

80 servers reduced to 7... Simple network configuration with easy maintenance

## Better business agility enhancement through server integration based on virtualization

SUCCESS STORY



Hyundai Securities (CEO: Choi, Gyeong-su, [www.youfirst.co.kr](http://www.youfirst.co.kr)) established 'vision 2012' of becoming a leading investment bank by providing the best financial solutions, and is in pursuit of 3 strategies of profit structure improvement, specialization, and expansion? Hyundai Securities increases customers' assets by developing various new products, and is trying to increase business flexibility through the virtualization of the IT system to support the product development process. <Editor>

Hyundai Securities has been attracting attention in the industry through various services such as the Hero Fund, the Theme Fund, the YouFirst Wrap, and ELS. With its accumulated knowhow, the company has constantly been developing new services. It is pioneering foreign markets aggressively, and by setting up local offices in New York, London, Tokyo, Hong Kong and Shanghai, it is strengthening its worldwide presence.

### Virtualization for cloud computing era

To respond flexibly to an ever-changing financial market, Hyundai Securities set up the long term plan of implementing an IT infrastructure based on cloud computing. In the first phase, the company pushed for virtualization. Since speed and reliability is key to the successful financial system, in the initial phase, the company introduced virtualization only for the internal system to be used by its employees.

The company started by integrating servers through virtualization in 2010. There were a total of 80 servers, including Windows servers and UNIX servers that are used for groupware and information security, and not very keen on speed. 'Typically, the average server utilization rate of the datacenter was 10% to 15% with a maximum of 30% at best. However, the rate can go up if several servers are integrated together, boosting cost efficiency as well,' said Mr. Yun-sang Kim, manager of system operation. 'Indeed, the latest trend of cloud computing is based on virtualization technology, and by implementing virtualization gradually, now, the company is ready for the cloud computing era.'

The company did consider server virtualization 5 years ago, however, the virtualization technology at the time was not mature enough, and performance was not guaranteed. Today, virtualization technology is highly developed, and along with better hardware performance, virtualization can provide higher speeds and performance than physical servers.

Mr. Kim said: 'Since the servers today support a multicore of 6-core or higher, virtualization can provide better performance than 2-core servers. In theory, that means you can use one server for work previously done by 20 servers in the past, reducing operation costs dramatically.'

### **Cisco UCS provides enhanced better memory scalability**

For server virtualization, Hyundai Securities adopted the virtualization solution of VMware and the 'unified computing system (UCS)' of the Cisco x86 server. Cisco UCS is a server that integrates computing, network, storage access and virtualization resources into a single system with high energy efficiency, and its high memory scalability is optimized for a virtual environment.

Mr. Kim said: 'In terms of server performance, most x86 servers based on the Intel processor provide similar performance. However, the UCS is in the form of blade, which means that it requires less datacenter space, provides simple network configuration and high memory scalability. And that makes a real difference.'

The biggest advantage of Cisco UCS is its simplicity in cabling. Typically, servers are connected in a very complicated way even on a single rack, and adding a new server means the whole network should be reconfigured, making cabling work a lot more difficult. On the other hand, in a single rack, Cisco UCS provides simple network configuration connecting servers through FCoE, and the servers can be put on upper part of the rack. When adding a server, only a single FCoE cable is connected, making it convenient to extend.

Memory scalability is the most distinctive feature of Cisco UCS. When building a virtual environment, the problem of lacking memory occurs frequently. This is because commands are issued from numerous virtual machines, and a bottleneck effect occurs in the IO of the memory and the disc. Therefore, the speed is dramatically reduced compared to a configuration of physical-servers-only.

Cisco UCS provides 48 memory slots, 4 times more than the other x86 servers, and it can process commands at 1333MHz consistently without a drop in speed. Besides, through IO virtualization, the bottleneck effect can be dramatically reduced.

### **Cost reduction through lower TCO**

Price was important factor, too. The price of the Cisco UCS is higher than other x86 servers. However, Hyundai Securities said: "We actually were attracted to the higher value."

Mr. Kim said: 'In a virtual environment, the lack of memory and disc space usually results in lower performance. However, the high memory scalability of Cisco UCS guarantees the performance of the virtual environment. Thanks to this, we reduced the number of servers from almost 80 to 7.' He also added: 'Considering the electric bill and the maintenance costs of the datacenter, the Cisco UCS was a very competitive offering.'

The server integration work of Hyundai Securities integrated 80 servers on 6 racks into 7 blade servers which occupy the space of one third of a single rack. After the integration, the space utilization of the datacenter went up, and electricity costs were significantly reduced.

Hyundai Securities supposes that the virtualization work was much easier due to the close relationship between Cisco and VMware. Cisco is in strong alliance with VMware and EMC, and together, they conduct joint research to improve the performance, security and reliability of the virtual environment. This is why Cisco UCS provides the optimal environment for VMware virtualization.

### **Reduced errors, improved maintenance**

Hyundai Securities points to the benefit of implementing Cisco UCS as the reduction of TCO due more efficient equipment, and a decrease in required maintenance. As the number of servers was reduced to one tenth the original number, maintenance costs decreased as well. And since the timing of adding a new server was postponed, the related costs were saved as well.

In terms of maintenance, the benefits of the UCS were

## “Business flexibility through virtualization”

### Q. Tell us about the background of the server integration.

The old servers were outdated, and due to additional work, we had to add new servers. The problem was that the server utilization rate at the time was less than 30%, and due to different environments for server configuration, maintenance was very complex. We wanted to increase server utilization and reduce costs through virtualization, and that is why we started server integration.

