



## Case Study

### Cloud based Holdfast Electronic Sports Game Platform

#### Intel and Holdfast work together to upgrade Holdfast Electronic Sports Game Platform with cloud technology

##### Background

Shanghai Holdfast Online Technology Co. Ltd., one of the biggest Electronic Sports Game Platform (aka, E-Sports Game Platform) vendors in China, supports many games and end users all round China. E-Sports Game Platform is to host third-party games and enable end users to compete via Internet. To provide a more attractive and perfect E-Sports Game Platform is Holdfast long term strategy.

## Challenges

Along with the fast growth, Holdfast E-Sports Game Platform needs to manage more and more online games, together with so many servers. Traditional hardware infrastructure cannot meet the business requirements. Holdfast E-Sports Game Platform faces new challenges:

- ✧ Based on game rule or user application, it is required to dynamically allocate and deploy game servers.
- ✧ Holdfast needs to support so many games and servers, which makes the IT maintenance work too complex and vulnerable.
- ✧ Supported game varies from several thousand users to just several players, it is very hard to manage them in just one console.
- ✧ Traditional hardware infrastructure cannot be adjusted dynamically, server utilization is low.
- ✧ Holdfast servers scatter around China, which greatly increases the maintenance cost.

These challenges harm the availability, stability and scalability of Holdfast E-Sports Game Platform, make it hard for Holdfast to improve the service quality and lower the operation cost.

## Intel and Holdfast work together to turn on cloud platform

To resolve these challenges, Intel and Holdfast worked together to develop the Holdfast cloud platform. This solution integrated Holdfast E-Sports Game Platform and enterprise cloud infrastructure, relaxed software solution from dedicated hardware resources, implemented one single flexible management framework to manage the software solution and all the hardware resources.

Cloud platform makes Holdfast E-Sports Game Platform to be more flexible and easier to manage, brings Holdfast manage great management advantages:

### **1. Solution management**

Under the cloud platform, different games are managed as game template and game instance, and then can be managed in a simple unified manner. When new game is online, it is installed as virtualization server group, and later packaged as game template. Based on the game template, when user request comes, administrator can fast deploy and turn on independent game instance to support the request. When the game instance is no longer needed, then can be stopped or deleted to release resources. If game instance needs to support different user scale, it is easy to be satisfied by adjusting template parameters. In this way, complex server topology is avoided, greatly simplified game instance management.

## 2. Resource management

Enterprise cloud is based on Intel® Virtualization Technology, and effectively makes the efficient hardware usage transparent to high level solutions. High level solutions are no long mapped to dedicated hardware, but agilely on-demand request resources from cloud. Enterprise cloud automatically chooses appropriate servers to deploy new game instance. With the help of Intel® VT FlexMigration, enterprise cloud eliminates resource fragments, implements dynamic load balance and supports redundant hardware online/offline without business interruption. Enterprise cloud monitors all hardware resource status in one single interface, greatly simplified the resource management. Enterprise cloud also supports more advanced usage models, like elastic application, dedicated instance and disaster recovery.

For Holdfast Enterprise Cloud, Intel provided professional value add cloud computing service support to Holdfast, covering every phase of the solution development, like requirement analysis, technical training, hardware evaluation, infrastructure reference implementation, BKM sharing and sample code. Intel worked with Holdfast closely to plan, design, implement and test the cloud platform. Figure 1 shows the reference architecture of Holdfast Enterprise Cloud.

