

Approximately 1,000 servers and 25,000 clients**Efficient central management of the largest network in the world—with low TCO**

Kansai Electric Power Co., Inc. is building the largest intracompany network infrastructure in the world, aiming for completion in 2000. The company combined Hitachi's JP1 system operations management, NETM**Cm2* network management, and NETM/DM software distribution for optimum efficiency. The result of this application effort based on "reliable central management" was recognized. Kansai Electric Power received the "Ministry of International Trade and Industry Award" and the "OA General Award" in 1997.

Centralized management and low TCO

Kansai Electric Power Co., Inc. has built the largest intracompany network infrastructure in the world, with approximately 1,000 servers and 25,000 clients. One would think that such a large network requires the most time and highest cost for operations management. However, the company succeeded in achieving reliable operations management of the network with an extremely small investment and low labor. As Mr. Hiroyuki Kitamoto, Information Planning Department Manager and Assistant General Manager, Kansai Electric Power, expresses, "we have not increased the size of the network-monitoring staff since the time of mainframe computers." What type of large-network management can reduce the total cost of ownership (TCO) this much? Kansai Electric Power's answer is reliable central management that combines multiple tools available in the market.

A network infrastructure to stay competitive

With about 12 million accounts, Kansai Electric Power provides power mainly to the Kinki area, along with Gifu prefecture and a part of Fukui prefecture. The intracompany network the company built is generally referred to as KIND net. In 1996, Kansai Electric Power prepared the corporate guidelines indicating their goals to be achieved by the 21st century, and has been working to achieve them under a "new mid-term management plan." The KIND net is the network infrastructure that is needed for the company to achieve this new mid-term management plan.

To be competitive, reduction of costs and improvement of service quality were necessary for Kansai Electric Power. Therefore, the company decided to initiate new management strategies for improving services and reducing costs. "We provide a one-stop service to our customers without transferring them to multiple customer service tellers on the phone. For our suppliers and the companies in the group, we try to transfer information quickly using EDI and CALS. Within our company, we have tried to improve office productivity through thorough reengineering. All of these management strategies require the new network infrastructure," Mr. Kitamoto says.

The company must be able to effectively link its 300 locations and use as many as 25,000 client PCs to perform one-stop services, CALS, and reengineering. Thus, the challenge of building the largest network in the world began.

Operations management for high reliability and efficiency

Kansai Electric Power started building the KIND net in 1996. Tasks, such as installation of communication lines, introduction of personal computers, and downsizing of existing systems, were completed rapidly. In parallel with the network building, the company evaluated its operations-management method. The most important requirement was reliability. "No electric company can exist as a service provider without customers. All customer-related applications need to be treated as a key system—that is, a mission-critical system. Therefore, high reliability and good response are required. For operations management, we wanted to attain the highest level of reliability that was possible at that stage," emphasizes Mr. Kitamoto.

Another requirement for operations management was efficiency. With a network consisting of 1,000 servers and 25,000 clients, a tremendous amount of work was required to distribute even one program. Considering that there are 300 scattered locations, employees must avoid any trip to these locations for operations-management purposes. Was there an operations-management system that could maintain a high level of reliability with low total cost of ownership (TCO) Kansai Electric Power seriously evaluated and compared various companies' suggestions. As a result, they chose the solution using Hitachi's Open Middleware. "Needless to say, Hitachi's Open Middleware provide all facilities we need, but the most important factor was the proven results," says Mr. Tadaaki Yoshikawa, Section Manager, Information Planning Group, Data Communications Office. A solution that monitors such a large network for 24 hours

a day and also performs software distribution is rare anywhere in the world. "The KIND net tries to be a combination of the existing mainframe network and new client/server systems, so we thought that a company with advanced technology in mainframe and open systems would be ideal," adds Mr. Yoshikawa.

Another evaluation criterion was the immediate availability of all products that handle monitoring, software distribution, and batch operation. "If the products are merely promised for the future, we could not keep up with our operation, which is supporting nearly one computer per person. In this respect, Hitachi had all the required tools," explains Mr. Yoshikawa. "As for operations-management software, we thought that it would be very difficult to handle a multi-vendor environment; therefore, it was important for us to obtain all the necessary functions from a single supplier," he says.

After an intense development period of ten months, the operations-management system started operation in June 1997. Kansai Electric Power could start its "one-stop services" for customers in time, which was the most important major application.

