

**Using JP1 for Integrated Management of a Large-Scale, Mission-Critical System  
Completely Automated Operation and Reliability Effectively Ensured**

UFJ Bank Limited (UFJ Bank) uses JP1, Hitachi's integrated system operation management software, to perform the integrated management of approximately 450 servers on which about 60 systems (bank branch systems and Internet banking systems) run, along with approximately 450 bank branch servers and 20,000 client machines. Integrated management means coordinating the operations of monitoring, distribution, and job management while accommodating multiple operating systems. One of the major benefits of JP1 is its ability to manage the entire large-scale system in a near automatic mode. As the number of distributed systems and future service enhancements increases, JP1's role will become ever more important.

**USER PROFILE**

<b>Company name:</b>	UFJ Bank Limited
<b>Headquarters:</b>	3-21-24 Nishiki, Naka-ku, Nagoya-shi, Aichi-ken
<b>Established:</b>	January 15, 2002 (through merger)
<b>Capital:</b>	843.5 billion yen
<b>Total assets:</b>	68.8075 trillion yen (as of March 2002)
<b>Number of Employees:</b>	19,526 (as of March 2002)
<b>URL:</b>	<a href="http://www.ufjbank.co.jp/ippan/english/">http://www.ufjbank.co.jp/ippan/english/</a>
<b>Business overview:</b>	Sanwa Bank Ltd. and Tokai Bank Ltd. merged to form UFJ Bank Ltd. The bank's core business is mid-level retail banking. As the core corporation of the UFJ Group, UFJ Bank — along with the trust banks, asset operation companies, securities companies, and credit card companies within the group — aims to form a general financial group that provides innovative financial services.

**PARTNER PROFILE**

<b>Company name:</b>	UFJ Hitachi Systems Co., Ltd.
<b>Headquarters:</b>	Nihonbashi Toyo Building, 2-7-24 Nihonbashi, Chuo-ku, Tokyo
<b>Established:</b>	August 1983
<b>Capital:</b>	50 million yen
<b>Revenue:</b>	16 billion yen (for the year ended march 2002)
<b>Number of employees:</b>	632 (as of October 2002)
<b>URL:</b>	<a href="http://www.uhsys.co.jp/">http://www.uhsys.co.jp/</a>
<b>Business overview:</b>	Grew out of Sanwa System Development Co., Ltd. In October 2002, UFJ Hitachi Systems was formed jointly by UFJ Bank and Hitachi Ltd., and is solely responsible for system planning, development, and operation for UFJ Bank. As a system development company that merges know-how in the financial industry with Hitachi's advanced IT technologies, UFJ Hitachi Systems provides services to other financial institutions as well.

**60 Systems and 900 Servers****Integrated Operation Management of 20,000 Terminals**

"The greatest advantage of using JP1 at UFJ Bank is its integrated management ability," says Mr. Akira Hotta, General Manager of System Foundation Development at UFJ Hitachi Systems Co., Ltd. (UHS). UHS bears total responsibility for UFJ Bank's core system, from planning and design to development and operation.

At UFJ Bank, "integrated management" has two meanings. The first is the integration of multiple functions, including monitoring, job management, and distribution, within a single framework. The second is the centralized management of multiple platforms, which include various types of UNIX servers — Solaris, HP-UX, and AIX — as well as various versions of Windows servers, and linking these managed servers to mainframe operation.

At UFJ Bank, approximately 60 systems — bank branch systems, Internet banking systems, telephone banking systems, investment trust, over-the-counter sales systems, and ERP systems — are running on approximately 450 servers. Additionally, there are around 450 branch bank servers and 20,000 client machines distributed and installed in branches across Japan. JP1 centrally monitors the operational conditions of all of these systems from a single server, automatically executes as many as 15,000 jobs a day, distributes control documents to branches, and upgrades programs at the branches.



In addition to the two data centers covering the entire country, the UHS control center also centrally monitors the operational conditions of UFJ Bank's system. Highly reliable operation management is being carried out while maintaining linkage throughout the entire company.

### **Integrated Management for Completely Automated Operation**

Integrated management has brought UFJ Bank the advantages of completely automated operation and a highly reliable large-scale system, along with management of a variety of functions within a single framework.

