Solution for Thin Client System with KVM

Our KVM have been highly evaluated in server management and systems for broadcasting stations with high image quality and good operability. This article introduces a solution for “thin client system” that is effective in improving the operation environment and security, and also introduces an application example in the CAD room.

* KVM stands for Keyboard, Video monitor, and Mouse.

Introduction

Our SERVIS KVM Series comprises solution products for PC/server control.

A KVM solution is an essential item for control and management at datacenter, it is now a key item in system integration. In addition, the necessity for remote control has increased for industrial devices such as monitoring systems and display devices and is broadening new applications.

To address such market needs, FUJITSU produces and distributes an intelligent KVM switch and console drawer that can be integrated on a 19-inch rack as part of the SERVIS Series. It has been adopted and well received for management and control in server rooms. We address demands for a total solution by developing products based on analog extension technologies such as the Cat5 extender and multi-user KVM switch and products based on network extension technologies such as the IP-KVM and serial console server as devices that can operate the console remotely.

The Cat5 remote extender and multi-user KVM switch have been especially highly received and are currently adopted in broadcasting station devices as products that satisfy high definition, high image quality, and good operability. We now propose thin client system with high image quality and good operability. This article introduces the developed solution as well as an application example in CAD that improves the security and the environment.

Basic Functions and Features

■ Thin client environment with KVM switch
  Measures against information leaks are indispensable in all companies. The thin client system with a disk-less PC method from which data cannot be retained or acquired is in the spotlight as a measure to prevent leaks from lost PCs, theft, or USB memories.

  Using the remote control technology of our SERVIS KVM Series, it is possible to realize a thin client environment at a relatively low cost and to implement a safer system to prevent information leaks than conventional thin client systems.
  * Only operation console (keyboard, video monitor, and mouse) is extended with the single Cat5 cable and installed at the client, physically preventing entrance from outside.
  * It is safer than conventional thin client systems. The Cat5 cable also prevents the entire system from going down even when network failure occurs.
  * It is possible to implement a system simply by adding this device (without replacing any of the hardware and software assets currently in place). There is no need to install special software.
  * Since conventional thin client systems require retooling of the system hardware, OS installation, and verification of the application software operation, they require enormous cost and a large number of man-hours.
  * Operation console is extended via an analog method that does not deteriorate the operational feeling or response.
  * Conventional thin client systems go through LAN and the response may be deteriorated.
Thin client system can be implemented with high performance PC or CAD and our device of high-resolution and high image quality.

Conventional thin client systems go through LAN, and they may have restrictions in screen resolution due to the limitation of transmission speed. They may not be suited to CAD.

The OS-independent hardware extension method allows remote BIOS setting and POST monitoring.

Conventional thin client systems cannot implement remote control before the OS has started up.

We offer a lineup of devices to remotely control the host power supply; the power supply of the host can be remotely controlled (turned ON/OFF).

Power supply control via LAN requires different system than that of the thin client, which costs extra money.

Table 1 presents a comparison among thin client methods.

### Easy construction of a thin client system
The basic configuration of the system is simple and easy. First, the existing server/PC and operation console that are used with it are separated. Next, by moving the server/PC to a physically secure environment and connecting operation console with extension via the Cat5 extender, thin client system that prevents eavesdropping can be rapidly implemented.

### Multi-platform
This solution works on PCs/workstations (PS/2, USB), PC servers (PS/2, USB), and Sun servers (USB, MD8). It does not depend on the kinds of OS.

### High image quality and good operability
The maximum distance between the PC/server and the operation console (keyboard, video monitor, and mouse) is 300m (for image resolution SXGA). Operation is possible with high image quality equivalent to that of local console.

- For image resolution QXGA (2,048×1,536 dots, 60Hz), extension up to 100m
- For image resolution UXGA (1,600×1,200 dots, 60Hz), extension up to 200m
- For image resolution SXGA (1,280×1,024 dots, 60Hz), extension up to 300m

Fig.1 presents a thin client system using our Cat5 remote extender.

