 9000 N-Class servers in an Oracle Parallel Server (OPS) configuration, using HP MC/Serviceguard for hardware fail-over, hosting the core database where all the client data is stored. These servers are quadruply connected to a storage area network (SAN) with the HP SureStore E Disk Array XP256 via double Brocade switches. elcom used HP Consulting to assist in optimizing the HP MC/Serviceguard
configuration of the N-Class servers in the third tier of the architecture, which holds customer data.

“Our entire architecture is covered by an HP Critical Systems Support contract providing 4-hour onsite call-to-repair,” commented Hanrahan. “The design of the environment means that it can suffer an individual server outage without reducing availability and allowing HP to come in and repair it.”

He continued, “We primarily use HP OpenView VantagePoint ITO for our systems management. I view this software like having extra staff on rotation – it doesn’t call in sick – it’s always running and does a very consistent job of alerting us to potential issues. It gives us a very detailed level of monitoring and control across the environment – it even pages us if there’s a problem.”

Scalability is an important component to ensuring consistent application performance for the end users. Each one of elcom’s HP 9000 N-Class servers has a pair of CPUs in it today, allowing additional CPU’s to be added within each server, plus the OPS cluster configuration can be expanded in the future to include more N-Class servers. In the middle tier elcom are running the LE6000r model of NetServers, which have a capacity of six CPUs. “We typically have two CPUs in each one of those servers,” noted Hanrahan.

“If even more horsepower is needed in a particular cluster I have the choice of adding more CPUs to the existing servers, or adding another Netserver to the cluster. With this infrastructure we can assign a cluster to one large corporate client or a cluster can serve a number of smaller clients.”

planning for disasters

“When everything was implemented we found we had a very manageable, expandable environment, however, we also recognized that we needed to deal with disaster recovery,” explained Hanrahan.

“We did the research and we looked at doing the recovery at another elcom-owned location ourselves, but after the cost analysis and the estimation of effort it would involve, it made no sense, so we decided to go with outsourced services. We looked at IBM and HP, and it came down to appropriate pricing from HP backed by very capable people. HP had the experience performing recoveries and would help us put the right procedures together to be successful,” he said.

elcom has contracted for the HP Business Recovery Critical Service, giving it an 8-24 hour recovery window, which meets its business objectives. Hanrahan commented, “If we were to have a data center disabling disaster, we can place a phone call, mobilize HP support and have our applications up and running at one of HP’s Business Recovery Sites (BRS) within the 8-24 hours and our customers will be able to continue operations.”

elcom also has HP’s Technical Recovery Procedures (TRP) Service. The TRP service provides elcom with an account assigned contingency planner who met with elcom before, during and after their first rehearsal at HP’s Philadelphia Area center. The outcome of these sessions was a completely documented step-by-step plan for exactly how to recover each of elcom’s systems. HP now keeps these plans current on an ongoing basis, so that elcom will always be well prepared for future rehearsals and for a disaster.

Hanrahan explained, “To keep us on our toes we’re scheduled to do three to four disaster recovery rehearsals per year. So far we’ve done one and we’re planning our next one in about 6 more weeks. The first one was very successful – we were able to bring up our systems and conduct transactions within the right timeframe and we were very happy about that.”

elcom’s recovery solution provides Internet access to the systems at HP’s recovery center and includes proprietary BRS scripts, which capture volume and configuration information about elcom’s production environment. These scripts are run on a regular basis and the data is transmitted to HP’s recovery center for immediate use in the event of a disaster – dramatically reducing elcom’s recovery time.
the new world of high availability

e1com has contracts with all of its customers that contain specific service level agreements (SLAs). Hanrahan admits, “I don’t monitor each contract specifically, we strive for zero outage across our entire infrastructure. We manage the environment to a very detailed level and because of the design the most we suffer is component level failure, which given our redundancy doesn’t affect end-user availability. The clusters are made up of three to five Netservers and even if one machine becomes unavailable the client’s application is still available. I can increase the clusters to meet the highest demands of our biggest customers.”

The new environment has been in place since mid-2000. Hanrahan is pleased and noted, “We feel it is substantially superior to our old one by being more manageable and very highly available. We can now very rapidly send information to one of our diverse locations (UK, San Diego) and essentially manage everything from Norwood. We’ve been able to reduce staff and yet manage a larger environment.”

He continued, “It’s helped us be able to sell to more clients because we can show that we are meeting the SLAs of our existing customers. We are in a competitive business and this infrastructure puts us in a very strong position.

“I’ve been dealing with HP for many years and they’ve continued to be a high quality company in everything that they do and make. They put quality first, they stand behind their products and their customers,” he concluded.

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