

Creating a non-stop operating environment with the highest levels of operational continuity

Solution

- Server Reconfiguration

Industry

- IT Services

Products

- PRIMEQUEST 540

Overview

TKC is an IT service company. It provides information services to accounting firms and local municipal entities. TKC set out a plan to reconfigure their mission critical systems. Key points were the consolidation of application development, execution using Microsoft .NET Framework and enabling full 24hour/365day support of their customer's business. To meet these requirements, TKC choose Fujitsu's mission critical server PRIMEQUEST540. They introduced "System mirroring" to internally duplicate each single server and clustered the overall operational environment to achieve the highest level of business continuity.

TKC

TKC provides information processing services specifically to accounting firms and their related companies and local government organizations. They also provide accounting and tax services to small and medium businesses (575,000 companies), and consolidated accounting and tax operation services to medium and large companies. In addition, TKC provides mission critical systems such as residents and tax information and since April 2004, they have started ASP services to local municipalities.

These services are operated by mainframe and hundreds of IA servers installed in TKC "consolidated information centers" located at 9 sites across Japan. Annual data traffic volumes now exceed 3 billion transactions.

TKC plans to replace the existing mission critical systems by introducing Fujitsu's PRIMEQUEST mission critical open server. TKC has already migrated their ASP service to local municipalities; starting operation in June 2006. "We are planning to double the number of ASP service contracts in the next 2 years. We have enough scalability to meet our business expansion."(Mr.Sumii, Chief Director, Local municipality business unit, [Pic.3](#))

TKC is also planning to migrate its accounting and tax transaction services to PRIMEQUEST. In these cases, high reliability and performance will be key points for the migration which will include the loading of vast amounts of data. Mr.Tsujita (Director, President's office, Tochigi HQ,



Pic.1 : TKC's Internet Service Center (TISC) provides the highest levels of data security.



Pic.2 : One of the largest data centers in Japan, TISC's server room covers more than 3,300 m².

[Pic.4](#)) says "We started to plan the introduction of PRIMEQUEST by starting PRIMEQUEST assessment committees. As a result, we concluded that we will have the high performance, high reliability and high scalability by using PRIMEQUEST. We can also expect the TCO reduction which enables the high quality service."

Next systems will be developed using C# Highly reliability execution environment is a must

In 2002, TKC was planning their next mission critical system. Their main theme was to consolidate the development environment.

Mr.Sumii says "COBOL was the main development language on the mainframe but this was changed when we started using Delphi, MRDB and PowerAE on Windows systems. Both had their own advantages but there were problems in efficiency and organization of development caused by having multiple development languages."

Most of the systems of TKC's clients (Municipalities and related companies) are based on Windows. For this reason, Windows seemed to be the most applicable environment for the next development. "We decided to consolidate development basis of the main system to .Net Framework and to consolidate development language to C#" (Mr.Sumii) However, "In 2002, we were anxious about running mission critical systems on Windows both in terms of hardware and OS."(Mr.Tsujita)



**Pic.3 : Mr.Sumi,
Chief Director, Local
municipalities
business unit**

At the end of 2003, a turning point came to TKC. When Mr.Sumi and Mr.Tsujita had a chance to hear Fujitsu's mainframe strategy, they realized that Fujitsu was developing a "64 bit Windows mission critical server".

Mr.Sumi says, "We thought this was a good chance because .NET Framework and Fujitsu's high reliability, scalability and mainframe-class operational technology was becoming available.

Stable ASP service for municipalities

TKC currently provides 9 ASP services including "Electronic application procedures" and "Public facility reservation services" to local municipalities. They are now planning to release their "E-file support system (Tentative name)" in Jan., 2008. These services are also provided by LGWAN-ASP.

In the summer of 2006, The Ministry of internal Affairs and Communications announced an "Online Guideline for E-municipalities." This was a business opportunity for TKC. By this guideline, various applications and notifications will go online and resident operation and cooperation is expected to become simple, efficient and convenient. For this reason, TKC switched their ASP service environment from legacy Windows servers to PRIMEQUEST.

