Case study
Intel® Virtual Gateway
Remote Management of Data Center
Gaming Industry

A Great Help in Remote Management of Data Center

Intel Virtual Gateway helps Shanda Games realizes remote automatic management of data center and greatly enhances efficiency of remote data center management

"Deploying Intel® Virtual Gateway offers us an excellent platform for data center equipment monitoring and big data analysis. It also helps us to tackle the challenge of remote management and automatic monitoring of data center, maintain the stability and continuity of our business. It is undoubtedly of great help to our operation management of online gaming servers!"

Mr. Qiang Yan,
Shanda Games G Cloud Data Center

G Cloud is a cloud computing platform subsidiary to Shanda Games Limited, the most well-known online gaming operator in China. Supporting dozens of titles for mobiles, PCs and web browsers, G Cloud is the corner stone of Shanda Games' powerful game operation and it also serves numerous external users in the internet industry. G Cloud provides customized operation management services such as cloud server, physical server, cloud DB and CDN, allowing users to have the exclusive right to the resource pool and make necessary adjustment to meet the requirements of the everchanging internet industry. On top of operation management, G Cloud can also provide value added services to ensure smooth business operation and simplify operation process, including application deployment assessment, one-stop operation management, information security, games' operation security(reinforcement, executable compression, anti-cheating) and quality control of games(game evaluation, crashreport).

CHALLENGES

- G Cloud is deployed regionally with each region having several SFPs in. The data center managers are required to discover the failed device and fix it in time to ensure business operation.
- The data center managers and on-site staff are located in different areas. It is highly important to automatize remote data center maintenance to enhance operation efficiency and cut the cost.
- The solution is required to support heterogeneous environment in Shanda Games' data centers.

SOLUTION

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CASE STUDY

Shanda Games, as one of the top companies in online gaming industry in China, is confronted with fierce competition from old and new rivals in this rapidly developing industry. The issues of how to improve and maximize user experience have become the key to maintain customer loyalty, or even decide the fate of a company.

In terms of online game experience, the most basic requirement is the stability of the infrastructure. The reason is simple: things like downtime maintenance or unexpected loss of accumulated credits or equipment will not only jeopardizes online gamers' loyalty to the games but also create distrust toward the operating company, which will subsequently bring devastating impact to the brand and other games operated by the same company. However, to maintain the stability of infrastructure through the IT system is much harder than it sounds. Online gaming is mostly deployed regionally

with several SFPs in each region. This means the failure of any of these points could lead to collapse of the entire region or even loss of all data on hard drive. As it is, the G Cloud data center operation team is far away from the site, which means they have to handle various emergencies remotely and direct on-site staff to conduct the maintenance. Such a working method will inevitably lead to issues like delayed problem detection and slow response of the on-site staff, which will easily trigger the customers' dissatisfaction and anger, hence the loss of the customers.

To tackle this, G Cloud deployed Intel® Virtual Gateway solution, which supports heterogeneous environment in datacenters. Through remote accessing devices as well as automatic and regular status checking, it gets rid of flaws of manual checking such as being long in checking cycle, slow in failure detection and trouble shooting. Intel® Virtual Gateway can detect problems in time, analyze the root cause of failures, check status, and assist in problem-fixing and decision making, thereby avoiding potential problems. It greatly enhances the efficiency and quality of operation management and reduces cost.

In online gaming industry, server management is usually controlled manually. Due to size of the team and its high personnel cost, manual checking process can take hours for every round. Besides, sloppy check is very likely and it will prevent the existing as well as potential problems from being discovered or fixed in time. Therefore when the operator detects a problem, it has to be channeled downward to exclude the cause in the hardware, which is both time-consuming and challenging. In addition, after locating the failure, it then requires coordination of the on-site staff to resolve it, but that could be jeopardized for lack of the evidence to measure the accuracy of the on-site staff's conclusion of the problems and

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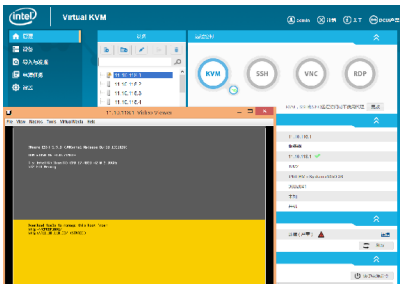
effectiveness of the measures they take. There is no KPI evaluation based on data. Moreover, it can take hours, even days, for the operating team to recover service. If the hardware problem is not detected in time, more errors can be derived and accumulated over the time. The outburst of accumulated errors can cause more severe consequences. It can mean the loss of tens of thousands Yuan per hour. In the worst scenario the damage might be unrecoverable.

