NTT Plala, Inc.

Cisco VXI-Based Office PC Desktop Virtualization
36% Less Electricity Used Office-Wide; Improved Operability, Convenience and Security

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Installation Background and Challenges

• After the 2011 Tohoku earthquake, electricity conservation became a vital challenge for all businesses. NTT announced a group-wide goal of cutting electricity consumption by 30%, but NTT Plala's mission was to realize even greater electricity savings.

• NTT Plala had implemented call center desktop virtualization in 2005 with the goal of improving security. The company knew this also had an electricity-saving effect. As a result, the idea of introducing virtual desktops was presented as an effective way to respond to the call to save electricity in March 2011.

• After comparing solutions from several vendors, NTT Plala opted for Cisco VXI for several reasons: No major change to user experience before/after implementation; the ability to use previously-installed applications; high operability; high cost performance etc.

• Cisco was praised for implementing a concrete, realistic proposal in a very short period of time: three and a half months after deliberation began and only one and a half months after a solution was decided upon.

Installation Solution

• Cisco Virtual eXperience Infrastructure (VXI)
  - Cisco Unified Computing System (UCS)
  - Cisco Virtualization Client (VXC)

Benefits of Installation

• Electricity consumption cut by 90% per client. Including the servers running the virtual desktops, total electricity use was cut by 45%.

• Including other processes, overall office electricity use was cut by 36% between 2010 and 2012.

• PC environment setup was simplified. Work which used to take a day or more per machine can now be handled in about 30 minutes.

• Server-side data management improved data security.

• The system is now more convenient for users. Powering on a PC used to take up to ten minutes; with Cisco VXC, the system is now usable in about ten seconds. Even after temporary office-wide power outages, the virtual desktops went right back into operation once power was restored. Only a small installation footprint is needed, allowing users to make fuller use of their desk space. Users can also access their desktops on Cisco VXC systems, as well as the one on their own desk.

• The company acquired ISO14001 environmental management system and OHSAS18001 occupational health and safety management system certifications in December 2011; the introduction of Cisco VXI played a major role in this. These certifications allow NTT Plala to submit bids to public institutions.

NTT Plala Inc. provides a wealth of services, from its Hikari-TV video streaming service to its Plala ISP packages, and also actively pursues a full corporate social responsibility policy. As part of the electricity-saving efforts, the company has a project underway for running internal PCs on virtualized desktops. Cisco VXI was utilized to provide the solution, and implementation was successfully carried out within just a month and a half. The result: 45% less electricity consumed for desktops. Combined with other processes, the office realized a 36% drop in consumption. The company also boosted system security and improved interface usability for its staff. Now they're seeking to further expand this system, adapting it for a variety of work styles.

Desktop Virtualization to Conserve Electricity

After the Tohoku earthquake and tsunami of 2011, energy conservation became an urgent issue across Japan. For businesses, it has become a major operational theme that cannot be ignored. In addition to fulfilling a social need, cutting electricity consumption also helps reduce costs. As a result, businesses have taken a variety of approaches and reviewed their electricity-consumption framework.

As part of their ongoing efforts to reduce power consumption, NTT Plala decided to convert its internal PCs to run on virtual desktops. NTT Plala is an Internet service provider that runs the Plala consumer/business ISP and the Hikari-TV video streaming service. The company served 2.24 million Hikari-TV subscribers and 3.11 million Plala subscribers in September 2012. The company's focus is on what they call "4C+C": the four C's of Customer, Communication, Challenge and Creation, as well as a fifth C for its corporate social responsibility (CSR) policy.

NTT Plala believes conserving electricity is an important part of its CSR policy. "NTT raised a goal of cutting electricity use by 30% across the entire group," said Ryuichi Sato, NTT Plala director and head of general coordination and policy planning. "However, we instituted a number of steps in order to try and surpass that goal." Concrete steps included switching to LED-based office lighting, dimming lights and reducing overtime work in the evening hours. "Desktop PCs formed a hefty chunk of overall office electricity consumption," Sato noted. "To reduce that percentage, we decided that introducing thin clients would be vital in our approach."

NTT Plala's decision to go with thin clients as an electricity-saving tool comes from its previous experience with the technology. The company introduced thin clients to its call centers in 2005 in order to improve security, but the move also proved to be highly effective in cutting electricity usage. When the call to conserve electricity came following the Tohoku earthquake, thin clients were proposed as one of the most effective solutions.

The company began deliberating on the introduction of thin clients in March of 2011.

After considering several possible implementations, the group decided to take the virtual-desktop approach. The reason: Virtualization provided the best electricity savings. "From previous experience, we knew that the blade-PC approach would be the quickest one to implement," said Sato. "However, this approach requires a great deal of server-side equipment, which means we wouldn't save very much electricity in the end. Instead, we came to the conclusion that a virtual-desktop approach that lets us store multiple client PCs in a single server would help us to make far more savings in electricity consumption."

