

Cisco Unified Computing Systems Case Study

SEGA Corporation.



A legendary online action role-playing game makes a comeback in a new version. ID registration for the game exceeded one million in about three months. What kind of server did SEGA choose to support such a huge number of gamers?

SEGA Corporation (SEGA) is a prominent and iconic Japanese game maker in the amusement business. The company covers a wide range of areas, domestically and internationally, ranging from the production of console game contents and arcade game machines to the operation of various amusement facilities.

One of SEGA's major game contents is an online game called "Phantasy Star Online 2." This is a new version of the popular "Phantasy Star Online," Japan's first online action role-playing game. The game has become a big hit with the number of registered users exceeding one million in only three months since its release in July 2012.

According to SEGA, numerous state-of-the-art technologies are used for the system infrastructure that supports the latest online game. In particular, since the game involves a huge number of users, the server foundation needed to have significant high processing capability and scalability. Server virtualization and Cisco Unified Computing System (UCS) are the key technologies supporting the server. This case study will introduce the backdrop in SEGA's decision to choose Cisco servers for "Phantasy Star Online 2."

The Father of Action Role-Playing Games is Back "

"Phantasy Star Online" (PSO1), SEGA's old hit, is a pioneer online action role-playing game now popular worldwide. PSO1 was released as software for the Dreamcast in 2000 and ended its service in December 2010 to the lament of its fans. In July 2012, its sequel, "Phantasy Star Online 2" (PSO2) was released.

PSO2 has many more contents than PSO1 and has attracted attention with its breakthrough multi-device support function, which enables the game to be played on not only PCs but also game machines and smartphones. Unquestionably, PSO2 was expected to have significantly increased content data and simultaneous connections compared to PSO1. This means the server foundation which supports the game contents bears a huge load, far surpassing what was needed for PSO1.

In 2010 SEGA started searching for a new server foundation for PSO2 on the premise that server virtualization would be introduced. All PSO1 servers were configured by physical servers but SEGA decided to provide the entire service for PSO2 on virtual servers. Yasuyuki Komiya (SEGA, R&D Solution Headquarters, Development Assistance Department, Operation Technology Section), who is in charge of operation and management of online game system infrastructure, explained that the reason for the introduction of virtual servers was to reduce time and costs for server procurement.

“The number of users for online games can suddenly increase when the game is updated or there is a special event. As a result the number of servers needs to be immediately expanded, but we cannot meet the requirements if we procure physical servers whenever necessary. In contrast, we can immediately launch a virtual server if the host server has sufficient resources. The speed with which servers can be launched is a great advantage for us.”

For the above reason, SEGA wanted to find a server product which could integrate as many virtual servers as possible and could provide superior operation and management of a virtualized environment. The company chose Cisco UCS B Series Blade Server, a blade server product provided by Cisco Systems (Cisco).

Cisco UCS Selected for Its Virtualization and Network Compatibility

SEGA compared several blade server products including Cisco UCS. Mr. Komiya said that the two main reasons for finally selecting Cisco UCS are its great “network compatibility” due to its simple physical configuration and its “memory capacity.” These two factors significantly affect the stable provision of services and integration.

For commercial online game service operation, it is important that game server software can take full advantage of network bandwidth in order to provide stable communication. SEGA evaluated that Cisco UCS has a unique design which combines servers and network to allow smooth communication.

Moreover, Cisco UCS’s network adaptor attached to each server blade is logically partitioned into as many as 256 adapters and interfaces. Mr. Komiya said this is another great advantage for operating a game based on a virtualized environment.

“Our entire infrastructure uses NFS or iSCSI for connecting servers and storage instead of fiber channels. For this reason, server blade network adaptors that can be logically and finely partitioned allow us to finely divide IP networking and storage connections for managing each virtual server.”

He said that they also attached importance to the maximum memory capacity for integrating as many virtual servers with physical servers as possible.

“The number of virtual servers run on physical servers is decided by the memory capacity of the server in a game system,” Mr. Komiya said.

The maximum memory capacity is an extremely important requirement for online game server infrastructure which needs to quickly increase the number of virtual servers to keep pace with the increased number of simultaneous connections. Cisco UCS has a large capacity for memory expansion.

This is why SEGA decided to introduce Cisco UCS as the server infrastructure for PSO2, the company's leading online game.

Superior Controllability Greatly Simplifies Configuration and Operation

When SEGA installed and setup Cisco UCS, the Service Profile function of the product was very helpful. This function enables simple and speedy launch of the new server by providing a template of server settings.

Mr. Komiya said, "Because most servers have the same settings in the PSO2 environment, environment setting is completed by simply applying the same template to blade servers. This function greatly reduced the amount of time needed for configuration. In addition, we were able to quickly add blades after operation started. Blade addition can be done very quickly. In the online game world, situations where "ten or 20 servers (blades) needs to be added by the next day" can arise. When considering future expansion, this automation function is convenient."

The PSO2 virtualized server infrastructure rolled out smoothly fully utilizing Cisco UCS functions. As a result of expanding the infrastructure right after the commencement of commercial service, a total of 24 physical servers on three chassis, each of which accommodates eight blade servers are running. Each physical server has over ten virtual servers. Over 300 virtual servers for the entire system are running.

According to the company, the system has never had a critical failure in two years since the service commencement. Mr. Komiya actually held a negative view of Cisco UCS, which had just been released at the time SEGA selected servers. He said that because Cisco UCS had a limited track record, he could not anticipate how stable the product would be. However, he soon found that Cisco UCS was more robust than any other servers he had previously used.

Mr. Komiya also favorably evaluated the UCS Manager functions of Cisco UCS.

"I believe that the ability of UCS Manager to centrally control several chassis is a great advantage for running the system. This will prevent complications in management in the event of increasing the number of chassis and networks in the future. Although some other products also have similar functions, I think Cisco UCS is the only product currently available which can centrally control everything including network environment."

Cisco UCS for Other Game Server Infrastructure

In addition to Cisco UCS being the PSO2 server infrastructure, SEGA is also using Cisco UCS as the server infrastructure for simultaneously supporting other small-scale games. This infrastructure is also fully virtualized and the server integration ratio is much higher than that for the PSO2 environment.

"Since the popularity of smartphone small-scale games often fluctuates, the number of users may significantly increase or decrease unexpectedly. Therefore, an environment like a private cloud is suitable because resources are pooled for several games and flexibly shared. We judged that Cisco UCS is an ideal product to realize such an environment in terms of management and server integration. An average of 30 virtual servers is currently running on each physical server."

Moreover, SEGA is now advancing standardization of the entire infrastructure for commercial services. Mr. Komiya highly evaluated Cisco UCS as a product suitable for SEGA's server infrastructure.

"Depending on the characteristic of game, physical servers are sometimes more suitable. Though for other games, we will configure infrastructure on the premise of virtualization, and we believe that Cisco UCS is the best choice among currently available server products."

USER PROFILE: SEGA CORPORATION

Headquarters:

1-39-9 Higashi Shinagawa, Shinagawa-ku, Tokyo

Incorporation

June 3rd, 1960 (Business initiation was in April 1951)

Capital

60 billion yen (as of March 31, 2011)

URL

<http://sega.jp>



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