

Thin Client Solution

Tsukuba Science City



Customer

- Tsukuba City, Ibaraki Prefecture, Japan

Industry

- Local Government (Municipality)

Challenges

- Burdening workload to maintain functionality and security of distributed PCs with inconsistent environments
- PCs required dual booting to switch between systems
- Complicated PC software licenses
- Many underutilized PCs

Solution

- Virtual PC Center thin client system (desktop virtualization solution) with virtualized PC sharing
 - Thin client notebook terminal US40a
 - Virtual PC server / management server: NEC Express5800 Series servers
 - NEC SAN Storage
 - Virtual PC Center management software

Results

- Enhanced security
- Significant power efficiency improvement
- Reduced TCO by optimization of IT resources
- Elimination of underutilized PCs and its application licenses
- Enhanced usability by smooth switching between two systems
- Significantly reduced operational management workload

<http://www.city.tsukuba.ibaraki.jp/>

How can client PCs and data, dispersed over departments and branch offices, be efficiently managed while enhancing security levels? This is a common concern for many corporations and municipalities. Tsukuba City of Ibaraki Prefecture, Japan, found its solution in desktop virtualization.

Home to many universities and leading edge research institutions, Tsukuba City of Ibaraki Prefecture is known as a science technology hub of Japan. The municipality of Tsukuba has long been actively engaged in the implementation and operation of innovative IT systems.

For example, PCs are controlled under three security status levels—prohibited, limited, or monitored status—according to the user's task and authority level. In addition, using PCs outside of the office and writing data to USB memory devices are restricted. Furthermore, the city's IT system uses separate OSs for its mission critical system which accesses information about citizens and its internal information system—dual booting required users to select the OS according to their task to avoid simultaneous access to both systems while reducing the number of terminals.

Challenges

However, the city was facing difficulties maintaining its IT system. "PCs in the municipal office numbered over 1000 and their environments were hardly consistent. Since we have about 170 remote offices, it required tremendous work to apply security patches and policy settings for each client PC," recalls Mr. Junichi Kazami, Manager, Information Systems Division, General Affairs Department of Tsukuba City. It was often the case that his department staff were too busy with PC maintenance for their primary tasks. In addition, there were concerns that the dual boot system was time consuming and therefore reducing productivity. Users had to shut down the OS they were using to boot up the other OS when switching between mission critical and information related tasks.

Solution

What caught the interest of Tsukuba City for its IT solution were thin clients or desktop virtualization. The city’s approach to the technology dates back 10 years.

“From around the time the Information Network Center was launched, we had started searching for a new client environment. Demonstrations showed that desktop virtualization was extremely effective. We first were attracted by benefits related to security and operational management—there was no risk of data loss because terminals did not store any data whatsoever and security patches and policy settings could be distributed in batch. On top of that, centralized management could simplify otherwise extremely complicated software license management,” explains Mr. Hiroyuki Tsukamoto, Chief, Information Systems Division, General Affairs Department of Tsukuba City.

However, despite their interest, at the time the solution was unable to support the city’s self-developed applications and shortcomings of the network forced them to give up the implementation.

It was the new municipal building, opened in May 2010, that put desktop virtualization back on the table. The city recognized that the relocation to the new office was a good opportunity to review their client environment. During the intervening years, virtualization technology had advanced and previous issues had been resolved. The city concluded that time was ripe to introduce desktop virtualization. Following the decision, the city drew up the specifications, conducted the bid, and as a result selected NEC’s Virtual PC Center thin client system (hereinafter VPCC) as their solution. NEC Fielding undertook the onsite implementation.

For Tsukuba, the greatest advantage of NEC’s VPCC was its virtualized PC sharing technology—a method which allows multiple users