After deciding on this approach, NTT Plala compared solutions from a number of vendors. In mid-May of 2011, the company decided to go with Cisco Virtual eXperience Infrastructure (VXI). After introducing Cisco Unified Computing System (UCS) in its data centers, the group gradually moved approximately 300 PCs to Cisco Virtualization Clients (VXC).

"The biggest issue in this conservation effort was how to cut usage during the peak summer months," said Katsumi Nagata, director and head of the main technology group at NTT Plala. To cut costs in the summer, the company needed to have its environment fully set up by July. As a result, NTT Plala completed deployment in astonishingly quick time — about three and a half months after deliberation began, and only one and a half months after opting for the virtual-desktop solution.

Emphasis on Operability and Cost Effectiveness; Praise for Quick Proposal Turnaround

Why did NTT Plala opt for Cisco VXI? Nagata gave six reasons.

First, the system put very little burden on users. The company's Cisco VXI environment uses VMware View as its desktop virtualization software. This allowed the group to virtualize its PCs while still retaining the entirety of their previous environment. "If the environment had changed before and after the move, that would've made it harder for staff to use," said Nagata. "We thought hard about this issue in order to avoid the problem from occurring."

Second, the system did not place any restriction on the applications that could operate under it. VMware View was also key in making this happen. NTT Plala runs a variety of different applications in each of its departments, all of which had to remain usable as-is in the new environment.

Third, the system boasted high operability. "Using Cisco UCS in the server was an important point for us," said Koji Tsuchikawa, chief network management engineer for NTT Plala's main technology department. "With Cisco UCS, the network uses a fabric-interconnect topology, letting us build the system with a minimum of cabling. The 'wire once' concept (where engineers set up cabling only once and can change the system structure later without any physical reconnecting) was particularly attractive to us. Cabling is always the trickiest part of building a new network. Getting that out of the picture improves operability and helps us avoid breakdowns."

Tsuchikawa also noted that having all servers connected to a single Layer 2 network allows them to handle live migration at will, also improving operability. Easier live migration keeps the company from having to shut down user desktops whenever server maintenance is needed. Desktops running on a server that needs work can be quickly and easily moved over to other servers. Being able to run the system like this opens up a wealth of new possibilities.

Fourth, the system makes it easier to retain security. NTT Plala staff have access to different servers depending on their department and position. According to Nagata, Cisco UCS makes it easier for the system to enforce these access restrictions on the network level as well. This is because replacing the virtual switch installed in VMware with a Cisco Nexus 1000V allows for unified management of network policies. Retaining network policies is a major issue when running live migration in a virtual environment, but everything is handled automatically when using Cisco Nexus 1000V switches.
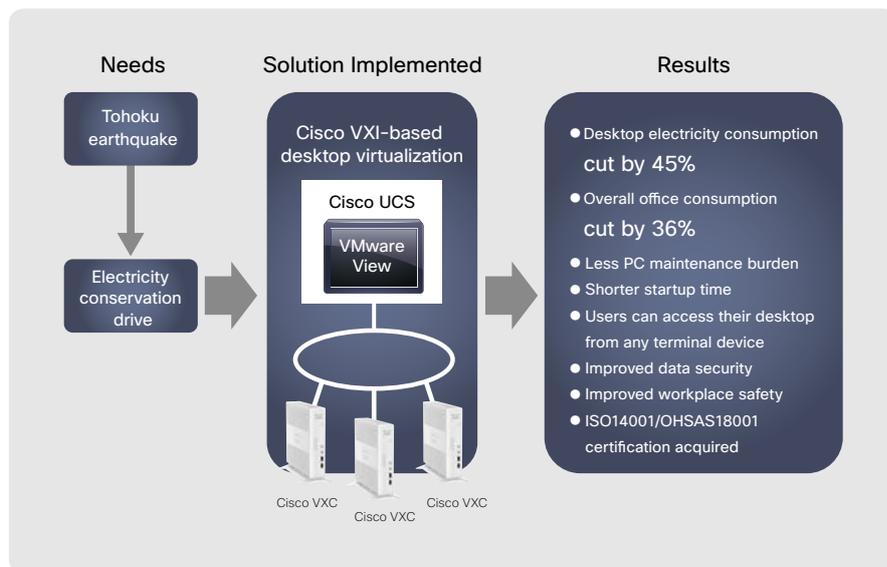
Fifth, the system offers high cost performance. When comparing overall system costs for running 300 virtual desktops, Cisco VXI proved to be the best value compared to other companies' solutions.

