Solution Brief
Intel® Xeon® Processors
Enterprise Server
Highly Intelligent Technologies for Tomorrow's Cloud

Strengthening enterprise competitiveness through multiple intelligent cloud services

MiTac Information Technology Corporation created MiCloud*, an intelligent public cloud system, using Intel® Xeon® processor E5 series as the core component, bringing enterprises easy and affordable access to IT resources and enhancing their information competitiveness

MiCloud

Founded in October 2010, MiTac Information Technology Corporation was established to promote the design and application of microcomputers from its parent company, MiTac Inc., the first computer company to introduce the microcomputer system in China. Today, it provides total solutions and one-stop service to meet all its customers' needs with speed, quality and enthusiasm.

With headquarters in Taipei, Taiwan, MiTac mainly focuses on system integration, with the goal of incorporating information and communications technology (ICT) and business domain knowledge to improve customers' competitiveness, productivity and work efficiency. It also provides customers with comprehensive solutions including e-government, e-society, e-industry, e-banking, intelligent transportation, smart city, professional services, customized manufacturing, voice communication, network communication and other fields via information products and consulting services.

"The Intel® Xeon® processors E5 series have the most complete instruction sets. The Intel team also assists in research and development, which is not only a great help in hardware platform development, but also greatly enhances the performance of various types of follow-up applications."

Zhao Yuanhan
Director of Information Services,
R&D Department
MiTac Information Technology Corporation

CHALLENGES

- **Optimize computing power of the public cloud.** Ensure overall hardware structure, level of virtualization and application resources configuration as a whole to create the best cloud environment.
- **Adopt optimized approaches for different data structures.** Use a high-performance CPU core built for top-level application software on a variety of heterogeneous data to maximize cloud resources.
- **Eliminate data transmission delay.** Ensure fast internal processing speed to achieve enhanced computing capabilities.

SOLUTIONS

- **Build public cloud using Smart Machines* technology.** Rely on the processing power of hardware and lower resource consumption by the virtual layer to cope with growing resources.
- **Deploy Intel Xeon processor E5 series as a core component.** Use the high performance of Intel Xeon processor E5 family, which supports enough instruction sets to provide enhanced data processing efficiency for the public cloud system.
- **Deploy 10 Gigabit Ethernet network infrastructure.** Utilize the power of the Gigabit Ethernet network infrastructure to complement Intel-based servers to ensure fast internal processing speed and lower data transmission delay within the resource pool.

Introduction

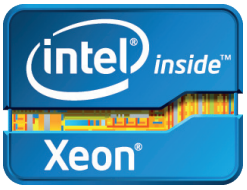
With advances in information technology and new developments in virtualization technology, cloud services began to flourish, particularly public clouds. Through public clouds, enterprises can establish dedicated internal information service systems by using either external IT resources or a range of professional information services such as email through existing cloud services without incurring higher operational cost in maintaining the service.

For enterprises to maximize the effectiveness of cloud services, besides thoroughly assessing internal needs, it is also important to choose a high-performance cloud platform with comprehensive services. To help Taiwan enterprises enjoy the benefits of cloud platforms, MiTac Information Technology Corporation built the MiCloud cloud system to provide multiple cloud services and fast computing resources that will enable enterprises to extend their IT systems to the cloud at a minimal cost.

Establishing holistic, intelligent, service-oriented public clouds

Unlike other companies that mainly provide infrastructure as a service (IaaS) cloud services, MiCloud provides both underlying hardware architecture and top-level applications.

"The focus of cloud platforms should be on service," explains Zhao Yuanhan, director of information services for the R&D Department of MiTac Information Technology Corporation. "When enterprises seek external information systems to adopt, they will have in mind the implementation of IT services as a starting point to find the suitable cloud system, such as e-commerce service, ERP system, etc. These requirements are not only for the cloud platform, procurement of CPU, memory and network bandwidth, but also to find the best solution for platform as a service (PaaS) and software as a service (SaaS). Thus, MiTac integrates hardware and software services, and provides a holistic, intelligent public cloud system to meet a wide range of IT needs by enterprises of different scales."



