"The location-free office which the Virtual PC Center created was received enthusiastically by the CEO, the Board members and the employees. Considering the benefits we've seen, the solution is very cost effective."

"Work is more efficient as employees can work in the same office PC environment regardless of time and location. We were able to present a revitalized information system to the employees."

Since its foundation in 1946, PHP Institute has demonstrated many achievements in three key activities—research, publishing, and education. Over 400 employees, including outsourced personnel and part-time staff, commute daily to the headquarters in Kyoto and Tokyo and the firm’s training center.

Improving data security throughout daily operations had become a company issue and various solutions were being discussed. Mr. Takayuki Moriguchi, Assistant General Manager of the Information Systems Division recalls the situation at the time. "In order to prevent information leakage, we restricted the use of PCs outside the office and gave the utmost attention to the handling of critical data. However, we had not gotten around to developing a new IT platform. In addition, we needed to provide for accidents and device failures which can cause data loss. To enhance data security and address these issues, we decided to consider deploying a new thin client system."

To begin, Mr. Moriguchi surveyed the current use of PCs within the company. From this review he learned employees had concerns such as "heightened data security would likely restrict the use of applications and thus increase the time needed to complete work". Due to the nature of its business—frequent customer visits and business trips, overtime work into late hours, holiday work, handling of classified data such as manuscripts and personal information, and use of various editing applications—work style and PC use varied widely among employees. Thus, standardizing the PC environment and adding restrictions would lower productivity. A new IT platform for PHP Institute required a high degree of flexibility as well as robust data security to satisfy the diverse
needs of employees.

"We determined that among thin client systems, a 'virtual PC solution' would best meet our requirements. Such solutions consolidate each employee's desktop environment by maintaining each user's unique applications and environment while simultaneously enhancing data security because there is no local data storage. In addition, we believed that work efficiency could be maintained through the implementation process as the solution provided the convenience of individual PC environments," recalls Mr. Moriguchi.

### Installation Process

#### Choice of Virtual PC Center–NEC's overall capabilities the decisive factor

As the next step, Mr. Moriguchi examined specific products and systems to find which would fulfill the company's requirements. After three months reviewing proposals from three companies, his choice was clear—the NEC Virtual PC Center. Mr. Moriguchi explains the reasons for choosing NEC.

"Reviewing the three proposals, I thoroughly evaluated the products and support jointly provided by NEC and NEC Networks & System Integration Corporation. It enabled operations which suit our business and included the necessary support. Later on we received extensive support when we planned the configuration for each department. I also found NEC very dependable in their prompt and detailed responses to our technical inquiries and issues. Although we were very demanding, NEC was truly cooperative. I was assured that we could be reliable partners."

#### Mobile thin clients enhance work efficiency

For the next step, the Information Systems Department made a presentation to the Board on the necessities and benefits of deploying the Virtual PC Center. Remarks from senior management were somewhat unexpected.

"They acknowledged the importance of enhancing data security, however, I was told that unless there were other benefits, the return on investment would be insufficient for a go decision," recalls Mr. Moriguchi.

Investing in security measures is, so to speak, a defensive action and does not directly contribute to profit. Though the necessity was clear, security alone was not a strong enough reason for the Board's approval. In order to seek benefits in addition to the enhancement of data security, Mr. Moriguchi set out to learn from other companies. One case from a tax accountant's office was a good example. This firm had deployed a system using wireless PC cards to access virtual PCs on a server which created the same secure office working environment for mobile users accessing the system from an outside location. Staff had access to their desktop environment during meetings at customer offices, from home, and while travelling.

At this same time, work extended into the night and weekends for the PHP Institute Publishing Department in particular. Employees often went to the office on holidays solely to check email. Members of the Sales Department were returning to their desks from business meetings at customer offices to submit reports and expense claims. This was not only inconvenient for the employees, but also incurred extra costs from overtime due to the travel time.

Mr. Yukio Mori Manager of the Information Systems Department expresses his impression of the system of the tax accountant's office.

"As the same environment can be accessed both in and out of the office, even if you had to leave the office mid-task, you could immediately resume the task elsewhere from the point at which you left off. In other words, you can work regardless of time or location which means work can be completed faster. I was sure this feature was the key."

Inspired by the time- and location-free work environment, the two found the true advantage of deploying the virtual PC thin client system lies in the greater work efficiency it enables through
enhanced convenience.

**Working toward a location-free office**

With confidence that thin client system could significantly improve efficiency, the Information Systems Department went on to test the thin client notebook terminal US60*. A test environment—an actual working virtual PC environment with access to the company's intranet and mainframe—was configured. The system was presented to the Board by Mr. Moriguchi as a location-free office solution.