### System with multi-user KVM switch
The use of our multi-user KVM switch allows multiple users to operate multiple units of PCs/servers; it also improves the operation efficiency. This shall contribute to operation cost reduction by allowing sharing and unified control of PCs as well as data sharing in meeting rooms.

### Bulk storing of PCs/servers in the machine room
- High security is realized by separating the machines and the users.
- Helps to solve the problems of power control by concentrating the machines.
- The operation environment of the machines, including air conditioning and dust prevention, can be properly controlled.

### Improving the users’ operation environment
- The users’ operation environment can be improved in terms of temperature, noise, and so forth.
- Only installing console, it is possible to flexibly realize space saving and layout change.

### Table 1 Types and Features of Thin Client Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Client’s processing capability</th>
<th>Freedom</th>
<th>Communication security</th>
<th>Necessary network band</th>
<th>Necessary environments</th>
<th>Introduction cost</th>
<th>Operation cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVM solution by FUJITSU COMPONENT (Cat5 access type)</td>
<td>Depends on the server (console only)</td>
<td>Intermediate</td>
<td>High</td>
<td>None required</td>
<td>Remote unit, multi-user KVM, special cable (no software required)</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Software type thin client</td>
<td>Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
<td>Small</td>
<td>Thin client software</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Server base (screen transfer) type</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Small</td>
<td>Server, special terminal, server middleware</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Network booting type</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Wide</td>
<td>Server, special terminal, server middleware</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Blade PC type</td>
<td>Low</td>
<td>Intermediate</td>
<td>High</td>
<td>Small</td>
<td>Blade PC, special terminal, middleware</td>
<td>High</td>
<td>Medium</td>
</tr>
</tbody>
</table>
Realizing unified control and data sharing by adding the KVM switch for control

- Possible to operate all PCs from one console and to do prompt and efficient maintenance.
- Possible to share data in meeting rooms. It helps to discuss smoothly. As a result, it may improve efficiency of designing process.

Fig. 2 presents the configuration of a multi-user KVM switch.

Case Study
Thin Client System in CAD Room

[In CAD room for Company A]
For 30 design workers in the same user room, a workstation, a general-purpose PC, a keyboard, a monitor, a mouse, and a 3D tablet were installed densely for each user.

Problems before introduction

- It was easy to locate important information such as design data; security reinforcement was an urgent issue.
- An unpleasant work environment and reduced efficiency due to increased operation noise; waste heat in concurrence with the increase in design workers and devices.
- Poor cable arrangement and difficult maintenance and operation control.
- Power supplies are also concentrated; power control and outage measures were urgent issues.

By adopting our solution, it was possible to realize a remote operation environment and unified control at a low cost without replacing the existing devices and software programs.

The workstations and PC main units were moved to the machine room, and only the console was left on each user’s desk. Remote operation for 3D tablets was also realized.

Since the workstations/PCs were located elsewhere, it was made possible for users to turn the power ON/OFF from their desks using the remote power supply unit.

Advantages after introduction

- A high-security system was addressed with risks for information leaks minimized to the extreme.
- The room was released from the problems of operation noise and waste heat from workstations. A comfortable work environment was realized.
• Reliability of the workstations/PCs was improved and maintenance and management became simple.
• Concentrated power control and outage measures were enabled in the machine room.

Fig.3 presents an example of a thin client system at CAD room.

**SERVIS Series**

**SERVIS EXTENDER Cat5 WideBand**

FE-1000CW/FE-2000CW

Analog extension of KVM with high resolution and high image quality. Offers remote control in the same operation environment as local (Photos 1 and 2).

**SERVIS MULTI FS-8032MM/FS-8008MM**

Multiple servers can be operated by matrix switching. The user console allows operation with high resolution and high image quality using the analog extension technology (Photo 3).

**NOTES**

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