The Intel® Xeon® processor E5 series has excellent performance scores. Used with 10 Gigabit Ethernet network infrastructure, it not only boosts internal processing speed, but lowers the data transmission delay within the resource pool, providing extremely powerful computing capabilities for the MiCloud.

With many years of experience in information system integration, MiTac knows exactly what IT services enterprises need. In building MiCloud, MiTac kept in mind what's best for business operations of the enterprise, creating a high-performance, highly flexible, intelligent and secure cloud platform.

Compared with internal private cloud systems, public cloud is different not only in name, but also in whom it serves and how it is constructed. Yuanhan explains that the resources consumed by the virtual layer on the public cloud must be very low to cope with constantly growing resources. MiCloud architecture answers this need, since it is different from a general enterprise private cloud, having a platform that is built using Smart Machines technology.

"To optimize the computing power of the public cloud, we cannot simply rely on the processing power of the hardware," said Yuanhan. "We must also look at the overall hardware structure, level of virtualization and application resources configuration as a whole to create the best cloud environment."

Enhanced cloud services rely on high-performance core

The underlying hardware of MiCloud was developed and manufactured by MiTac itself according to the required specifications of its public cloud services. To provide optimum computing resources and hardware performance, MiCloud uses Intel Xeon processors E5 series as a core component. Yuanhan pointed out that after much testing by multiple parties, the Intel Xeon processor E5 series had excellent performance scores. In addition, when using 10 Gigabit Ethernet network infrastructure, it not only boosts internal processing speed, but lowers the data transmission delay, providing extremely powerful computing capabilities for the MiCloud.

Selecting the right underlying CPU core for MiCloud depends not only on high clock frequency, but also on high processing performance for top-level application software on a variety of data. Different data structures demand different optimized approaches to fully use the cloud resources.

"The processing efficiency of the top-level application software depends on whether the underlying processor has a corresponding instruction set, which in turn determines the overall efficiency of data processing," shares Yuanhan.

For MiCloud, which horizontally integrates a variety of application services, the level of support provided by the instruction set will affect the overall carrying capacity and response quality of the whole cloud service. Hence, the processing core must support a sufficient number of instruction sets for the public cloud system to show its strengths.

"The Intel Xeon processor E5 series has the most complete instruction sets. The Intel team also assists in research and development, which is not only a great help in hardware platform development, but greatly enhances the performance of various types of follow-up applications," relates Yuanhan.

Through MiCloud, MiTac is able to launch various kinds of cloud application services, the first in Taiwan to do so. These cloud application services include the credit card automatic debit mechanism DTrace Intelligent Tracking System*, and the Stingray Traffic Manager*, which allow credit card users to experience a fast and convenient checkout process. The DTrace technology analyzes data in real time, allowing users to monitor resource utilization while it is being updated. Using this technology, users can write scripts to automate scale-up or scale-out operations based on the IT budget. The Stingray Traffic Manager, on the other hand, makes balancing cloud network load easy, so enterprises no longer need large and expensive equipment to achieve the load balancing. They can use this software in any cloud platform to easily manage network traffic.

Eyeing multiple intelligent clouds through innovative software services

For Yuanhan, the key to multiple intelligent clouds is innovation in software services. However, in Taiwan there is no public cloud similar to Amazon's that can serve as a development platform to nurture software service innovation. MiCloud frees domestic developers from geographical and language barriers while allowing them to freely develop their innovation in the cloud. At the same time, MiCloud also works to strengthen interaction with the software development community and help them to materialize their innovations, creating a complete software ecosystem.

Next in line for MiCloud is its support for big data, large-scale data processing, and integration of business intelligence (BI), customer relationship management (CRM), and other business applications into the cloud to make these large systems accessible for common folks. With the help of cloud technologies, these large systems can be converted into application services, which will enable small and medium enterprises (SMEs) in Taiwan to benefit from its functionalities, which were traditionally provided only by expensive software. By promoting the advantages of cloud services, MiTac aims to help Taiwanese SMEs gain an edge in their industrial competitiveness to exploit more new business opportunities overseas.

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