"The demonstration was a great success. The board members all understood that work efficiency could be enhanced by the Virtual PC Center. When I took the results to the CEO, he too understood the benefits straightaway and gave approval on the spot," recalls Mr. Moriguchi.

The CEO showed great commitment to the project. Later at the management council, he announced the necessity of the thin client system and agreed to 'proceed with the deployment as a CEO project'

**System Overview**

**Creating an secure environment for 470 virtual PCs**

A Virtual PC Center consisting of the following products was configured for deployment across the company. NEC Express5800/120Rh-1 servers powered by Intel® Xeon® processor function as virtual PC servers, accommodating 470 virtual PCs. An NEC SAN storage D3-10 provides shared storage, and the management server is a NEC Express5800/320Fd-LR—a highly available fault tolerant server.

For terminals, the palm-sized thin client desktop terminal US110E was selected for office use. As a way to efficiently utilize existing resources, desktops from the previous system are also enabled with access to the virtual PC. For non-office use, 50 thin client notebook terminals US60 coupled with wireless PC cards were distributed among departments for shared use.

[Diagram of Virtual PC Center and System Overview]

System design of PHP Institute, Inc.'s solution
The Sales Department was the first to use the thin client system. Twenty thin client notebook terminals were provided to share across two groups. It was not long before the employees were familiar with working away from the office. The notebook terminals soon became extremely popular—all terminals were always in use and there was demand for more.

For one department after another, the Information Systems Department continued to deploy the systems throughout the company. The gradual shift enabled a smooth switchover to the thin client system. In parallel with the deployment, the Information Systems Department held training sessions on operations and data security rules for non-thin client environments. Thanks to the well-planned deployment process, there were no serious complaints from employees. Four months after the first installation in the Sales Department, the thin client environment for the entire company was completed.

The Information Systems Department has received positive feedback from employees in the half year since full-deployment of the thin client system. Most commonly heard are comments about how work efficiency has been improved by the mobile use the Virtual PC Center.

"Now that emails can be checked regardless of location—for example, while moving to the next customer site—time away from the office is used effectively. Through access to the company's service application system, inventory levels and order status can be viewed on-site. The real-time information enables immediate responses to customers and has contributed to better customer satisfaction," says Mr. Moriguchi.

Mobility has brought about further benefits to the company. Previously, sales professionals were calling the office for inventories and other data. This required time but also constantly interrupted office work. Now, office staff can concentrate on their own mission as the sales members have direct mobile access to the company's data base from the thin client notebook terminals.

In addition, the use of printed material has been greatly reduced as files can be easily accessed as needed. This saves the trouble of printing while contributing to cost-savings and the environment.

Substantial improvement in work efficiency is also obvious in the Publishing Department. Now that stored manuscripts can be viewed and corrected away from the office, staff no longer need to return to the office after interviews. Even during extremely busy periods, such as when facing deadlines, work can proceed using the time between appointments. The location-free office which Mr. Moriguchi proposed to the CEO has been achieved.

The Information Systems Department also benefited from the Virtual PC Center. Previously, to respond to technical problems and inquires from local offices, the staff often needed to travel to the sites or send devices. Now, employee PC environments are consolidated and centrally managed. Thus, most problems are resolved by remote support.

Though not initially considered in the planning stage, the thin client system also proved effective when the office was relocated.

"Thanks to the Virtual PC Center, the consolidation of the two offices of Tokyo headquarters—a transfer of a PC environment of over 250 employees—was completed smoothly and securely. Since there was no data saved on local terminals, there was no risk of information leakage in the process. In addition, there was no need for backup or reinstallation," explains Mr. Mori.

Installation Results and Future Benefits

Positive feedback increases confidence in the deployment

Mobile notebook terminals enable quick responses to business needs

Client management simplified for Information Systems Department

Virtual PC Center is the information system foundation for future growth
Currently, PHP Institute is considering the introduction of a sales force automation (SFA) system to manage customer data and sales process. The aim is to accelerate sales performance through integration of the SFA with the thin client system.

"I believe business applications such as the SFA we are now considering are only truly effective when coupled with a thin client system with mobility. The company IT systems which we built in the past are now more effective with Virtual PC Center. By achieving the mobile client environment created by Virtual PC Center, our company's information system has advanced to next level," says Mr. Moriguchi.

Mr. Moriguchi mentions he is proud of being able to present a revitalized information system to the employees of PHP Institute. Virtual PC Center will deliver continuous support for PHP Institute to prosper into the future.

* The notebook terminal available in regions other than Japan is US40a.