"We were required to keep high sustainability to support 24 hour/365 day operation for the local municipalities. We were also expected to support secured and convenient services to residents and enterprises." (Mr.Sumi)

In the new system, all servers and networks are redundant and in particular, the highly reliable database (DB) is configured on PRIMEQUEST (Diagram 1). System boards with four Itanium 2 and four 32GB memory modules are installed in two PRIMEQUEST 540 servers. Windows Server 2003, for large scale and highly reliable systems, was introduced as the OS and the latest SQL Server 2005 was introduced as the DB.

PRIMEQUEST has "system mirroring" which duplicates major hardware components to ensure high reliability. TKC also introduced clustering to achieve the highest sustainability. Mr.Sumi says, "If we focus on online applications and notifications, we could promote its reliability to users." PRIMEQUEST has "system mirroring" which duplicates major hardware components to ensure high reliability. TKC also introduced clustering to achieve the highest sustainability.

Mainframe replacement Migration planned in few years later



**Pic.4 : Mr.Tsujita,
Director, President's
office, Tochigi HQ**

Accounting system ASP services to accounting firms and their related companies are mainly operated by the mainframe in each TKC consolidated information center. ASP services for tax operation are operated at the TKC Internet service center (TISC) Tochigi prefecture. (Pic.1) From June 2003, TKC commenced a search engine service capable of searching the past ten years of data by transferring accounting data to TISC.

TKC is planning migration of these systems to PRIMEQUEST within a few years. "By this migration, system architecture will be consolidated. Also, closer connection between accounting and tax operation will be realized by reviewing the role of TKC consolidated information centers and TISC system operation. Also, we are now planning for the higher level service." (Mr.Tsujita)

Along with the changing environment of mid- and large-scale enterprises, TKC expects to have a large number of potential clients who require consolidated accounting and tax services.

In addition to overall system performance, TKC also is responsible for data protection and accurate operation. Chart 1 is a comparative chart for TKC to plan the system configuration of PRIMEQUEST. Since PRIMEQUEST has system mirroring and component duplication, it can continue operation in cases of system failure caused by memory, chipset or processor problems. However, system failure caused by other components may result in system suspension.

Clustering of two partitions in the base unit will become possible using PRIMEQUEST's partitioning function. This "clustered within base unit" enables higher availability compared to a single system. However, it cannot tolerate system failure which effects both partitions such as a total base unit failure.

TKC finally decided to choose "clustered across 2 base units" by introducing 2 PRIMEQUEST. Mr.Tsujita says, "We can solve small problems related to clustering within base unit. We will achieve the highest business sustainability by introducing PRIMEQUEST."

