

Holdfast Virtualization Solution on Intel Architecture



Holdfast offers a highly available online gaming solution with reduced infrastructure maintenance and operation costs with the help of Intel® Virtualization Technology built on Quad-Core Intel® Xeon® processor based servers.

Holdfast Online Technology Co. Ltd., one of the largest game operators based in China, provides a platform to host third-party operator LAN-based console games, enabling gamers to play against each other in wide area networks. Infrastructure maintenance and operation investment management are the primary mandates of the online game operators. Traditionally, game operators have utilized a dedicated server model; Holdfast has revolutionized the game hosting services marketplace through the innovative use of virtualization.

This paper discusses Holdfast's high availability (HA) model, deployed in Holdfast's IDC and validated with real workloads and scenarios.

The Challenges

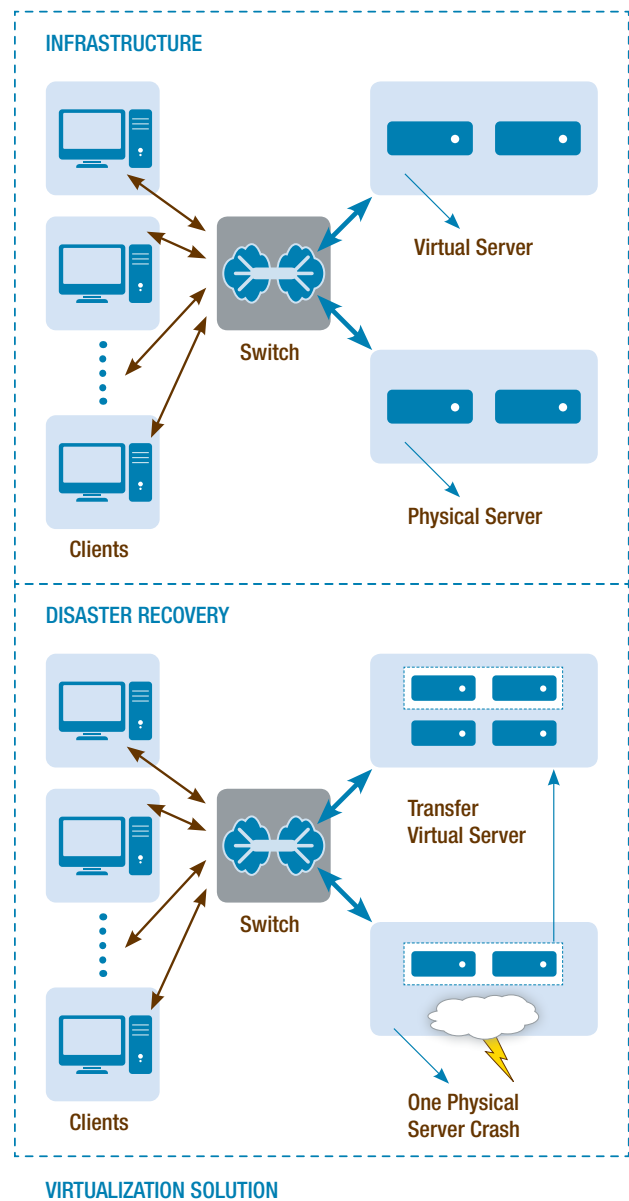
1. Online users may experience service outages for an extended period due to a physical server crash in the system caused by hardware or software failure.
2. A single system may not be able to handle a large user load or unexpected spikes in demand.

These challenges drive online game operators to seek solutions to improve system high availability, critical for improving the end user experience and increasing service levels.

Holdfast makes solution choices beyond consolidation

The primary goal of Holdfast was to reduce system down time. Holdfast engineers, assisted by Intel, implemented a high availability solution. After examining several options for virtualization, Holdfast chose a solution that consisted of two Intel®Xeon®5300 series processor based servers used to provide reciprocal backup. Each server hosted "n" guest virtual machines so that if either of the physical servers crashed, the virtualization software could monitor the status change of the VMs. In the event of a crash, the backup server would take over all the services. System down time was reduced to between 90-120 seconds. This was significantly less expensive to manage than the native solution. The entire solution could be automated by the virtualization software, reducing the operator's cost and response time.

Solution Architecture



Quad-Core Intel® Xeon® processor advantage

The Intel® Xeon® processors with Intel Virtualization Technology provided better performance per watt and

performance per unit price options for Holdfast. Intel® Core™ microarchitecture delivered better performance on multiple application types at substantially reduced power consumption levels. This helped Holdfast to improve the data center density and lower power costs.

Successful business solution meets the goal

The goal of the Holdfast solution went beyond consolidation and having the ability to provide business continuity under conditions of server outages or unexpected spikes in customer demand. While the virtualization solution provided very comparable performance to native performance, the high availability (HA) virtualization solution deployed on Intel® Xeon® processors helped Holdfast reach their primary goals of both functionality and performance. It was also observed that Intel® Virtualization Technology could improve system stability without the need to replace the application software, thus reducing the investment cost.

Find a business solution that is right for your company. Contact your Intel representative or visit the Intel® Business/Enterprise Web site at: <http://www.intel.com/business>

For more information about Intel® Virtualization Technology, contact your Intel representative or visit <http://intel.com/technology/virtualization>

“This time we adopted HA functionality based on Intel Virtualization Technology and did performance testing in our IDC. We feel HA with Virtualization Technology plays an important role in the areas that need high stability, especial for the servers that developed by customers, or for the servers that don't support cluster. Using virtualization HA technology can reduce the cost of investment and the recovery time of 90~120 seconds can also reduce response time for online users.”

— Lu Zhihua, Senior Engineer, Holdfast Online Information Technology Co. Ltd.

“HA based on Intel virtualization technology can improve the stability of system and service quality level, at the same time, the biggest value is the technology can reduce operator's cost.”

— Yan Wei, Technical Director, Holdfast Online Information Technology Co. Ltd.

About Holdfast

Holdfast e-sports platform is a gaming platform developed and operated by Shanghai Holdfast Online Information Technology Co., Ltd (hereinafter “Holdfast”). Since Holdfast was established in September 2002, it has accumulated more than 150 million registered users with the latest record breaking peak of over 750k concurrent users. As one of the leading interactive gaming platforms in the world, this platform occupies 70% market share of the electronic sports and game competition market in China.

In it's six years of successful operations, Holdfast has developed an adhesive customer platform by emphasizing the services and continuous enhancement of our cutting-edge technology. Holdfast has quickly evolved from a purely LAN based e-sports game platform into an interactive game community platform, offering diversified content covering e-sport games, LAN games, online games, casual games and services such as social networking and game contestant matching.

Holdfast's business is comprised of community platform, game content provision and professional tournament organization. Powered up by advanced technology and comprehensive system functionalities, the platform is able to support world class blockbuster and popular LAN game titles. Through the organization of regular tournaments on LAN games and online games, Holdfast has become one of the most popular game and internet platforms in China.

For more information please visit Holdfast official website: <http://www.cga.com.cn>



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