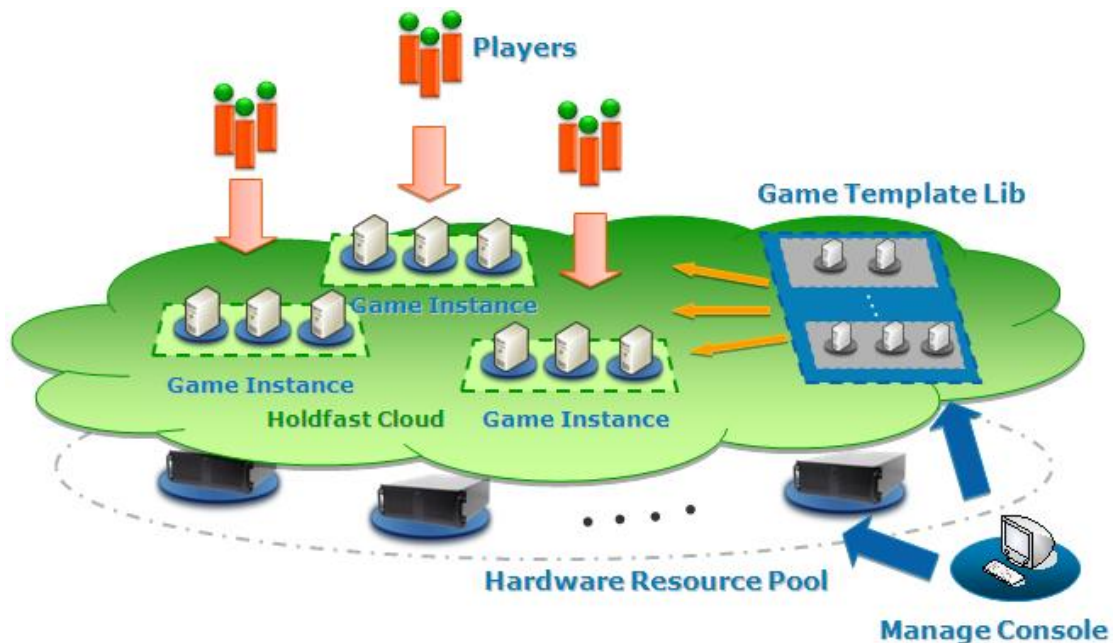


Figure 1 Holdfast Enterprise Cloud

In another hand, Intel® Virtualization Technology and Intel high performance server platform helped a lot to make this cloud platform successful:

- ✧ Enterprise application usually requires high speed memory access. Intelc Virtualization Technology supports Extended Page Tables, which greatly speedups memory access under virtualization environment.
- ✧ Network I/O is one key performance bottleneck for online game, Intel® VT-c technology directly allocates I/O channel, simplifies the I/O process and speedups network I/O.
- ✧ Intel® VT FlexMigration secures real time virtualization machine migration. It also has

good compatibility within Intel different server generations, thus protects the IT investment.

Based on cloud technology and Intel® Xeon processor based servers, Cloud based Holdfast E-Sports Game Platform succeeds to reach the project objectives.

## Cloud based Holdfast E-Sports Game Platform Advantages

Based on Intel and Holdfast's great cooperation, Cloud based Holdfast E-Sports Game Platform successfully launched; it adds great value to Holdfast:

### **1. Lower IT maintenance cost**

Enterprise cloud manages game instances and hardware resources automatically and intelligently, speeds up user request response, lowers Holdfast IT management cost. The integrated IT management also reduced Holdfast IT investment.

### **2. Higher resource utilization**

Enterprise cloud enables Holdfast to deploy several game instances in one physical server without interruption, greatly improves the server utilization.

### **3. Lower energy consumption**

Enterprise cloud automatically consolidates servers with low utilization, then makes extra servers offline. This helps Holdfast to use less servers to support more game instances, reduces power consumption.

In the future, Holdfast will also use this to provide multiple service level agreements and new business models, customize service for different game vendors, provides more accurate billing model. Cloud based Holdfast E-Sports Game Platform enables Holdfast to provide services with higher quality, supports Holdfast fast growth!

As the evaluation direction of next generation enterprise data center, cloud computing will surely benefit online game a lot with so many advantages, such as on-demand resource management. To make full use of these advantages is one of Holdfast long-term strategies. During this cooperation, we are deeply impressed by Intel's value add enterprise cloud service, the experienced engineering team and the high performance Intel hardware products.

- **Xu Haixia**, CTO, Shanghai Holdfast Online Technology Co. Ltd.

As one new business model, Electronic Sports Game Platform increased the service management complexity and IT administrators are so easy to be submerged by the endless server maintenance work. With the help of Intel, Holdfast integrated enterprise cloud into the infrastructure. The new solution greatly simplified the software and resource management, increased the solution agility, and satisfied our operation requirements.

- **Yan Wei**, Technical Director, Shanghai Holdfast Online Technology Co. Ltd.

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