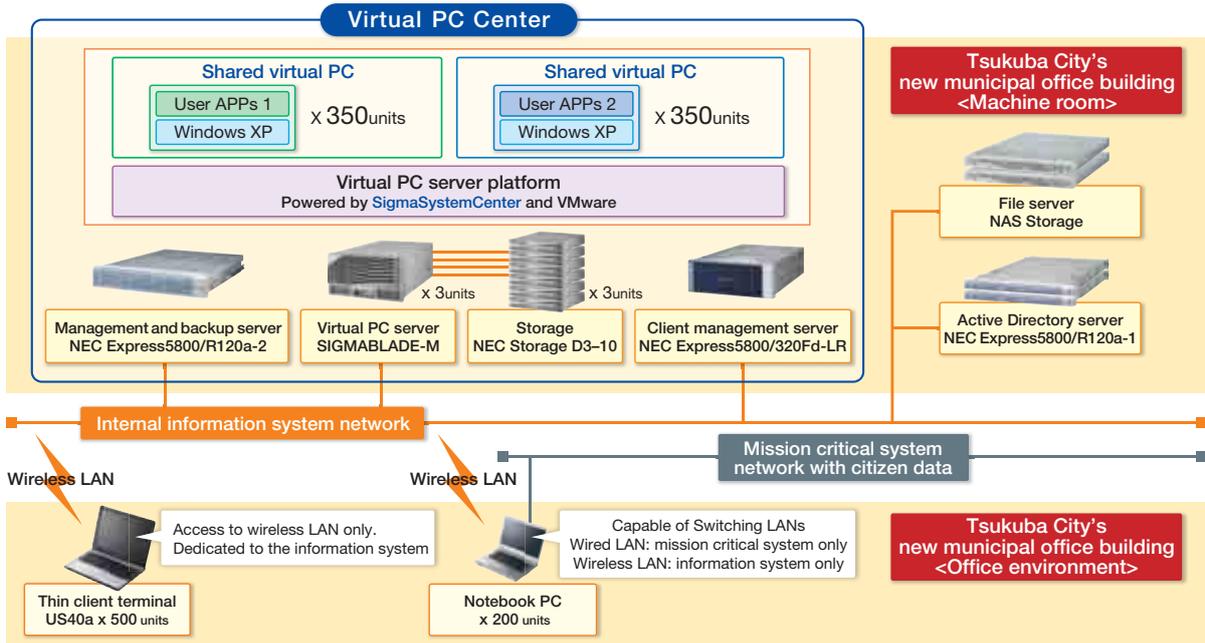
to share a common application environment. “Our survey on PC usage had showed that, contrary to our expectation, quite a few terminals were left unused by staff members who were out of the office for meetings, business trips, or absence on leave. Therefore we determined that by adopting virtualized PC sharing technology, instead of having one PC for every staff, we could build an environment with a PC for each of the staff members working the same hours,” explains Mr. Tsukamoto.

Results

With the adoption of virtualized PC sharing, the information system environment was greatly reduced from over 1000 PCs to 700 virtualized PCs plus a minimal number of traditional PCs for specific operations. Mr. Kazami comments, “We have 700 virtualized PCs for 1000 staff working with the information system in the main office which demonstrates that we are making maximum use of our resources. Shifting from an environment with one PC per staff member to this new environment with just enough PCs for the simultaneously working staff helped us achieve significant reductions.”

Throughout the system configuration process, great attention was paid to improving usability. With the new system, staff who engage in tasks with both the internal information system and the mission critical system which accesses citizen data no longer need to reboot the OS when switching systems. “This was achieved by completely separating the environment and network of the two systems. The mission critical system requires a PC installed with an OS and wired LAN, while the information system is used by accessing a virtualized PC via wireless LAN,” explains Mr. Yuichi Numajiri, Assistant Manager, Information Systems Division, General Affairs Department of Tsukuba City.

● System Overview



Virtualized PC sharing achieves efficient resource utilization and cost reduction. Notebook PCs connected to the mission critical system can access the information system by switching to the virtualized PC environment residing on the VPCC platform via wireless LAN

About

Located 50km northeast of Tokyo, Tsukuba City of Ibaraki Prefecture is historically well known for the legendary Mt. Tsukuba dominating its northern area. Designated as Tsukuba Science City by the Japanese government, Tsukuba is the base of many private and governmental institutions devoted to research and development of leading-edge technologies.



Project members of the Information Systems Division, General Affairs Department of Tsukuba City: Mr. Junichi Kazami (below right), Mr. Yuichi Numajiri (below left), Mr. Hiroyuki Tsukamoto (above right), Mr. Hideki Aizawa (above left)

For further usability enhancement, virtualized PCs are pre-installed with one of two master images with different sets of applications. Users can choose a virtualized PC by the two sets of applications, applied to 350 virtual PCs each, according to their task.

The new system has benefited Tsukuba in many other ways including contributing to the city's active efforts for environmental enhancement. By replacing the traditional PCs with US40a thin clients, power consumption of terminals has dropped by around 75% of previous levels.

In addition to power savings, when the system is extended to the remote offices, thin clients are expected to improve operational manageability even more. "Some remote offices are located as far as 30 minutes from the main building. VPCC can bring significant difference through centralized management and simplified maintenance of remote PCs," foresees Mr. Hideki Aizawa, Chief, Information Systems Division, General Affairs Department of Tsukuba City.

The successful implementation of an IT infrastructure by Tsukuba, the city of leading science technologies, offers a valuable example for corporations and municipalities facing various challenging issues.

Smooth implementation by One NEC

The onsite implementation, preceded by intensive operational testing, was managed by NEC Fielding. Mr. Tsukamoto, pleased with the process mentions, "Issues concerning application operations and compatibility with other systems were detected at a fairly early stage to minimize modifications in the latter process." It was the good coordination with the Virtual PC Center Product Division that is credited for this achievement. NEC Fielding and the Product Division shared their know-how from previous implementations including proven knowledge related to application validation and virtualization procedures. Therefore issues that arose could be swiftly communicated and resolved.

With these thorough arrangements, implementation to the new municipal building was completed in merely two months.

The success of this project is a perfect example of the strength of One NEC—providing the best by leveraging the expertise of the whole NEC Group for customers.



A total of 700 virtualized PCs are centrally managed in the server room of the main municipal building. Municipal staff members using the virtualized PCs see very few differences from traditional PCs