Job masking boosts the efficiency of centralized monitoring

For the building of the operations-management system for the KIND net, there were three important considerations. First is its link to the existing monitoring systems. Kansai Electric Power has been monitoring communication and data processing for 24 hours a day, 365 days a year at two locations: the network center and the computer center. The company wanted to link KIND net's new operations-management system to the existing monitoring system, so that it could monitor the KIND net 24 hours a day without having to increase staff or make changes to the existing system. Although it was very difficult to link to the existing monitoring system, Hitachi developed an interface software package for these two monitoring systems and met Kansai Electric Power's expectations. "We were monitoring 6,500 terminals when we had the mainframe. With an addition of 18,000 clients and 1,000 servers, the size of our network has grown by four times since then, but the size of our monitoring staff has not increased," says Mr. Yoshikawa.

The second consideration was the achievement of work masking. "If an alarm occurs if you turn off the printer switch, for example, the network would be full of alarm events. When conducting central monitoring of a large network, it is not a good idea to monitor every detail," says Mr. Kazuhiro Mitsuji, vice-head of the Information Planning Group, Information Communication Office.

There were two solutions. First, each terminal's attributes was managed using an IP address, and then any monitoring information about a printer, which could now be identified by its IP address, was masked. Second, in the event of a scheduled build or personnel transfers, a work area was defined and work masking performed in such a manner that monitoring information about a specified area temporarily would not be displayed.

"The other day, we found out from error-information analysis conducted at the network center that a PC server's BIOS needed to be replaced. We were able to take an action immediately. If there were no such masking method, we would not have discovered this serious problem at an early stage," emphasizes Mr. Mitsuji.

The third consideration was hierarchical management. The network center and computer center at the top hierarchically manage all the lower layers, consisting of the head office, branch offices, marketing locations, generator sites, electric-power sites, and individual offices. "Hierarchical management is indispensable for a large network. No other monitoring software provided such a function, but Hitachi developed it for us in a short period," explains Mr. Yoshikawa.

One operator manages 6,200 batch jobs in a night

There are many large monitors placed at a network center or computer center that perform centralized monitoring 24 hours a day, 365 days a year. Kansai Electric Power uses NETM*Cm2 and JP1 for this 24-hour network monitoring. The greatest feature of NETM*Cm2 and JP1 is that they provide GUI-based operations that are easy to understand. "As many as 6,200 jobs come through every night, including those via LAN/WAN. Macro monitoring would be impossible with character-based monitoring software because only certain characters show up—and disappear quickly. On the other hand, NETM*Cm2 and JP1 provide a network chart with problems indicated in colors. This enables us to locate a problem and promptly take an appropriate action," says Mr. Mitsuji.

Kansai Electric Power uses JP1 operations management tool to control batch jobs at the computer center that are executed primarily at nighttime, such as server-to-server data transfer jobs. "Even client/server systems have to handle many batch jobs, such as sending data processed on each server to the master server, and sending a table processed at the master server to each server," explains Mr. Yoshikawa. Currently, the system handles 6,200 jobs per night, but this number is expected to reach 15,000 in 1998. The company says that only one operator will be able to handle these batch jobs in 1998 because of the automation and scheduled operation that JP1 provides.

- NETM*cm2's network-monitoring screen
- JP1's job-monitoring screen

NETM/DM, an indispensable tool for downsizing

NETM/DM is a software-distribution tool that is expected to provide the most effective operations-management solution in the future. If distribution can be fully automated, the staff in the Information Communications Room can reduce their workload for support considerably. "Software distribution at the level of entire company is still at the test stage. The current rate of automatic distribution is 90%," says Mr. Mitsuji. The remaining 10% is expected to be achieved by careful enforcement of rules for users.