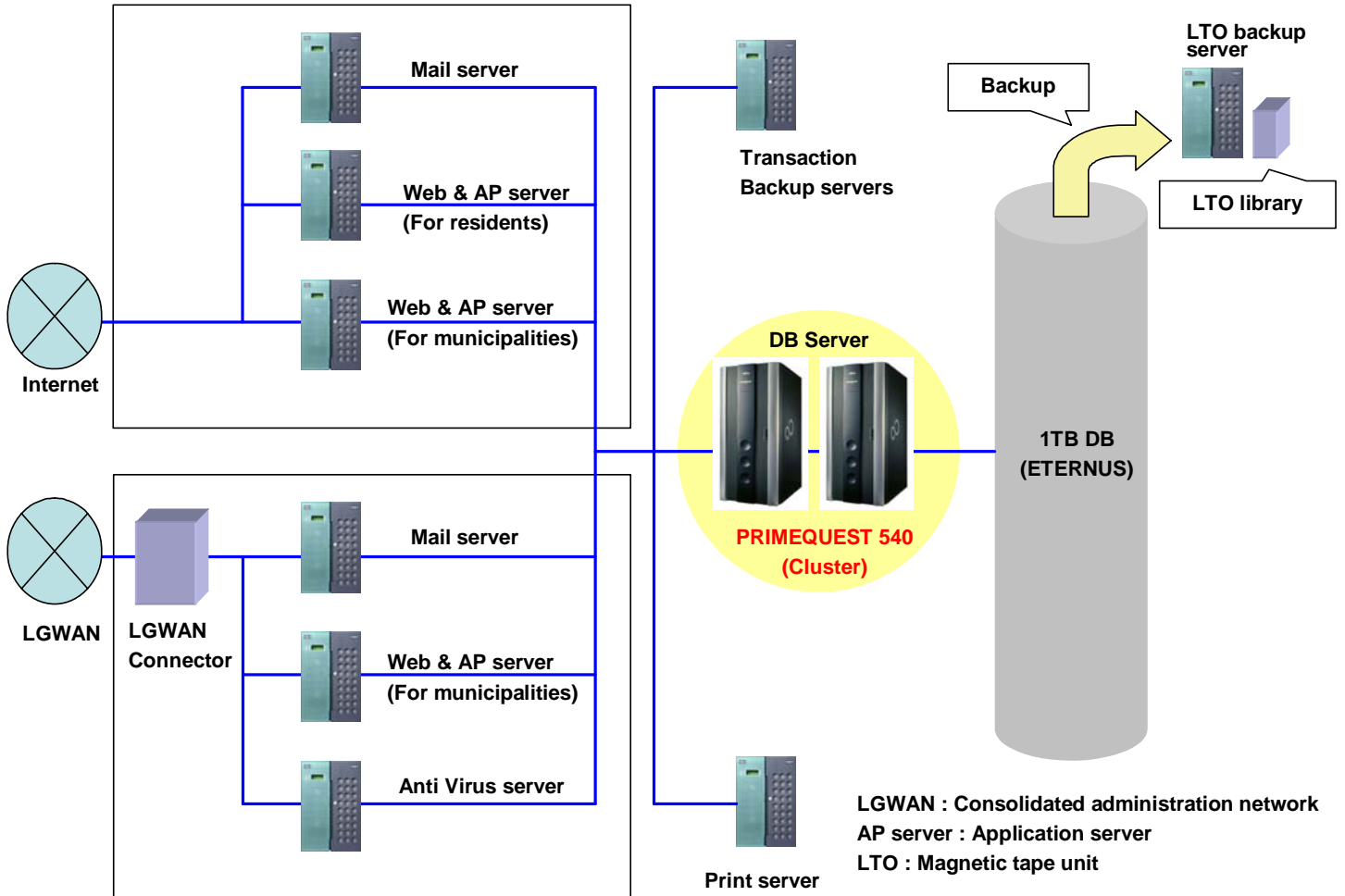


Diagram 1 : Local municipalities ASP server system diagram. Clustered PRIMEQUEST 540 servers for the database.

Failure	Operational continuity - single configuration (system mirror)		Operational continuity - clustered within base unit		Operational continuity - clustered across 2 base units		Effect of failure/maintenance
	Failure	Maintenance	Failure	Maintenance	Failure	Maintenance	
Processor failure	F	F	OK	OK	OK	OK	Partition only
Memory, chipset failure	OK	F	OK	OK	OK	OK	Partition only
Crossbar failure	OK	F	OK	OK	OK	OK	Entire base unit
System clock failure	F	F	F	F	OK	OK	Entire base unit
HDD failure	F	OK	OK	OK	OK	OK	Partition only
Server management unit failure	OK	OK	OK	OK	OK	OK	Server management unit
Power unit, Cooling fan failure	OK	OK	OK	OK	OK	OK	Power unit, Cooling fan only
OS failure, patch application	F	F	OK	OK	OK	OK	Partition only
Base unit failure, firmware application	F	F	F	F	OK	OK	Entire base unit

F = Failure occurs OK = No failure occurs

Chart 1: TKC demanded the highest levels of operational continuity

TKC compared the operational continuity between different system configurations. Although PRIMEQUEST enables high reliability within a single server, TKC configured to the highest levels of operation continuity to overcome any component failure.