Some companies will adopt simple offline equipment management or internally developed remote visit program to manage their server. The use of an offline excel file as a simple method to manage devices in datacenterrequires specific script conducted manually to obtain server information, which will be entered in the excel file for management and tracking of the equipment. Such programs cannot automatically differentiate, manage or track assets in data centers, which is far from the timely and automatic performance required by the online gaming companies. If companies develop their own simple remote access solution, it could support certain devices, but there're devices with various brands and models deployed in datacenters, it will create workload in different areas including equipment maintenance and software update. The internally developed debugging program is unlikely to achieve timely and automatic support.

Intel® Virtual Gateway is a solution that can realize automatic management and reduce the checking process time from hours required by manual checking down to a mere quarter of an hour. It also allows any potential hardware failure to be detected, reduces the impact to the minimum, and avoids the dangerous situation where errors pile up due to untimely debugging. After Intel® Virtual Gateway detects a failure, it would form a detailed report which can even pinpoint the component position, including the categorized analysis of the CPU, memory, fan, power source, RAM, temperature, battery and voltage, and skips over the conventional process of locating the hardware failure through checking by regions. After locating the cause of a failure, it can offer a timely suggestion to replace the component or the whole mainframe without accessing the equipment or the precise location of the component. This can efficiently help the on-site staff to rapidly locate and solve the problem, reduce the time needed for manually troubleshooting in every possible region for failure to a large degree. This also guarantees that operation can be resumed soonest and the negative impact to user experience would be brought to the minimum.

Intel® Virtual Gateway also provides various methods for remote visit and access. After installing Intel® Virtual Gateway, platforms like Shanda Games G Cloud which needs to be managed remotely will be given access to remote visit or even operate when the equipment is shutdown or the server isn't installed with operating system. Actions like installing operating system, setting up BIOS, setting up intranet system and maintenance can be conducted easily, and initialization, management and hardware maintenance can also be done. Operators will not need to physically enter data center to operate or maintain, and through this it greatly reduces human cost and complexity of operation management. On the other hand, this solution is very compatible as it allows users to directly visit mainstream operation system including Linux, Unix



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and Windows through standardized agreement like SSH, VNC or RDP.

In terms of the choice of servers, G Cloud uses various brands including Dell, HP, Lenovo and Inspur. Intel® Virtual Gateway supports a wide range of hardware. It also meets the needs of speedy expansion of the supporting equipment range. It only takes hours for G cloud to match new devices or hardware. In our current deployment, G Cloud successfully added approximately 2,000 unit servers of various brands and models with Intel® Virtual Gateway and the monitoring function. 141 servers reported errors right after the deployment, of which 4 had exceeded the required temperature to a serious degree, 3 were found with errors in their hard drive or memory. The report of hardware failure was specific to the category and trench code, and effectively increased the efficiency of data center management and reduced maintenance time. It is estimated that 500 man-hours can be reduced per hundred devices per year, and counted by 100 CNY cost per man-hour, if G Cloud is adopted in all management, the estimated annual financial return of per thousand servers can be as much as 500,000 CNY. In terms of reducing the average failure time of equipment, conservative estimation counts an annual reduction of 0.2 hour (12 minutes). According to a business report, 98% of the data centers find more than 100,000 USD are lost per hour due to the failure. Considering the business scale of Shanda, the cost caused by equipment failure and maintenance per device can amount to at least 1,000 USD per hour, which is around 6,500 Yuan. It is predicted that the annual financial return can reach up to 1,300,000 Yuan per thousand devices.

Conclusion

Through adopting Intel® Virtual Gateway, Shanda Games G Cloud Data Center manages to efficiently detect existing failures and eliminate potential ones by replacing the manual check with automatic way to assist IT management team. At the same time it realizes remote automatic management of data center, maximizes the range of support from various server brands and greatly enhances efficiency of remote data center management, which then saves cost of hardware procurement and human resources. The deployment of Intel® Virtual Gateway greatly enhances stability as well as efficiency of IT infrastructure of Shanda Games G Cloud, and improves user satisfaction and loyalty.

G Cloud Data Center will continue to carry out active cooperation with Intel in the future, seek more smart technology to enhance intelligent management of data center.

For more information please visit **www.intel.com/dcm**, or send email to **dcmsales@intel.com** to contact us.