The final reason NTT Plala went with Cisco: The company's speedy response to its needs. "We said that we wanted the system running and usable by the start of July," Nagata said. "Cisco was the only company that gave us a concrete, realistic proposal in response." Cisco's proposal involved several steps. First, before building a live environment, the company would introduce an advance server that could be validated as it ran. As this server was be-

Needs

- Tohoku earthquake
- Electricity conservation drive

Solution Implemented

Cisco VXI-based desktop virtualization

Cisco UCS

VMware View

Cisco VXC   Cisco VXC   Cisco VXC

Results

- Desktop electricity consumption **cut by 45%**
- Overall office consumption **cut by 36%**
- Less PC maintenance burden
- Shorter startup time
- Users can access their desktop from any terminal device
- Improved data security
- Improved workplace safety
- ISO14001/OHSAS18001 certification acquired

ing tested out, the company would also build the live environment in parallel. Once the live environment was complete, desktops running on the advance environment would be moved to the live server, as other PCs were gradually converted to the virtual environment. This process ensured both a quick turnaround and a stable migration process.

Following this proposal, NTT Plala built the advance server environment in mid-June of 2011. The company virtualized approximately 40 PCs and verified correct operation of the environment. Build work on the live environment took place simultaneously, and everything was in full operation by the early-July deadline. "Even I had some concerns about whether this schedule was realistic," Nagata recalled. "However, Cisco put in a greater effort than I expected to get everything up and running in such a short time."

45% Less Electricity Used in Desktops; Improved User Convenience and Security

Virtualizing desktops with Cisco VXI has resulted in major electricity savings. According to NTT Plala's measurements, one of the PCs they previously used would consume 60 to 80 watts of electricity. With Cisco VXCs, that figure is down to about 7 watts. On a per-client basis, that's a 90% drop in electricity usage. Of course, the electricity consumed running the virtualization servers must be factored into this. Even with the servers continually running, NTT Plala reported electricity savings of 45% for all desktop-related services.

How much power did the office save overall? "Compared to 2010, we cut electricity by 30% in the summer of 2011 and 36% in the summer of 2012 across the entire office," Sato reported. The company successfully surpassed its original goal. This was thanks to all of NTT Plala's various conservation efforts. However, Sato stated that the chief electricity savers were dimming lights, moving overtime work from nights to mornings and virtualizing their office desktops.

The company also reaped benefits beyond saving electricity. According to Tsuchikawa, vitualization also greatly simplified the building of new PC environments. Compared to the old PC environment, less time is now required to get desktops in operation. For example, a user's PC environment may need to be reconstructed after moving departments. Previously, this involved a hard-disk refresh and setup process at the user's new location. Work could take a day or longer per computer. Now, though, all the administrator needs to do is apply an image template, a process that takes only about 30 minutes. "Sometimes we need to set up PC environments for short on-the-job training courses for new hires," Tsuchikawa explained. "It used to involve a great deal of work setting up all these PCs, which would only be used for two or three weeks. With Cisco VXI, everything's set to go in a much shorter time. We're able to turn things around far more quickly than before."

The company also saw improvements in security. All data is now managed on the server side instead of the client, making it harder to remove data from the system.

NTT Plala, Inc.

Location
Sunshine 60, 24th Floor
3-1-1 Ikebukuro, Toshima-ku, Tokyo
Established
December 18, 1995
Capital
12.321 billion yen
Employees
380

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For users, the work now runs more smoothly in practice as well. Launching one of the old PCs used to take several minutes; with Cisco VXCs, the system is ready for use in about ten seconds. Since the new terminals are much smaller, users now also have more space on their desks. "We call this a 'clear desk' system," Sato said. "We've received praise for it because it helps improve workplace safety."

The new system also lets users access their desktops from Cisco VXC units, as well as the one on their desk. This contributes greatly to user productivity. NTT Plala has two separate offices within Tokyo, with employees frequently going between offices to conduct meetings and do other work. With Cisco VXI, employees can access and work on their own desktops without having to return to their own office.

In December 2011, NTT Plala acquired ISO14001 environmental management system and OHSAS18001 occupational health and safety management system certifications. "Virtualizing our desktops played a major role in this effort," commented Sato. Sato also noted that obtaining these certifications allows the company to submit bids to public institutions. "Virtual desktops offer a more systematic, easy-to-understand approach than other methods," he said. "They easily appeal to clients, which is another benefit for us."

Developing New Work Styles with Virtual Desktops

NTT Plala did not virtualize all of its office PCs in this effort. Many PCs remain non-virtualized, such as computers handling large amounts of data, PCs used in video verification work and development systems. However, after the necessary technical verification process, the company has plans in line to gradually virtualize these PCs as well. If successful, this effort should further contribute to NTT Plala's electricity conservation efforts.

Meanwhile, the company is also exploring new work styles that take advantage of virtual desktops. One example being deliberated upon is allowing more employees to work at home. This would enable employees who need to take care of young children or elderly relatives to be able to continue to conduct business from their homes. "This is already in the testing phase," said Sato. Once a full company system is in place, he said, he feels that such employees would be able to contribute to company projects equally as well.

Virtual desktops like these allow for more than just major electricity conservation. They offer better operability, better convenience, improved security and the potential for new and innovative work styles. With the right solutions in place, investing in virtualization could produce major benefits for companies.