Using JP1/Cm2, a network management tool, UFJ Bank can continuously monitor 60 systems with only two employees. They take action only when necessary, leaving them free to perform other tasks.

The former Sanwa Bank had previously installed JP1, Hitachi's integrated system operation and management middleware, and was expanding JP1's application scope in conjunction with its open systems. Even though system size nearly doubled when Sanwa Bank and Tokai Bank merged to form UFJ Bank in January 2002, only two employees were needed for system monitoring.

"Because the role of a system is to support management strategy and help expand services, the number of systems has continued to increase since the merger. Despite this huge increase, we can get by with only two employees for monitoring. Very efficient," says Mr. Tetsuya Kusuda, Project Leader of Distributed Foundation Group in the UHS System Foundation Development Division.

Furthermore, because warnings and other messages are converted into audio and broadcast inside the data center, the monitoring employees need not be glued to their screens. "When the monitor checks the screen after hearing a message, it displays the contact person as well as that person's telephone number, allowing for quick action," says Mr. Kusuda.

Ample operational experience has resulted in the standardization of corrective actions.

"We have standardized and documented operational procedures and levels using JP1's facilities as a basis. Therefore, during application development, engineers do not have to be concerned about individual parts related to operation. This has resulted in a reduction in the number of development processes," adds Mr. Kusuda.

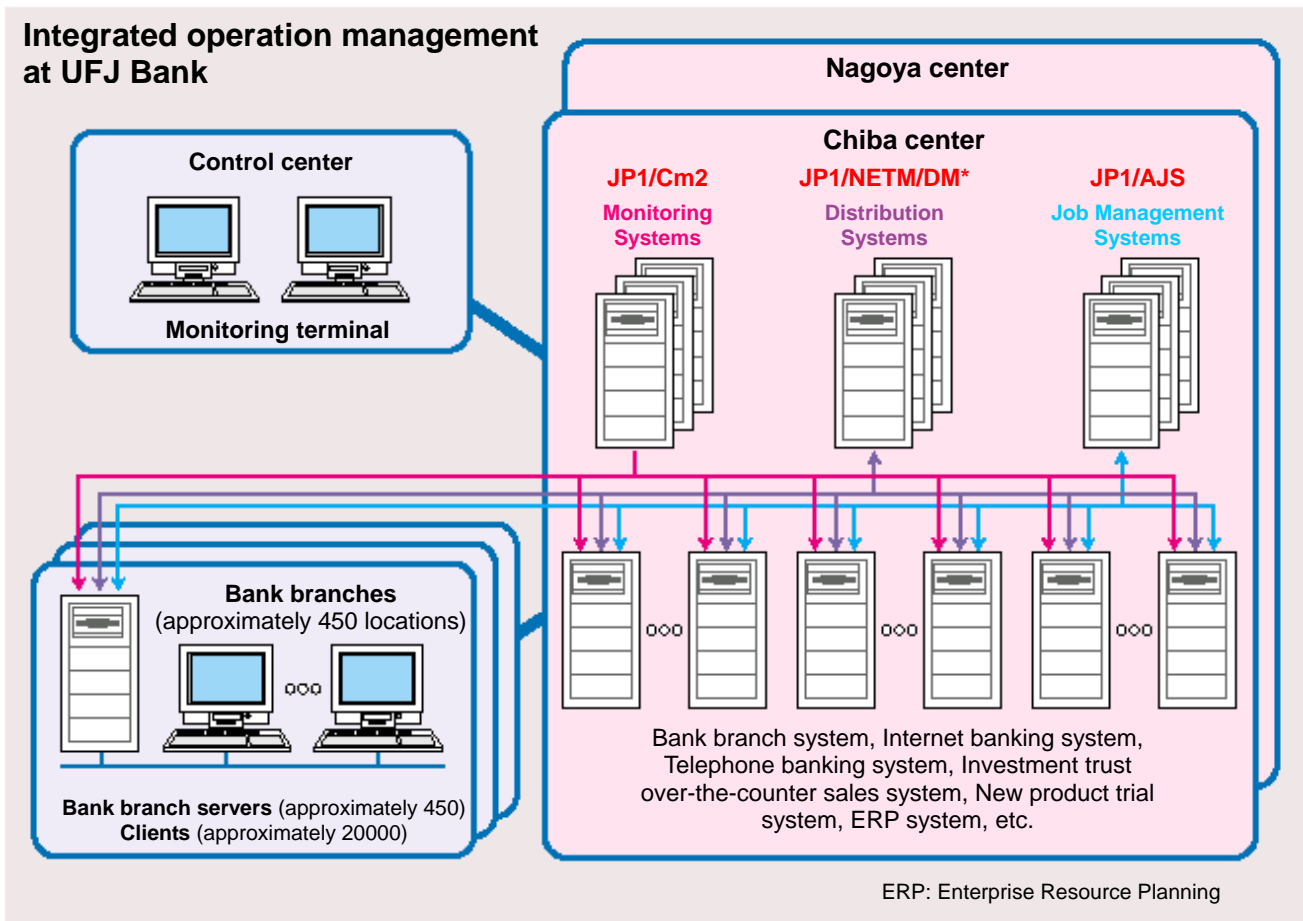
### **Completely Automated Report Delivery and Bank Branch Information Collection**