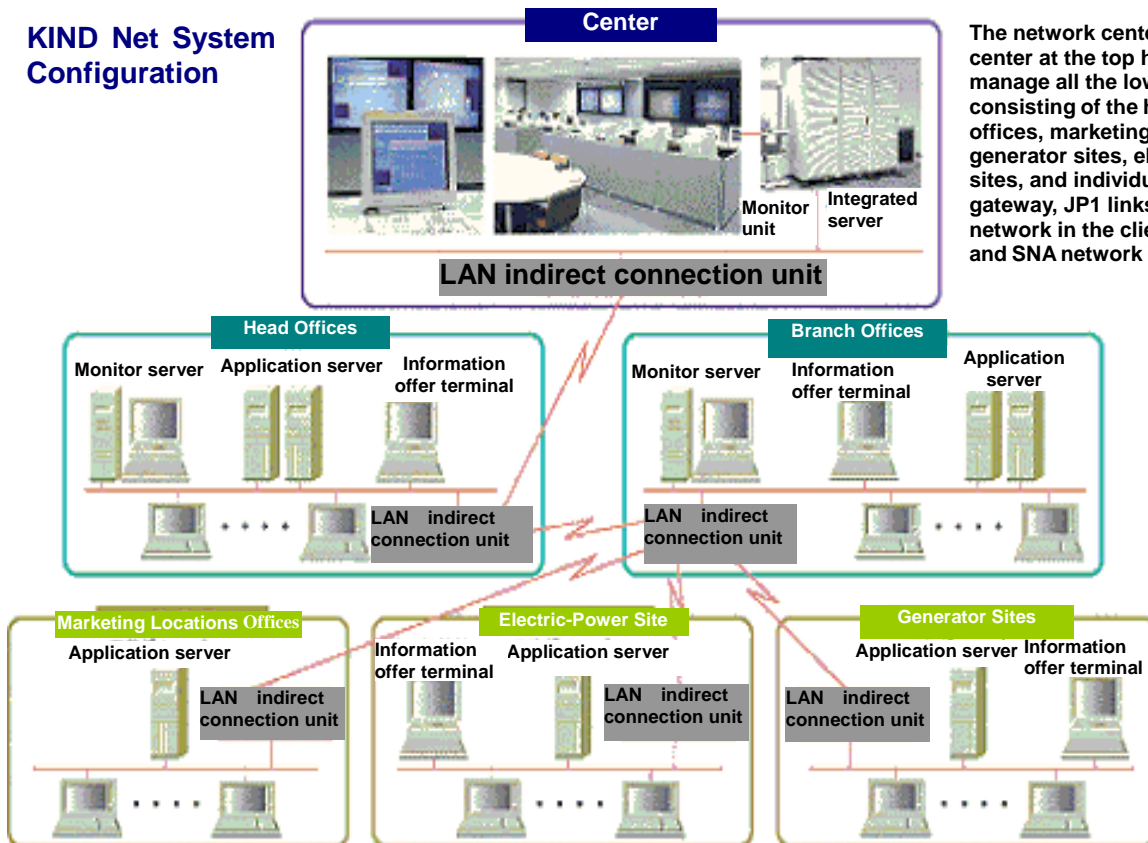
The KIND net will complete its preparations as groupware in 1997 or 1998, and at the next stage, considerable downsizing of applications is scheduled. The software-distribution tool's role will increase more and more.

Two awards in one year

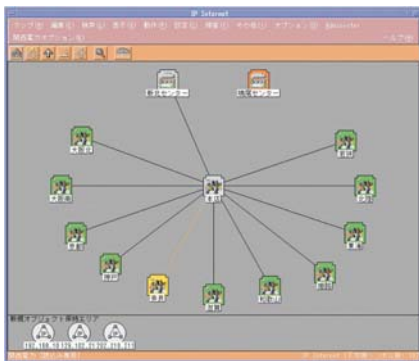
In 1997, Kansai Electric Power received the Ministry of International Trade and Industry Award as an information-technology promoter of 1997, and OA General Award from the Japan Institute of Office Automation. The KIND net's great achievements of cost reduction and improvement of customer service was highly rated. "As downsizing continues, critical systems that cannot stop operation even for a moment will be added to the KIND net one after another. The demand for an operations-management system will also keep increasing," says Mr. Yoshikawa.

At Kansai Electric Power, everything can be controlled at the computer center. The central monitoring plan that Hitachi's Open Middleware made possible will continue to support Kansai Electric Power in achieving its management goals.

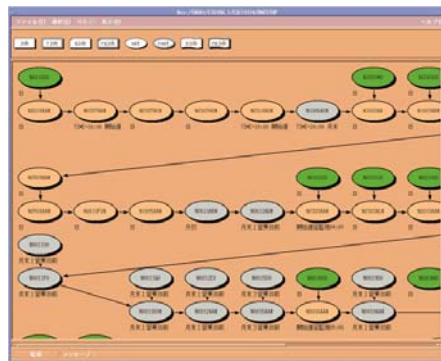
KIND Net System Configuration



The network center and computer center at the top hierarchically manage all the lower layers, consisting of the head office, branch offices, marketing locations, generator sites, electric -power sites, and individual offices. Using gateway, JP1 links to TCP/IP network in the client server system and SNA network in the host system.



NETM* Cm2 Network-monitoring screen



JP1 Job-monitoring screen

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