### Q. Why did you implement Cisco UCS?

The greatest feature of the Cisco UCS was its simple network cabling. The existing servers had too many cables to connect to various servers, and they were hard to maintain. On the other hand, the cabling of UCS is simple because it requires a single FCoE connection in a single rack. Also, adding a new server is convenient because that just requires adding an FCoE cable. Another benefit was its high memory scalability. When implementing virtualization, the biggest problems are a lack of memory and an IO bottleneck. In virtualization, several virtual machines are run using a single physical server; however, the simultaneous processing of commands is limited due to a lack of memory and an IO bottleneck. Since Cisco provides high memory scalability, and can reduce bottlenecks through IO virtualization, it can optimize the virtual environment.

### Q. What happened after implementing the Cisco UCS?

First of all, the costs were reduced, while maintenance became much easier. As the number of servers was reduced to one tenth the original number, the maintenance of servers decreased, errors were reduced, and maintenance efforts were reduced as well. Additionally, since the number of servers was reduced down to 7 from 80, now servers occupy only one third the space of a single rack, freeing up the datacenter.



Yun-sang Kim | Manger, System Operation, Hyundai Securities

### Q. Tell us about your next plans.

We plan to implement UCS to replace 30 outdated servers and for newly-added works in 2011. Although we think that adding some discs without adding additional servers will do just fine, we will add more UCS if necessary. In the long run, we will expand the virtual environment in phase to build a cloud computing environment. For that, first, we can increase work productivity by applying virtual terminal technology.

integrating the different environment of the Windows server and the UNIX server into a single management console. As the number of servers was reduced down to 7 from 80, we now have fewer errors, and less maintenance work. Besides, Cisco and VMware provides an integrated management tool, which enhanced the maintenance work.

Mr. Kim said: 'In the physical server environment, dual processing was done through HA, however, in virtualization, dual processing can be done through a virtual machine. And, if an error occurs in a server, the work can be transferred to the virtual machine, which, in turn, increases system availability.'

He also added: "Thanks to the high performance and reliability of Cisco UCS, there have been no errors so far. And, even if something comes up, immediate action can be taken, making system operation a lot easier."

### In phase adoption of cloud computing technology

In the second phase Hyundai Securities plans to implement UCS to replace 30 outdated servers and in newly-added works in 2011. Although the company thinks that adding some discs without adding additional servers will work, if necessary, they plan to add more UCS, nonetheless.

Mr. Kim said: "Although virtualization technology has matured, one should be cautious when applying it to the critical systems of security companies. However, when applied to systems that do not require fast speeds and high reliability, the benefits of virtualization are many."

He added: "The performance of virtual machines is not lower than physical machines. Rather, the virtual machines can process commands in a faster and more reliable way. There is no reason to resist virtualization. The sooner virtualization is implemented, the greater value you gain."

# Cisco UCS (Unified Computing System)

## Optimal solution for cloud and virtual environments

Usually, the average server usage rate in an x86 server environment is less than 10%. Besides, servers are connected to networks and storage through additional, very complex cables and switches. Under such an environment, it is difficult to provide virtualization and a cloud environment for the whole datacenter. Cisco UCS (Unified Computing System) is the optimal computing solution for next generation datacenter. Based on Cisco's integrated I/O technology, it simplifies the datacenter structure. Additionally, many virtualization solutions are applied in the system's architecture, it provides a customizable solution for virtualization and cloud computing.

### Cisco UCS: Features

- Cisco UCS (Unified Computing Systems) is a next generation x86 server with I/O architecture for tomorrow's datacenter.
- Cisco UCS with its Industry-standard x86 platform and proven virtualization and I/O technology is equipped with the optimal architecture for cloud computing.
- Cisco UCS is available in blade and rack server types that supports the server products optimized for various services and applications.
- When configuring and operating the server farm of the datacenter, Cisco UCS simplifies network configuration to reduce investment costs. Also, a datacenter with high efficiency and low costs can be built because it supports a convenient and fast operational environment.

Intel Xeon Platform  
2 CPU, 4 CPU

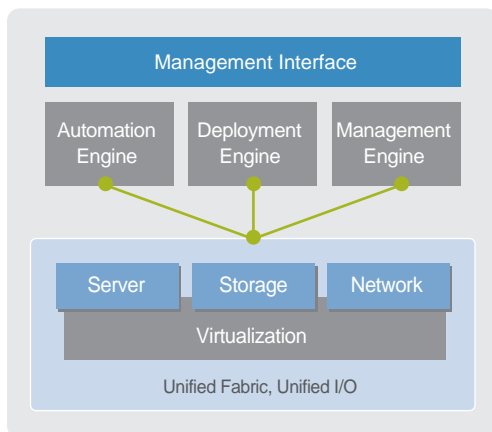
Blade Server  
& Rack Server

Cisco Unified Fabric,  
I/O

Cisco VN-Link  
Technology

Quick & Easy  
Management

#### Features



Next generation Datacenter Architecture

To build the next generation datacenter, servers, storage and networks should be organically unified, and Cisco UCS is designed to reflect this. The unified architecture can be managed through a UCS Manager.

- Unified Fabric, Unified I/O Architecture
- Supports optimized virtual environments
- Cisco's memory scalability technology
- Integrated management of servers, networks and storage through system management software (Cisco UCS Manager)
- Simple system operation and management based on service profile
- VCE (Vmware, Cisco and EMC) Partnership

### Cisco UCS Server Line-up



B200 M2  
general-purpose  
x86



B250 M2  
large-volume memory  
technology



B230 M1  
high-performance/  
integration x86



B440 M1  
medium-large  
enterprise server



C200 M2  
general-purpose  
x86 platform



C210 M2  
large-volume disc



C250 M2  
large-volume  
memory



C460 M1  
large enterprise server