The job management tool JP1/AJS is also contributing greatly to completely automated operation. This tool automatically executes an astonishing 15,000 jobs a day, in addition to maintaining data linkage with a Hitachi mainframe.

At UFJ Bank, output and distribution of reports is also completely automated. By sending management reports to approximately 450 bank branches and having each branch office print out and use these reports every morning, the bank has reduced the cost, labor, and time associated with sorting and delivering paper documents. This task is automatically executed by scheduling JP1/NETM/DM\* jobs using JP1/AJS.

JP1/NETM/DM\* is used for collection as well as for distribution. At their counters, bank branches now display the number of customers currently in line and the estimated wait time. This information is automatically collected via bank branch servers. At headquarters, the wait-time information is analyzed, and the result is used for re-evaluating

personnel assignment or developing plans to increase the number of terminals at bank branches. Essentially, the system is collecting information necessary for further improving customer service, without increasing the amount of on-site work at the branches.



### Maintaining High Reliability of a Large-Scale System

Because UFJ Bank's system is extremely large and mission critical, UHS has implemented measures to ensure its reliability.

First, redundant data centers were established in Chiba and Nagoya. These two centers have the same functions, and should a natural or other disaster render one of them non-functional, the other will continue to run banking operations. Furthermore, due to the large size of the system, relay servers for data distribution are installed at three centers — Chiba, Nagoya, and Osaka — to distribute the load.

The system performs both node check and message monitoring. For the node check, a PING signal is sent to the terminals at all 20,000 nodes to determine whether or not the hardware is functioning. These nodes are arranged into a hierarchy at distribution points to reduce the load, and are connected to the network. Messages from servers are monitored by checking error information from the software. The redundant monitoring system enables messages from individual servers to be collected, even in the event of a network error.

Performance management has been implemented to increase the reliability of the entire system. Constant monitoring of the servers' CPU and memory usage allows for proactive operation management steps, such as early memory expansion and planned server upgrades.

Another noteworthy implementation is an increase in security levels through authority levels pre-determined according to operation rules. UFJ Bank has established a rule that once an application is put into operation, even the developer of that application is not allowed to modify it at will. In other words, when operation begins, all responsibility shifts to the operation management division. These rules can be implemented only because the quality of operation management is high, and operational integration and standardization have been established.

UHS is also considering enhanced backup efficiency and disaster recovery measures by saving all data through a combination of the Hitachi disk array subsystem SANRISE, SAN (storage area networking), and NAS (network attached storage). One of the potential software products for this step is JP1/VERITAS NetBackup. This product can

perform server-free backup, as well as more accurate and efficient backup through linkage with the JP1 job management tools and integrated monitoring consoles.

"Standardizing operations and fully utilizing JP1 facilities to increase the reliability of UFJ Bank's various core systems mean that UHS can accumulate advanced operational know-how. UHS plans to feed this know-how back to its system integration technologies so that it will be able to satisfy the need for higher reliability operation management for a broader range of customers," says Mr. Hotta confidently.

\* JP1/NETM/DM is the name of the Japanese version of JP1/Software Distribution.

- Windows is a registered trademark of Microsoft Corporation in the U.S. and other countries.
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